June 2024

Duddon River Association Newsletter

Duddon Dispatches

Improving the natural habitat of the River Duddon and its tributaries for the benefit of all wildlife

Following our very positive AGM in February, I feel a wave of enthusiasm for what we may achieve this year, from all members of the DRA that I have had contact with.

It has been a record breaking wet winter. Two local weather watchers tell me that they have recorded rainfall figures of over two metres [seven feet] since May 2023. I have seen for myself the many times the River Duddon has burst its banks and flooded my fields near Duddon Bridge. During the biggest flood in January, the Ulpha road was closed for several hours under three feet of water and I met two moles swimming across the road flood to reach higher dry ground in Bankend Wood.

Hopefully, flooding is now behind us and we can look forward to a busy, exciting year with many activities planned: electrofishing, riverfly surveys, water quality monitoring, leaky dam building, fencing stream edges and planting trees in riparian strips, as well as controlling Himalayan balsam, skunk cabbage and Japanese knotweed. I hope many members can join our work parties over the coming months and enjoy the wonderful experience of working together to improve the environment in the beautiful Duddon River catchment area.

One of the things that is most enjoyable about being involved in the DRA is meeting many like-minded people and finding out about their areas of expertise. In this issue, two of our members share their passions with us; bats and peat. Both articles make for fascinating and informative reading.

Details of our summer event, a visit to the Freshwater Biological Institute at Lakeside, followed by a picnic and reed bed volunteering, can be found on page 16. Spaces are limited so please book your place early.

We are also going to be present at the Thwaites Gala again this year, and also for the first time, at the Millom & Broughton Agricultural Show, so please do look out for us and come over to say hello!

As always, you can get in touch with us by emailing **duddonriverassociation@gmail.com**, and keep up to date with all our activities via Instagram and our Facebook group.

Best wishes,
Rick Browne (DRA Chair)

Contents

Rick demonstrates the enormous height balsam can reach!

Volunteer WhatsApp group

Thank you to all the volunteers who have signed up to balsam bash. We now have 24 members on the WhatsApp group, plus a few more besides!

If you would like to join the WhatsApp group, please email duddonriverassociation@gmail.com and Pam can tell you how to join.

Let the baslam bashing begin!

By Rick Browne

With the arrival of summer, the Himalayan balsam is already growing again! We will be out in force over the coming weeks as we continue our work to eradicate this invasive non-native species from our catchment.

Removing Himalayan balsam will be the biggest task we face this season, however it comes on top of the excellent progress we made last year. Across last summer we expanded our control areas and pulled up a huge number of balsam plants - over eighty thousand of them! These areas will need further work as dormant seeds start to germinate into new plants. We know from our continued efforts in the past few years on the area around Duddon Bridge, that revisiting these sites is necessary and has huge benefits, with fewer and fewer plants emerging in subsequent seasons. The odd plant that remains must be pulled up before it scatters thousands of seeds to prevent the balsam reestablishing itself.

We identified some new areas at the end of last summer that we will be tackling for the first time this year, and I expect more new areas will be discovered by vigilant volunteers throughout the summer. Please can everyone look out for and report Himalayan balsam plants anywhere within our catchment. The distinctive pink flowering heads can be easily spotted from June onwards. You can either let me know directly, email duddonriverassociation@gmail.com, or log it on the INNS app - see the adjacent information box for details on how to do this.

To make organising our balsam bashes more efficient, as agreed at the AGM, Pam has set up a WhatsApp group for volunteers. We will use this as an easy communication network to coordinate work parties which will begin in June and run through to the beginning of September to make sure we pull up all this year's crop before any seeds are dispersed.

There are four main areas that we will be concentrating on: Duddon Bridge, the Lower Lickle, Black Beck at The Green and Underhill. It makes sense to me for volunteers to work in areas nearest to where they live, but this will also depend on where most work is needed.

We are delighted to have had some new volunteers contact us over the past few months and we look forward to meeting them at our balsam bashes.

I'm looking forward to getting out there and continuing the great work that we've been doing over the past few years. It really is making a big difference!

INNS Mapper

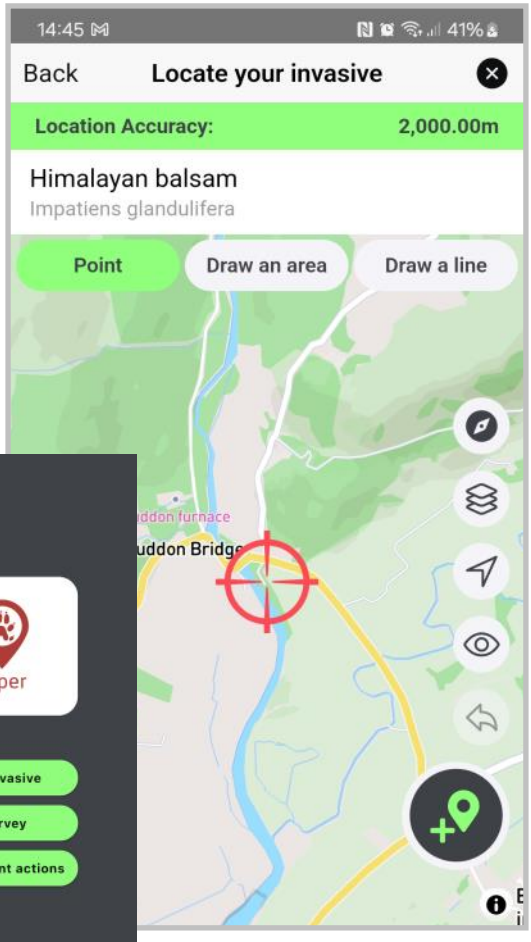
By Sammy Graves, SCRT

There's a recently developed app and website that enables us to map the locations of invasive non-native species called INNS Mapper.

INNS Mapper is a national citizen science project. It is free to use and aims to provide an effective resource to support INNS (Invasive Non-Native Species) programmes and coordinate efforts, allowing the reporting of sightings, surveys and management of INNS in England, Wales and Scotland. It enables different groups to see where actions are being taken around them to create a more effective approach to INNS control.

It can be used both via the website innsmapper.org or on your phone by downloading the app through Google Play Store or Apple App Store. You'll need to create an account to be able to report an invasive species and/or put in the areas that you are managing. It works best if you have a picture of the invasive but this is not required.

It is still quite new, but the more people that use it the more effective and useful it will become, so it would be great if the DRA volunteers can give it a go!



Below: INNS Mapper home screen as it appears on a phone.

Right: Locating an invasive in the app.

Above: Himalayan balsam on the banks of the River Lickle

General advice for balsam bashing

Balsam bashing requires a reasonable level of general fitness, but isn't difficult to do as the plants pull up easily due to their shallow roots. Always put your safety first, especially when next to the river.

Here's a little advice on how to prepare for our volunteer sessions:

- Wear suitable old clothing (long sleeved, hard wearing tops and long trousers are suggested due to brambles, nettles, ticks etc.)
- Bring gardening gloves to protect your hands.
- Wear wellies/walking boots. Waders can sometimes be useful if you have to work from the river, but pay great attention to your safety and only ever do this when with a group.
- Depending on the weather, bring sunhat/ sunscreen or waterproofs (or both!)
- Packing a bottle of water is a good idea too as it can be thirsty work!

Duddon Catchment Project *by Rick Browne*

It was with great excitement that we announced the Duddon Catchment Project a few weeks ago, following a successful application for funding due to a partnership formed between local environmental organisations with common aims.

The partnership is comprised of the Duddon River Association and South Cumbria Rivers Trust, along with the Sustainable Duddon and the South Lakes Red Squirrel groups, and it was created to facilitate applications for grant funding to help the groups do more work within the catchment.

The area of focus of the initiative is south of Dunnerdale Bridge in the Duddon valley, and includes the Lickle valley and the Estuary to the south, stretching from The Hill in the west and Kirkby in the East.

I am delighted to report that in April we received a considerable sum from Cumberland council for the project. This is for the purchase of capital items and needs to be spent by August this year on projects earmarked for west of the River Duddon.

A DRA volunteer balsam bashing in the Lickle Valley

Items to be purchased include fencing materials, wildlife cameras, squirrel traps, bird and squirrel feeders, nest boxes, mink rafts and traps, bat monitors, weather stations, river quality monitors, trees, remote trap monitors and data recording software.

Going forwards, plans include training of volunteers and this will include the local communities and schools who will conduct environmental and ecological surveys. We are pursuing further applications for funding to pay for experts and officers time to train volunteers and oversee surveys.

This is a very exciting and challenging project which could potentially have significant benefits for our area and community. It compliments the great work which is happening in the Upper Duddon Landscape Recovery Project (UDLRP) north of Dunnerdale Bridge.

Although this is a completely separate project, there are definitely synergies. We have close contacts with John Hodgson and his team who are running the UDLRP and can learn from their experiences and their progress over the past two years.

There are many opportunities to get involved (see the advert opposite) so if there is something that you feel you can help with, then please get in touch with me!

DUDDON CATCHMENT PROJECT

JOIN OUR VOLUNTEER TEAM

We need help with:

SURVEYORS -Identify the flora and fauna present both in the river and the surrounding area.

PHOTOGRAPHERS - Regular, seasonal photographs of the river and surrounding catchment.

HABITAT CREATION - Our local Trusts regularly run volunteering days in tree planting or wetland creation.

INVASIVE SPECIES REMOVAL - 'Balsam bashing' is one of our most popular volunteer events!

TRAINING - in squirrel and mink management, this will include species monitoring and management techniques.

CLEAN UPS - You can help to alleviate the pressure of plastic pollution and make freshwater habitats much nicer places to spend time.

For more info:

Rick Browne -
browne_rick@hotmail.com

SCRT South Cumbria Rivers Trust

South Lakes Red Squirrel Group

SUSTAINABLE DUDDON

Cumberland Council

Funded by UK Government

POWERED BY LEVELLING UP

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Peat, peatlands and the Duddon catchment

By Joshua Caulcott-Cooper

If you don't know much about peat you are not alone! DRA member and passionate peat enthusiast, Joshua Caulcott-Cooper, shares his expertise with us about this little understood soil and explains why it is so important.

What is peat?

Peat is an organic soil which, like all humic soils, is derived of degrading plant material. It forms in waterlogged anoxic conditions where, unlike other humic soils, complete decomposition does not occur. This ensures that a significant amount of carbon is locked into peat and not released into the atmosphere as CO_2, the usual outcome for carbon in soils. This unique attribute has two important impacts; that peat's continued growth is only limited by the persistence of peat-forming conditions, and that peat is an incredible carbon store, removing CO_2 from the carbon cycle as long as the peat remains intact.

The global profile of peat has significantly increased in recent years as understanding of its value as a carbon store has grown. Peatlands, the ecosystems associated with peat, make up three percent of the world's surface but are estimated to store 600–700 gigatonnes of carbon. This is more than all global forests combined and constitutes 30% of global soil carbon, the largest terrestrial store. The increased understanding of peatlands has led to policy in the UK and across the world being introduced, attempting to protect peatlands and improve those that have been damaged.

In the UK the two main types of peatlands are fens, associated with the calcareous rocks of the South and East of England, and bogs, associated with the siliceous rocks found across the rest of the UK. The geology and topography of the Duddon mean that the peatlands found here are bogs. The two main types of bog, blanket bog and lowland raised bog, can both be found in the catchment. Whilst blanket bog constitutes a significant amount of upland land cover, the historic extent of lowland raised bog in the Duddon has been reduced to the Duddon Mosses, a collection of bogs in lower Woodland. Both bogs are typified by the presence of cotton grass (*Eriophorum vaginatum*) and *Sphagnum*, a moss that constitutes the majority of peat deposits and drives the creation and growth of bogs.

Above: The natural appearance of peat, with noticeable organic elements, like roots and moss.

The value of peat

Peatlands provide a wide range of ecosystem services, directly moderating resources that society requires, regulating water supply and quality, and capturing and storing carbon. Peat also offers significant benefits of a less tangible nature at local and greater scales, hosting important endemic biodiversity, being areas of local cultural value, and being important sources for archaeology due to peat's preservative properties. Beyond its role as a carbon store, the single most recognisable function of peat in the Duddon is the regulation and filtering of water. All inhabitants of the Duddon drink water sourced from the catchment,

Glossary

Humic - Soils formed by the decomposition of organic material.

Anoxic - Conditions where there is an absence of oxygen.

Peat hags - exposed peat faces, commonly a sign of historic peat exploitation.

Calcareous - Rocks high in carbonate leading to more alkali water pH.

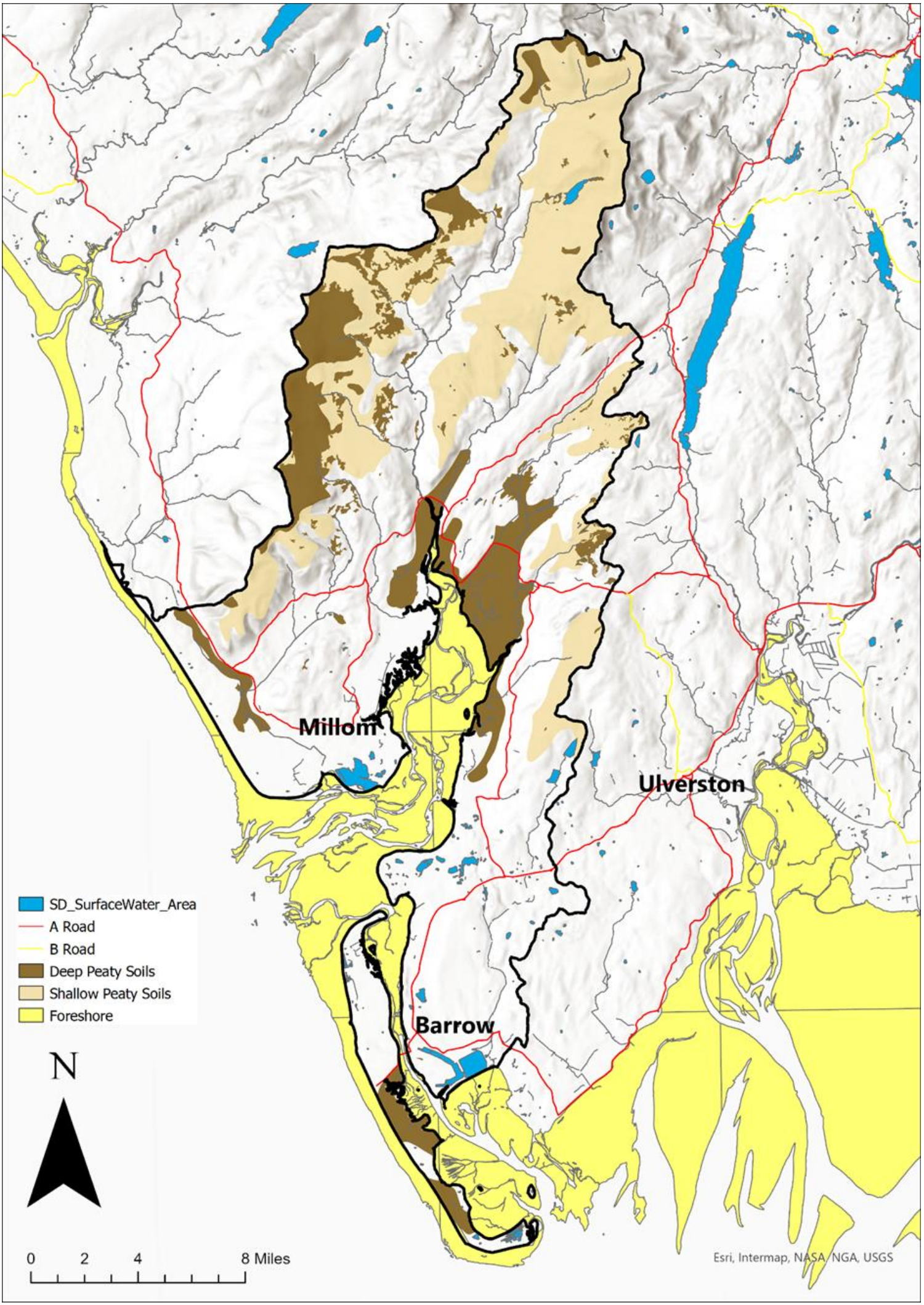
Siliceous - Rocks high in silica, not influencing water pH.

Ecosystem service - Specific resources or processes provided by nature that humans rely on.

Hydrology - The presence, movement, and control of water in a landscape.

Livestock poaching - Disturbance of soil by livestock, causing damage, mainly in the form of noticeable depressions.

Evapotranspiration - The removal of water from the earth's surface, either by direct evaporation or through transpiration by plants.



Above: A map of modern peat deposits in the Duddon

Above: Peat bunding being carried out on the Duddon Mosses. The grid-like structure is designed to hold water on the bog for as long as possible.

whether via public or private water supply. Healthy peat naturally filters water, removing pollutants and nutrients, and moderating flow, absorbing water in wet periods that is subsequently slowly released during dry periods. This role is of increasing importance, as climate change will lead to wetter winters, drier summers and an increase in the intensity and occurrence of extreme events. Our peat can provide a natural buffer against these concerns, mitigating the impact of flooding and drought, and providing greater sustainability for our current ways of living and managing land. If degradation is sufficient peat will fail to provide the above benefits and will cause significant increases in sediment and dissolved organic carbon (DOC) in running water, leading to chemical imbalance in rivers and reduced viability for human and animal consumption.

Pressures on peatlands

Over the last few centuries, the peatlands have experienced significant pressures from humanity. Peat is extracted for use as a resource such as fuel and compost, drains have been dug across peatlands for land reclamation, and pollution from industry and farming has caused nutrient deposition, destabilising the plant communities that create and sustain peatlands. These issues have affected peatlands across the world, but have been particularly severe in the UK due to our high population density and level of industrialisation, which has increased intensity of pressures in the post-war period. All these challenges have affected peat in the Duddon in some way, but the historic impact of land drainage for farming and construction purposes is usually viewed as the most severe pressure in the catchment.

Saving peat

Global understanding of the value that peat provides has significantly grown in the late 20th and early 21st centuries, and with it, activity aimed at preserving and restoring peatlands, primarily in the form of changing land use practices and interventions to rectify peatland hydrology, have increased.

Although active efforts to reclaim land from bogs has drastically reduced, the legacy impact of previous drainage continues to harm the peatland health. Once damaged or drained, there is no natural process through which peatlands can recover. Instead, the peat will enter a process of degradation, where decomposition and erosion will eventually lead all areas of degrade peat to be lost as either carbon dioxide or as sediment in runoff. This inevitable outcome necessitates human intervention to change peatland hydrology and structure. Across Britain action is being taken to “slow the flow” – reduce rate and volume of water leaving peatlands. This is done by blocking channels, and installing dams and obstructions that ensure the water table is at most 25 cm above or below the surface of a peatland at all times, maintaining the ideal conditions for *Sphagnum* growth.

In the Duddon, this work is carried out in two main forms. First, small-scale interventions across a wide range of smaller, broadly disconnected sites where timber bunds, leaky dams and other small obstructions are installed in targeted areas that are known to host peat. Secondly large-scale remediation carried out on larger peatlands, primarily the Duddon Mosses, where heavy machinery has been used to install peat bunding, dams made of peat that stretch from the surface of the peat to glacial bedrock, often in excess of 8 metres. Additional pressures associated with land use have also been reduced. Stocking practices have

Below: Wooden bunds installed in a degrade peatland to hold back water.

been modified to reduce peat compaction and livestock poaching, *Sphagnum* and cotton grass are being re-introduced to reduce peat surface erosion, and damaging vegetation, such as trees and invasive species like rhododendron (*Rhododendron ponticum)*, are being removed to stop changes in peatland ecology, stop carbon emissions from the sub-surface peat, and reduce rates of evapotranspiration.

Whilst there is significant national and international action to restore the form and hydrology of peatlands far less is being done to tackle the pollution that is encouraging competitive, generalist plants into our peatlands. This damages their valuable biodiversity and continues their degradation which can single-handedly counter the time, money and effort that is being invested into improving peatlands. Whilst atmospheric emissions are an unavoidable cost in the modern world, far more can be done through both policy and stakeholder management to reduce Britain's atmospheric pollution, at both national and local levels.

Conclusion

Peatlands are wonderful environments which, whilst growing in cultural prominence, are still thoroughly misunderstood. In the Duddon the damage caused by historic and modern actions continues to pose an existential threat to our peat, limiting the value we can gain from it. I believe we would benefit immensely from increased intervention and remediation to protect and restore our peat reserves, and that a continued promotion of catchment wide management of the Duddon will create universally beneficial outcomes and increase the likelihood of support for all landowners.

About the author: *Joshua Caulcott-Cooper has spent the last four years working in nature conservation across Cumbria, including work for Natural England on peat bogs in the north of the county. He is currently studying a Masters in rivers at the University of Birmingham that he will finish this year.*

Further reading - click the links

peatlands.org - good overview of the topic.

iucn-uk-peatlandprogramme.org - Discusses the impact of healthy and degraded peat on water quality.

nature.scot - Overview of peatland restoration techniques.

iucn-uk-peatlandprogramme.org/pollution - An overview of the impact of atmospheric pollution on peatlands.

Above: The new Eskdale TRail signs

Update from the Lake District National Park Authority

By Adam Phillips, Area Ranger (Western)

The LDNPA have been working on the new agency agreement with the two unitary authorities, Cumberland Council and Westmorland & Furness Council, for future management of the Rights of Way network across the Lake District. There has been a big focus on the Coast to Coast National Trail improvement through Ennerdale, Borrowdale and continuing east. In Wasdale we have been supporting the community with an area action plan to help alleviate visitor pressures with the continuation of a shuttle bus service. In Eskdale we have been finalising the Eskdale TRail improvement project with the new finger posts and brass rubbings that can be used with the TRail art packs that will be avaialble from May. As well as these externally funded projects we have been maintaining our properties such as Stanley Ghyll, Eskdale that has been damaged following recent storms.

Below: Burning rhododendron at Stanley Ghyll

Above: Natterer's bat (Myotis nattereri) in a slate working

Bats in mines

by Chris Arthur

This article is intended to give a brief overview of an investigation into the use of derelict mines in Cumbria by bats during the winter period. It should be noted that the author is an ecologist and licenced to disturb bats (eg. by taking photographs such as those in this article). Some information about the legal status of bats and links to guidance on responsible caving (and mine exploration) is given at the end. Mine exploration is inherently dangerous and should not be embarked upon without due consideration of potential risks. With that important warning out of the way, let's dive into this fascinating topic…

A (very) brief overview of mining in Cumbria

There is speculation that copper was mined in Cumbria by the Romans, and definite evidence of mining from as early as the 13th Century but it was the Elizabethan era when the systematic exploitation of minerals really began. As well as minerals such as copper, iron, lead and tungsten, slate was quarried and mined at numerous locations throughout Cumbria. Over the following centuries mining activity ebbed and flowed, driven largely by market forces, to peak around the middle of the 19th Century. Thereafter it declined sharply with only a few mines continuing to operate into to the 20th Century. Today there are only a few slate quarries still in operation. The Cumbrian landscape has been shaped by mining and there are remnants of these activities throughout the county.

The history of mining locally is fascinating but far too extensive to adequately address here. The Cumbria Amenity Trust Mining History Society (CATMHS) is a great place to start for anyone looking to learn more, but for some mines there is very little information remaining. For the Duddon valley specifically, The Duddon Valley Revisited (available from the Newfield Inn and all good bookshops) gives a good overview of the slate mining activity within the valley, though there are numerous other workings that can be found with a bit of effort.

A brief overview of bats and their roosts

In the UK, bats use a variety of roost sites for different purposes throughout the year. In spring and summer bats are most likely to be found in trees, buildings and other structures (such as bridges). Bats can be found roosting individually or in low numbers at transitional or day roosting sites, or in large numbers where they congregate to give birth to and raise young. Typical roost sizes vary between species and locations but a soprano pipistrelle roost could contain over 600 bats at its peak. During the coldest months bats enter a state of torpor by reducing their metabolism and remaining dormant for days or weeks on end. This isn't true hibernation but is generally referred to as such for ease, and I will do so throughout this article.

Bats 'hibernate' where they are less likely to be disturbed by light, noise, and predators. For some species, underground sites like caves and mines are ideal, though other species, such as pipistrelles or noctules, are very rarely found underground and more likely to be found in trees, buildings or bat boxes through the winter. Sites used for hibernation are often referred to as hibernacula and they provide the

optimum humidity and stable low temperature that bats require during their winter hibernation. In the autumn, before entering a state of torpor, some bat species show swarming behaviour where large numbers can be observed at particular sites; often at entrances to hibernation sites such as caves or mines. Some bats also use underground roosts during the night in summer for feeding or for mating, so encountering them at any time of the year is a possibility.

There are 18 species of bat found in the UK, though some of these are only found in the South. In Cumbria we might expect to encounter 10 species, of which 6 could be anticipated to use underground sites. Table 1 (below) shows species that could reasonably be foreseen to be found in Cumbria and their typical roost preferences. (Note the vagueness with which I wrote that paragraph; wildlife rarely does what books say it should, which combined with climate change means that other species may be expanding their ranges northwards and/or be found in atypical locations).

Bats in mines

Cumbria, or at least the Lake District National Park, isn't festooned with lots of natural underground sites but what it does have is an extensive history of mining. To my knowledge there hasn't been a great deal of investigation into the extent of the use of these mines by bats though certainly some of the more easily accessed will have been checked periodically. Nationally the situation is broadly similar; some sites will be regularly monitored, particularly those in the South where the conspicuously free-hanging horseshoe bats are found, but the vast majority of underground sites have likely never been monitored or even checked. This is further exacerbated by the labyrinthine nature of many sites and preference for crevices by many species – even in a small adit there could be deep cracks or fissures containing bats that can't be adequately surveyed. Conversely, many of the bats I've recorded over the past few months have been roosting in very exposed locations, and often very close to the entrances, making them fairly easy to spot.

Above: A conspicuous free-hanging Brown long-eared bat (Plecotus auritus)

One fundamental reason for relatively low survey effort for bats in underground sites is the very different skill sets for bat surveying and safely accessing underground sites, and the seemingly little overlap between the two groups. Simple sites such as the slate caverns in South Cumbria don't pose too much of a challenge, but there are far fewer people using caving techniques to survey for bats.
Even in underground sites where bats are recorded, numbers are very low, typically single figures. This is in stark contrast to the size of many summer roosts where tens or hundreds of bats can be seen emerging.

Table 1: Bat species in Cumbria and typical roost preferences – those likely found in underground sites are marked in blue

Species		**Summer roost sites**	**Winter roost sites**
Common pipistrelle	*Pipistrellus pipistrellus*	Crevices in buildings	Data deficient!
Soprano pipistrelle	*Pipistrellus pygmaeus*	Crevices in buildings	Data deficient!
Nathusius' pipistrelle	*Pipistrellus nathusii*	Crevices in buildings	Data deficient!
Noctule	*Nyctalus noctula*	Crevices / voids in trees	Crevices / voids in trees
Brown long-eared bat	*Plecotus auritus*	Voids in buildings	Underground sites
Whiskered bat	*Myotis mystacinus*	Crevices in buildings	Underground sites
Brandt's bat	*Myotis brandtii*	Crevices in buildings	Underground sites
Daubenton's bat	*Myotis daubentonii*	Crevices in buildings	Underground sites
Natterer's bat	*Myotis natteri*	Voids in buildings	Underground sites
Alcathoe bat	*Myotis alcathoe*	Crevices in buildings	Data deficient! (but likely underground sites)

Findings so far

Between December 2023 and April 2024, 37 sites were surveyed to check for bats (excluding a few that were investigated but found to be completely flooded, run-in or otherwise inaccessible), with a strong bias for those local to where I live. As such, a good proportion of sites were former slate workings (of which there are many in the Duddon valley), but numerous copper mines were also visited as well as iron, lead and other mineral workings. Twenty sites (54%) were found to contain hibernating bats, with a further three sites containing droppings which indicates some degree of use through the year. Forty-nine individuals of at least four species (noting the difficulty in separating whiskered and Brandt's bats) have been found. Numbers were typically in the region of one to three bats, but a peak of 13 individuals at a single site was recorded. Locations where bats have been found will not be publicised but records have been submitted to the relevant biological recording schemes.

Figure 1. shows the proportion of mines found to contain hibernating bats. Where no bats were found, 'absent' has been split into suitable or unsuitable based on an assessment of the conditions within, and whether it's considered worth revisiting in future years. Even during the hibernation period, bats are likely to rouse during warmer periods and move roost site, either within the same site or to somewhere different. Some of the more local mines were checked frequently (in some cases several times a week) and a high level of movement was observed both within and between sites. Figure 2 shows the relative abundance of each species recorded so far. Whiskered and Brandt's (and Alcathoe) bats are very hard to differentiate and it was not possible to do so in some instances.

Below: Daubenton's bat (Myotis daubentonii) behind a copper mine speleotherm.

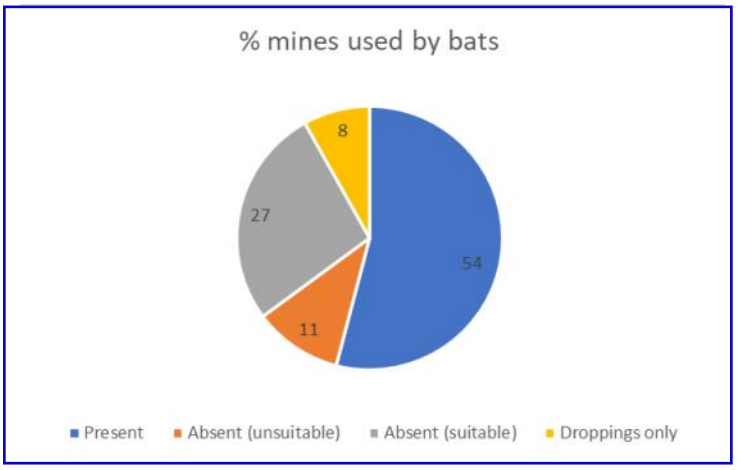


Figure 1. Percentage of mines used by bats

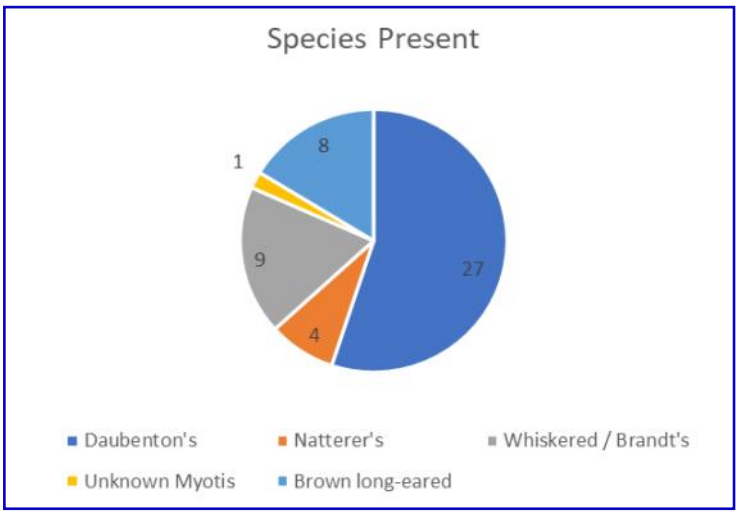


Figure 2. Species of bat recorded

Other species

Bats aren't the only wildlife you might find in caves, particularly over winter. Two species of moth, The Herald (*Scoliopteryx libatrix*) and Tissue (*Triphosa dubitata*) are fairly conspicuous and often seen in exposed locations; though the former is far more common than the latter. Caves and mines may also be used by overwintering ichneumon wasps, most often *Diphyus quadripunctorius* (voted 'cave animal of the year 2017' by the German Speleological Society!). The Ichneumonidae are parasitoid (ie. parasitic but with a fatal prognosis for the host) wasps and are amazing creatures. Their lifecycle is not within the scope of this article but they're well worth researching if you're interested in this sort of thing.

Summary and further questions

The importance of underground sites to bats is clear from the percentage of mines found to be used by bats. Whilst this fairly haphazard initial exploration doesn't allow any robust conclusions to be drawn about the suitability of sites, a few anecdotal observations can be made. The geology of the area appears to have an influence; typically the haematite mines in West Cumbria are loose and exceptionally wet in comparison to other areas showing greater usage.

Above left: Diphyus quadripunctorius. Above right: The Herald Scoliopteryx libatrix (right)

The size of the entrance to the mine appears insignificant, but the width of the adit once inside is potentially a limiting factor. The entrance to several mines are obstructed, yet bats were found to have entered the systems via very small crevices, and in one instance by plastic drainage pipe installed, presumably, for this purpose. In contrast, several Victorian era 'coffin levels' were found to be unobstructed but seemingly unused by bats. This is possibly due to the width of the levels being too narrow for bats to navigate comfortably.

Numerous questions remain unanswered and worthy of exploring in the future. The most obvious area of study is to continue exploring underground sites – there are a vast number of derelict mine workings in Cumbria and so far only a small number have been investigated. Some seemingly ideal sites showed no indication of use by bats which suggests there may be a climatic reason for their absence. Extent of movement of individuals within and between sites would also be very interesting to investigate, particularly if it could be related to temperature changes or other external factors.

Bats and the law

All British bat species are protected by law, making it an offence to kill, injure or disturb a bat, or damage or destroy a resting place used by them. Whilst most people are unlikely to know the nuances of the legislation affecting bats, many are aware of the fact that they are heavily protected which can sometimes cause concern over potential conflicts with other activities. It's important to note that whilst wildlife legislation is restrictive, it is designed to attempt to halt significant declines seen in many species, primarily from development, and not to inconvenience people undertaking otherwise lawful activities.

The following guidance has been produced by the Bat Conservation Trust and contains a 'Conservation Code' for those that may encounter bats in underground sites; cncc.org.uk/conservation
The advice within is hopefully fairly common sense and adherence to it should help maintain a conflict-free relationship between bats and troglodytes.

Final Thoughts

Bats, like much of our wildlife, have declined significantly over the recent past due to development and changes in land use and management. Understanding their use of sites such as mines, and the environmental conditions needed, is important to ensure that conservation efforts can be effective. The mining history of Cumbria is also a fascinating subject to delve into, and so combining these two contrasting subjects makes a compelling study.

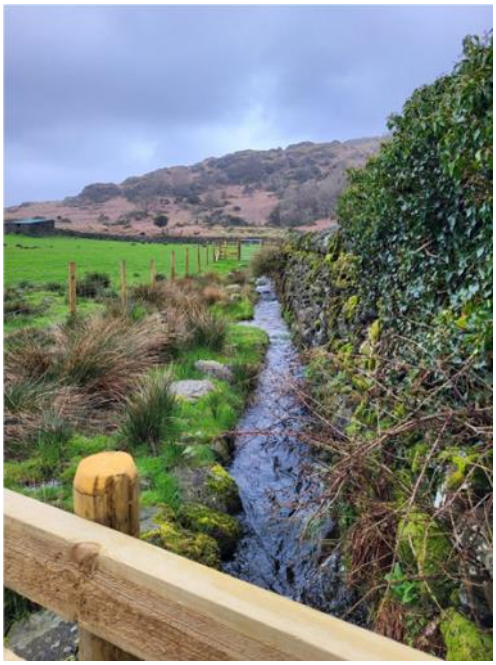
For anyone who would like to learn more about either bats or Cumbria's mining history, the two websites below are the obvious places to start:

CATMHS – Cumbria Amenity Trust Mining History Society

Bat Conservation Trust (bats.org.uk) – Bat Conservation Trust

For those wanting to know more about the Duddon Valley specifically, Restoring Hardknott Forest are running evening bat walks throughout the summer which can be booked via their website here or through their social media pages. Please come along!

About the author: *Chris Arthur lives in the Duddon Valley and has worked as a professional ecologist for over 12 years, currently providing ecological advice to a site in West Cumbria and providing consultancy services as Duddon Ecology. He is an experienced climber, caver and certified rope access technician which allows him to enter mines in a safe and responsible manner.*


The bufferstrip during (above left) and after (above centre) the fencing installation, and (above right) the location of one of the two drinking points where large stones have been installed to allow for drinking access without increased livestock poaching. Additional stone/railway sleepers will be added to extend the drinking area in the spring.

Bufferstrip creation

By Hannah Teagle

Last autumn the DRA funded a bufferstrip project in the lower Duddon. The beck where the works were completed is believed to be a possible spawning ground for salmonids in the Duddon Valley. However, livestock accessing the beck were causing poaching of the bank, increasing sediment and nutrient run-off into the watercourse.

High fine sediment run-off and deposition in a spawning beck can obstruct the circulation of oxygenated water. Consequently, the oxygen levels in the watercourse drop, causing a decline in egg survival rates.

Increased nutrient run-off from livestock poaching has a negative impact on water quality. As well as preventing livestock poaching, bufferstrips also increase the establishment of vegetation on the bank. This both increases nutrient absorption, preventing it entering the watercourse, and increases potential habitat for invertebrates and where trees establish, birds.

For bufferstrips to be effective a width of over three metres is usually recommended. To ensure that livestock can still access watercourse, where they are the main drinking source, drinking points can be installed. These usually consist of concrete railway sleepers or large flat stones being placed on the bank face, with gravel behind. This provides a hardstanding access point, without heavy livestock poaching.

A length of 250 metres of fencing was installed, with two drinking points to be finished this spring. Thank you to the DRA for the donation of funds to do the works!

Upper Duddon Landscape Recovery Project update

By John Hodgson

We are currently conducting the final ecological and habitat surveys of the development phase. We've commissioned Cumbria Wildlife Trust to survey some more peat and make restoration plans. Breeding bird surveys have started and we've also scoped out some areas to prioritise the planting of montane scrub species such as specialist willow species and juniper. In particular, Harter Fell, which straddles both the Duddon and Eskdale valleys, looks to have amazing potential for some montane species.

We've also looked at some of the hay meadows and booked in some specialists to survey them later in the year, and are making plans for growing and sourcing various wildflowers to increase the species diversity. All this will include growing more plants (both wildflowers and certain tree species) ourselves - as ever, we welcome more volunteers interested in helping with this. You needn't be an expert already, you can learn on the job - as we do all the time.

It was also nice to see the project featured on Countryfile on BBC1. You can watch Project Manager Paddy Deady discussing his farm and the project with Matt Baker at 11 minutes 30 seconds in.

More background information on the Upper Duddon Landscape Recovery Project can be found in our blog here, and our website here.

Roanhead update *By Steve Benn*

On the 29th November 2023, an application to Westmorland and Furness Council for planning permission to build 450 eco-lodges on land at Roanhead Farm, Hawthwaite Lane, Barrow-in-Furness was '*withdrawn*'. The reason for the withdrawal is not shown on the Westmorland and Furness website, but it is known that there was significant local opposition with well over 1,500 public representations made, the vast majority of these objecting to the proposal, including the one from the DRA.

In January this year, the developer behind the proposal submitted a second application, (essentially a re-submission in a revised form) this time reducing the number of Lodges from 450 to 233 (**Planning Reference Number B06/2024/0024)**. This second Application for Outline Planning Permission included "*habitat creation*" and "*ecological enhancements*". Anyone wishing to read the new proposal can find it on the Barrow Planning Hub - search for 'Roanhead'.

As mentioned at the Duddon River Association AGM 2024, this process by the developer is a typical approach to a proposal such as this. Initially the developer applies for a huge number of lodges (hoping - but not expecting, to get Approval). The developer then submits a second proposal with a reduced number of lodges while at the same time stating something along the lines of: '*we have listened to the concerns of local people and taken steps to remove any threats*'. There will be a reduced number of public submissions against the second proposal because people just don't have the time to keep fighting – or they just give up. It is often the case that the second application is Approved with Planners believing they have achieved a 'balanced approach' and after a few years of operation the developer will then apply for the full number of 450 Lodges and it will likely get Approval.

The DRA did not give up - a second letter of opposition (please email us if you'd like to see a copy), indicating the same concerns was submitted from the DRA, along with some individual members also submitting personal opposition to the proposal.

Currently, (as of 16th May), the situation is that the Application is still '*PENDING*'. DRA members can only wait for a decision while hoping that the Planners listen to us and the many other locals who are opposed to the development, and refuse the application. The Facebook page SaveRoanhead is regularly updated, so it's worth keeping an eye on that. We'll also keep you posted if we hear any news.

Thwaites Gala

It's time for the annual Thwaites Gala!

Date: **Saturday, 8th June**
Time: **1.00pm – 4.00pm**
Venue: **Thwaites Village Hall, The Green**

Entrance Fee: £5 (including participation in games and show)

We are delighted to have the DRA represented again this year in the Green Matters area, thanks to Steve Benn. He will be in good company with the Red Squirrels Group, Sustainable Duddon, Millom Marsh project, a waste plastic workshop and a puppet theatre featuring squirrels!

Please support this wonderful community event, and pop along to the Green Matters area to say hello to Steve and a few other faces that I am sure you'll recognise!

Open garden day at Tomsteads

Cumbria Wildlife Trust Duddon Support Group will be holding an open Garden Day in June. Activities will include a tombola, guided walk, moth trap, pond dipping – or just wander at will round this seven-acre wildlife haven.

Venue: **Tomsteads, Woodland, LA20 6DG**
Date: **Sunday, 23rd June**
Time: **10.00 am – 4.00 pm**

Entry: £5 to include refreshments (accompanied children under 12 years, £1)

Millom & Broughton Show

For the first time, the DRA will be present at the annual Millom and Broughton Agricultural Society Show on **Saturday, 31st August**, along with other conservation and environmental organisations. It's always an amazing day, so do come along!

Elizabeth Pennefather

Summer event at the FBA

After the success of our guided walk last summer, we are organising another summer event - a visit to the fascinating Freshwater Biological Association (FBA) on the west shore of Windermere.

The FBA was established in 1929 and is an NGO and charitable trust dedicated to understanding and conserving freshwaters across the globe. Working to address the challenges facing freshwater, including the severe effects of climate change on freshwater ecosystems, the FBA aims to increase understanding, learning and participation in freshwater ecology. The FBA conducts innovative work on species recovery, such as the freshwater pearl mussel programme which is supporting one of the most endangered freshwater invertebrates in Europe through the work carried out at its Windermere facility.

Time: **10.00am**
Date: **Friday, 23rd August**
Place: **FBA, Lakeside, Newby Bridge, LA12 8BD**

After a tour of the facility (which will take approximately 1.5 - 2 hours), we will drive a short distance for a picnic lunch (please bring a packed lunch, and picnic blanket or camping chair to sit on).

Afterwards, there will be the opportunity to support Hannah with her work on a reed restoration project at Windermere. If you'd like to join in with this, please bring your wellies. Otherwise you are welcome to enjoy a stroll in the sunshine (we have booked this especially!) along the lake side.

Numbers are strictly limited for the FBA visit to 20 places, and these will be offered on a first come, first served basis. To reserve your space please email **duddonriverassociation@gmail.com** There is limited car parking available, so we will need to arrange car shares where possible.

DIARY DATES

JUNE

Sat 8th	**1pm - 4pm**	**DRA at Thwaites Gala** See page 15
Tues 11th	**10am - 3pm**	**Aquatic invertebrates** RHF event - see below
Wed 12th	**8.30am - 1pm**	**Wildlife walk** RHF event - see below
Sun 23rd	**10am - 4pm**	**Open garden day at Tomsteads** - See page 15

AUGUST

Fri 23rd	**10am**	**DRA summer event at the FBA** - see opposite
Sat 31st	**TBC**	**DRA at Broughton Show**

Balsam bashing volunteer sessions

Sessions will be coordinated via the volunteers WhatsApp group (see page 2). Please also check our DRA Facebook Group for updates.

Restoring Hardknott Forest events

Aquatic invertebrates - riverfly surveys, 11th June at Hardknott Forest: Join RHF staff and Hannah Teagle (SCRT) to help identify and count these fascinating and important invertebrates. The data will contribute to our monitoring of the River Duddon. Book here

Wildlife walk, Hardknott Forest, 12th June: Join project staff for a walk around Hardknott Forest, where you'll have the opportunity to observe the local wildlife, and their tracks and signs. Staff have spent the spring monitoring the birds and mammals of the site, and will share their knowledge on a guided walk. Book here

Information on all Hardknott Forest volunteering opportunities and events can be found here.

SCRT events

Tree planting, leaky dam building, electrofishing and riverfly survey training days are all run by SCRT. Please see their website for details: www.scrt.co.uk/events

Duddon River Association contact details

Chair: Rick Browne
Secretary: Steve Benn
Social Media & Newsletter: Pam Pennefather

Email: duddonriverassociation@gmail.com
Instagram: duddonriverassociation
Facebook Group: www.facebook.com/groups/724478118674632

DRA is part of SCRT
South Cumbria Rivers Trust