

i see...



**Bryniau Clwyd a
Dyffryn Dyfrdwy**
Ardal o Harddwch
Naturiol Eithriadol

**Clwydian Range
and Dee Valley**
Area of Outstanding
Natural Beauty

North Wales Rivers

Reconciling Conservation and Recreation

**Siarter
Amgylcheddol
Environmental
Charter**



Snowdonia-
Active
Eryri-
Bywiol

Siarter Amgylcheddol Environmental Charter



Snowdonia-
Active
Eryri-
Bywiol

Charter signatories seek to:

- Avoid damage to sites and minimise disturbance to wildlife and the environment
- Ensure all group leaders understand more about the habitats, species, geology and environments of North Wales and how to avoid disturbance and damage
- Encourage others to respect the wildlife, landscapes, culture and community life in and around North Wales
- Work with land managers, statutory bodies and other interested parties to best manage groups on existing sites and consider the implications before developing new sites
- Respect conservation based management plans that have been agreed and publicised
- Show consideration to landowners, residents and other users when parking and operating
- Encourage groups, colleagues and students to respect, protect and enjoy the special character of the region – habitats, species, wildlife, geology, archaeology and manmade structures
- To discuss any essential permanent fixtures with the statutory bodies and relevant parties
- Leave a site cleaner than we find it and take litter home



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The growing popularity of outdoor activities means we all need to be aware of the sensitivity of the environment in which our activity is taking place and take steps to minimise our potential impact.

Although, relevant to rivers throughout North Wales and further afield, this guide particularly focuses on the wildlife, landforms and cultural heritage found in waterways throughout the **Clwydian Range** and **Dee Valley**.

Clwydian Range and Dee Valley is the scenic gateway of North Wales, embracing some of the UK's most wonderful landscapes earning its designation as an Area of Outstanding Natural Beauty (AONB).

iSee North Wales Rivers has been created by **Snowdonia-Active** in partnership with:

Clwydian Range and Dee Valley Area of Outstanding Natural Beauty, with funding from the **Sustainable Development Fund**.

Cadwyn Clwyd who provide guidance and support to develop the rural economy in Flintshire and Denbighshire through European Union funds, UK domestic funds and private sector funds.

This booklet is available in Welsh and English.

on the
banks

in the
water

in the
air

on the
riverbed

landforms

learning
prompts

unwelcome
visitors

other
resources



grey heron

On The Banks

Trees on the river's edge have a beneficial impact on the biological health of the river, naturally altering the chemical balance of the water by taking up minerals from the soil and releasing them into the water. Invertebrates (animals with no backbone) form up to 90% of the diet for fish, such as the brown trout. Shade is important as it keeps the growth of water weeds in balance, and regulates the temperature of the water. Bankside trees such as alder help to maintain the soil in river banks and reduces the effects of erosion.





ash



oak

On The Banks



◀ **Water mint** prefers damp habitats, its leaves can be used in the same way as other mints, flavouring cooking and drinks.

▶ **Cuckoo flower** also known as lady's smock, grows in damp places like meadows along the river.





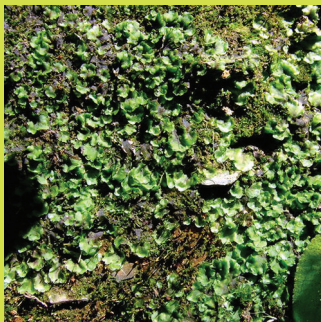
◀ **Willow** leaves and bark have been used to remedy aches and fever for thousands of years. The Welsh coracle, used for fishing on the River Dee traditionally used willow in the 'lats'.

▶ **Mosses** are the oldest land plants on earth. The 20,000 known species have been around for 400 million years or more and range in size from microscopic to over a metre.



◀ **Water vole** often confused with the brown rat, is Britain's fastest declining wild mammal.

▶ **Liverworts** can look similar to mosses, they can be very conspicuous growing as extensive mats in woodland, as cushions on walls, rocks and tree trunks.





European otter



The Water

Upland rivers are typically fast flowing with waterfalls, pools and rapids, supporting many mosses and liverworts, but relatively few higher plants. The insect life of upland rivers is dominated by stoneflies, mayflies and caddisflies, providing food for fish such as salmon and brown trout.

Lowland rivers are typically deep, wide and slower flowing, supporting a greater number of higher plants and coarse fish such as chub, dace and roach. The undercuts and deep pools along a tree-lined river bank give shelter and shade to fish.





bullhead



grayling

in The Water



◀ **Brown trout** start life on a diet of invertebrates, but later in life some switch to eating fish.

▶ The **chub** is a member of the carp family and popular with anglers due to its readiness to feed, and thus to be caught, in almost any conditions.





▶ **Atlantic salmon** migrate to the headwaters of rivers to spawn but actually spend most of their time at sea. They are able to leap vertical distances up to 3.6 metres.

▶ Adult **eels** swim from rivers to the west central Atlantic to spawn. It is a critically endangered species, the numbers of eels reaching Europe is thought to have declined by around 90% since the 1970s.



▶ **Lamprey** are jawless fish which feed by sucking fluids from other fish with their disc-shaped mouths.

▶ **Stonefly larvae** can only survive in clean water so are a good indication of water quality.



beautiful demoiselle





The air

The many habitats present in river corridors are rich sources of food for river birds such as herons, kingfishers and dippers. Rivers, streams and canals provide lots of insect prey for bats as well as being useful features for them to find their way to their favourite hunting grounds. Plants along the waters edge allow the aquatic larvae of insects such as dragonflies and damselflies to emerge from the water, before moulting and taking their first flight.



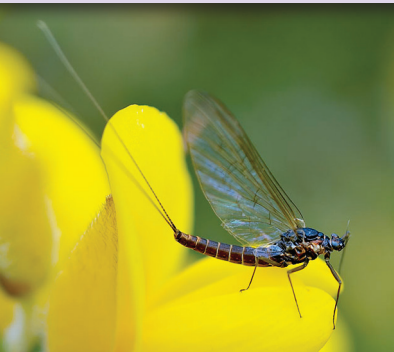


sand
martin



mallard

in The air



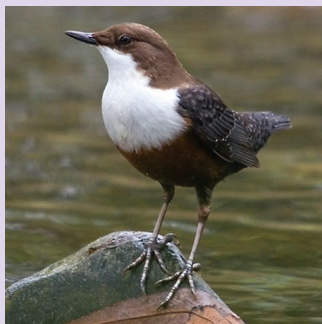
◀ **Mayflies** were one of the first winged insects, with fossils dating back over 300 million years – long before the dinosaurs!

▶ **Grey wagtail** is a common sight on fast flowing rivers, they nest near the water in hollows and crevices lined with moss and twigs.





► **Club-tailed dragonfly** is found in the River Dee and only a few other rivers in Britain.

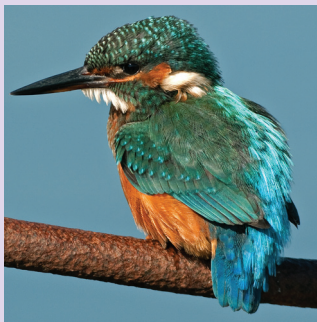


► A **kingfisher's** vivid colour is iridescence, not pigment – the pigment is actually dark brown! Interference between different wavelengths of light reflected from different layers of the feathers produces blues, greens and oranges.

◀ Bats swooping up and down in the air are likely to be **pipistrelles**, those that stay flying low just above the water surface are likely to be **Daubenton's**.



◀ **Dippers** are one of only a few birds with solid bones, which help it to walk along the river bottom in search of food without floating to the surface.



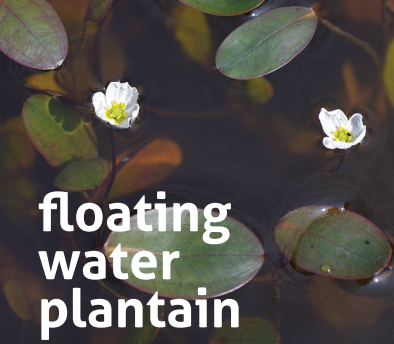


greater water moss

on The river Bed

The nature of the river bed is determined by the river flow and geology. In fast flowing upland rivers, boulders, rocks and gravel beds provide shelter for insect larvae and other invertebrates. These both feed on the film of bacteria and algae coated on rocks and pebbles. In slower flowing lowland river beds, nutrient rich sand and silt enable plants to grow at the waters edge.





**floating
water
plantain**



**water
crowfoot**

on The river Bed



◀ Salmon 'redds'

In winter months look out for flashes of silver as the hen (female) fish turns onto her side and flexes her body in rapid bursts to displace stones and gravel until a deep nest is formed. The hen then releases her eggs as the male moves alongside her to fertilise them. She then knocks stones over the eggs to protect them creating a distinctive mound that can be seen from the riverbank.



◀ **Shingle banks** are dynamic habitats which are formed and moved by the river, they are rich in invertebrates such as communities of rare beetles.

▶ **Freshwater pearl mussels** can live 120 years! Their larvae live on the gills of migratory fish such as salmon and sea trout.



◀ Some **caddis fly larvae** build protective cases from tiny pebbles and debris on the river bed.

▶ **Lichens** consist of not one but two organisms, a fungus and an alga (algae are very simple plants), so closely interwoven they appear to be a single individual.



Landforms



River Dee (Afon Dyfrdwy) is of special interest for its fluvial geomorphology (shape of the river) which changes along its route as the underlying geology changes. This ancient river was running before the last Ice Age and is thought to be about 3 million years old. From the river some interesting features can be seen.

Eglwyseg Escarpment

10km long and rising in a series of steps over 450m, the layers of limestone which make up the Eglwyseg Escarpment were laid down some 350 million years ago in a shallow tropical seas. The series of quarries and tramways highlight the economic importance of limestone.





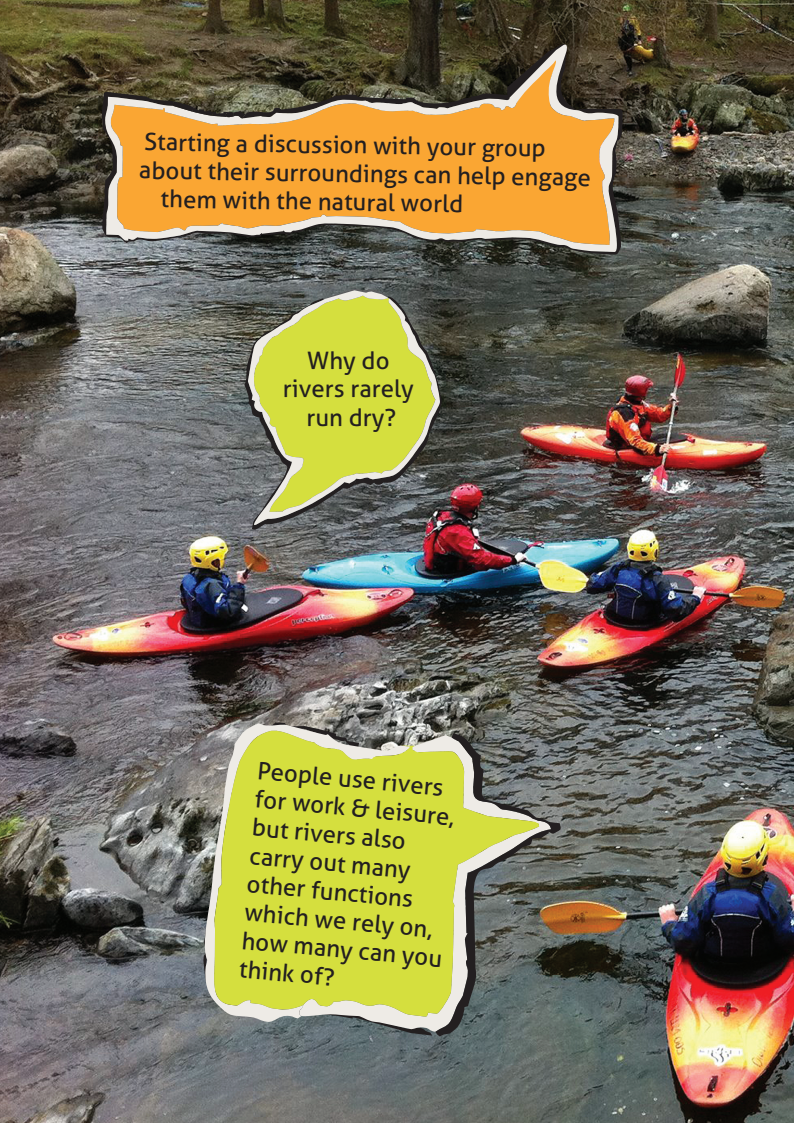
Bridges over the Dee

Stone bridges over the Dee offer an insight into the local geology. The bridges at Llangollen, Trevor and the Pontcysyllte aqueduct are built from Cefn Sandstone. This Coal Measure sandstone was laid down some 300 million years ago and was an important local building stone.

Slate tips of Penarth Quarry

Historically the Dee Valley was an important centre for slate quarrying. The massive waste tips at Penarth Quarry above bare testimony to the massive caverns that were created during excavation for slate. Other quarries included Moel Fferna, Deeside Slab Quarry and quarries around the Horseshoe Pass.




A group of five kayakers are on a river. One kayaker is in the foreground, another in the middle ground, and three others further back. They are wearing helmets and life jackets. The river is surrounded by rocks and trees. Three speech bubbles are overlaid on the image, containing text about discussing the natural world, why rivers rarely run dry, and the various functions of rivers.

Starting a discussion with your group
about their surroundings can help engage
them with the natural world

Why do
rivers rarely
run dry?

People use rivers
for work & leisure,
but rivers also
carry out many
other functions
which we rely on,
how many can you
think of?



Can you spot ways in which people have altered or affected this river?

How has this river shaped the landscape?

How many ways are there to cross a river?

Unwelcome Visitors

Freshwater invasive non-native species

Species introduced from elsewhere are known as non-native species. Most don't cause problems; others thrive and can have serious consequences for native wildlife. These are known as invasive non-native species.

Record sighting www.cofnod.org.uk
- if possible take a picture.

Himalayan balsam

was introduced as a garden plant in 1839, its explosive seed pods send the seeds into the river rapidly spreading along the banks downstream.

Dense stands of Himalayan balsam reduce the growth of native grasses and other plants. In autumn it dies back, leaving the banks bare of vegetation, and more likely to erode.

Spend a few minutes pulling Himalayan balsam... Pull when the plants are at least 50cm tall and in flower - before they have gone to seed (usually June to September). Leave the extracted plants well back from the river to compost.





◀ The first **American mink** were brought to British fur farms in 1929 and all wild mink in Britain today are descendants of escapees.

▶ **American signal crayfish** can burrow up to 1.2m into banks, increasing erosion and affecting the habitat of threatened, bank-dwelling species such as water voles.



◀ **Japanese knotweed** was introduced to the UK from Japan in the 19th Century as a garden plant.

▶ **Chinese mitten crab** are the only species of crab found in freshwater in the UK. They are sold live in vending machines in China.



STOP THE SPREAD



Are you unknowingly spreading invasive species on your water sports equipment and clothing?

Invasive species can affect fish and other wildlife, restrict navigation, clog up propellers and be costly to manage. You can help protect the water sports you love by following three simple steps when you leave the water.



CHECK

Check your equipment and clothing for live organisms - particularly in areas that are damp or hard to inspect.



CLEAN

Clean and wash all equipment, footwear and clothing thoroughly.

If you do come across any organisms, leave them at the water body where you found them.



DRY

Dry all equipment and clothing - some species can live for many days in moist conditions.

Make sure you don't transfer water elsewhere.

For more information go to www.direct.gov.uk and search for **Check Clean Dry**



Other resources

Codes for the **Countryside • Wild Swimming • Canoeing • Angling** can be found at countrysidecode.naturalresourceswales.gov.uk. **Enjoying the Rivers and Lakes of Wales** - vimeo.com/2666837 **GB Non-Native Species** - vimeo.com/31446956

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This guide has been produced by Snowdonia-Active with financial support from Cadwyn Clwyd and Clywdian Range and Dee Valley AONB. visit: www.clwydianrangeanddeevalley.org.uk twitter: @clwyd_dee_aonb facebook - facebook.com/clwydianrange



Asiantaeth Datblygu Gwledig
Rural Development Agency



Partneriaeth Cynllun Datblygiad Gwledig Sir Ddinbych
Denbighshire Rural Development Plan Partnership



Cronfa Amaethyddol Ewrop ar gyfer Datblygu
Gwledig: Ewrop yn Buddsoddi
mewn Ardaloedd Gwledig
The European Agricultural Fund for
Rural Development: Europe Investing in
Rural Areas



Llywodraeth Cymru
Welsh Government

Field guide to North Wales Rivers

Waterproof • Fits instructor buoyancy aid

