



BEAVER

Barmy about **Beavers**



Derbyshire
Wildlife Trust



Beaver Facts

Scientific name:
Castor fiber

Common names:
Beaver,
Eurasian
beaver

Family:
Castoridae

Origin:
Native

Predators:
Adults have no
natural predators

Appearance:
Beavers have
brown fur, a flat,
broad tail and
huge orange
teeth.

Diet:
Aquatic plants,
tree bark and
leaves

Size:
One of the largest
members of the rodent
family, beavers can
weigh as much as 30kg
and measure well over a
metre from head to tail!

Habitat:
Streams, rivers
and lakes next
to woodland



We want beavers back in Derbyshire



The Eurasian beaver (*Castor fiber*) is a large herbivore, a mammal that was formerly native to these shores and once played an important part in our landscape. After 800 years, we want to bring beavers back to Derbyshire! Our beaver family will play a really important part in making Willington wilder. They will enjoy over 20 acres of Wetland habitat at Willington, within a special beaver-proof fence. Egginton Brook flows through the beaver zone, and the native plants and trees will offer our beavers all the food variety they need to thrive.

Where did they go?

Beavers were hunted to extinction in the 16th century for its fur, meat and scent glands. The loss of this charismatic species also led to loss of the mosaic of lakes, meres, mires, tarns and boggy places that it so brilliantly built. The Wildlife Trusts are working hard to bring these fantastic mammals back to Britain.



Why bring back the beaver?

This isn't just about the reintroduction of a species - it's about the reintroduction of an entire ecosystem that's been lost.

Beavers are often referred to as 'ecosystem engineers'. They make changes to their habitats, such as digging canal systems, damming water courses, and coppicing tree and shrub species, which create diverse wetlands. In turn these wetlands can bring enormous benefits to other species, such as otters, water shrews, water voles, birds, invertebrates (especially dragonflies) and breeding fish.



The benefits of beavers



Improved water quality

Beaver dams slow and filter water, causing sediment and nutrients to be deposited in ponds. This improves the quality of water flowing from sites where beavers are present.



People engaged with wildlife

People are fascinated by beavers. The presence of beavers in an area provides an opportunity for people to engage with wildlife, as well as creating a market for nature tourism in some places.



More wildlife

Beavers create diverse wetland habitats that can provide a home for a wide range of wildlife, especially aquatic invertebrates which act as a food source for other species.



Land holds more water

The dams, ponds and channels created by beavers increase capacity of land to store water and produce a more consistent outflow below their dams. This can result in less water being released during storms and heavy rainfall, and more water availability during times of drought.

Beavers: Before and after

As ecosystem engineers, beavers are able to very rapidly alter the hydrology of the landscape they occupy. These before and after images taken from a fixed-point post in the enclosed beaver project run by Devon Wildlife Trust, show the impact the beaver activity has had on the capacity of the land to hold water in just five years. This example of landscape engineering 'slows the flow' of water, thereby

decreasing the chance of flooding downstream.

Ponds created in this way have a complex and varied structure and integrate seamlessly into the landscape. By coppicing broadleaved trees and bushes, this creates diversity in surrounding habitat structures which increases the level of biodiversity.

BEFORE: 2011



AFTER: 2016



Willington wetlands

Beavers and much more, coming soon:

A beaver family will be released into our newly-built monitoring zone

In 2009, beavers were reintroduced to a site in Scotland, and Willington offers equally ideal conditions. They are vegetarians, and the native plants offer our beavers all the food variety they need to thrive. Beavers manage wetlands for their own benefit, and have a large positive impact on the ecology of the whole site. For example, beaver dams would slow the flow of Egginton Brook, diverting it onto the meadows of the reserve...in turn, helping keep winter floodwater away from the village of Willington.

Willington is a special place, recovering from industrial scars

We acquired this site in 2005 after initial restoration work had been carried out. Prior to this gravel had been extracted here for decades, leaving a series of deep pits across its 114 acres. We've gently helped nature and wildlife to reclaim the landscape... by keeping human impact low... and by encouraging water to flow between the pits. These are now the vital water reservoirs at the heart of this rich wetland.

The site is already teeming with life

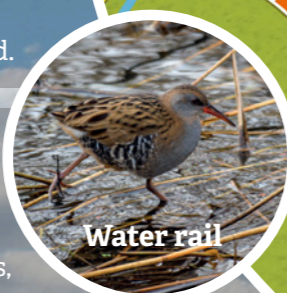
Many rare bird species have become resident or feed here on their migration paths... including kingfisher, reed buntings, water rail, marsh harrier, Cetti's warbler, lapwing and bittern.

It's a key wildlife 'hub' for Derbyshire

The location and size of Willington make it a natural 'hub' for wildlife, providing links between neighbouring reserves. Our efforts are focussed on protecting and enriching this nature reserve to support Derbyshire's wildlife.



Hen Harrier



Water rail



Bittern



Building one of the existing hides at Willington Wetlands

Our planned visitor centre will have a classroom with spectacular views

Our plans include a visitor centre that will house a classroom space with views right across the reserve. It will be designed and built with sustainability in mind, of course. This valuable facility will one day help make the wonders of Willington Wetland even more accessible to people of all ages.

We're promoting eco-friendly visiting

- Willington Wetlands is a 10 minute walk from Willington Train Station
- We've planned a 5 mile circular walk, allowing visitors of all abilities to immerse themselves in the sights and sounds of this tranquil space
- To complete the walk we'll build a footbridge over Egginton Brook
- Along the route we'll add to our existing nature-watching hides, providing even more opportunity to get closer to the wildlife
- And we'll install signposts and informative orientation boards to help visitors make the most of their day

...now watch Willington Wetlands grow wilder, more self-sustaining, and become easier to visit!

Scottish Beaver Trial

Scottish Wildlife Trust

The project

In 2009, the Scottish Wildlife Trust and partners released the first wild beavers in Scotland in over 400 years. The beavers were released in Knapdale Forest, in Argyll. The findings of this pioneering project, the first of its kind in the UK, persuaded the Scottish Government to allow beavers to remain, and commit to granting beavers legal protected species status. In October 2017, a three-year reinforcement project began with the release of three more beavers into Knapdale Forest, with further releases in spring 2018.

The impact



The beavers temporarily increased water storage in the larger lochs. This also caused the elevation and stabilisation of water levels in small lochs which can reduce the impact of flooding downstream.



The most striking change was caused by a dam on the outflow of a small pond, Dubh Loch, which caused a rise in water level of 1.1m.



Beavers greatly increased the habitat diversity of the landscape, providing more niches for different species. The impact of this will continue to be monitored in Scotland in order for long-term effects to be identified.

The future

The reinforcement project has a licence to release up to 28 animals over 3 years.

Project summary

Area of habitat: 4,400ha

No of beavers: around 11

Wild or enclosed: Wild

Trial timescale: 2009 – 2015

Reinforcement: 2017-2020+

Partners: Scottish Wildlife Trust and Royal Zoological Society of Scotland.

Host: Forestry Commission Scotland

Funding: £1m grant from Biffa Award and funding was also received from the People's Postcode Lottery and Scottish Natural Heritage, and donations from the public.

Beaver created wetland at the Dubh Loch

© James Shooter/scotlandbigpicture.com

“Beavers have created a wetland the size of ten Olympic swimming pools... **When the land holds more water, this means less water is free to flow downstream, and a lower risk of flooding**”

Susan Davies, Scottish Wildlife Trust

The Devon Beaver Project

Devon Wildlife Trust

The project

In 2011, Devon Wildlife Trust introduced one beaver family group to an enclosed area (3 hectares) of land in the west of Devon. They're working with the University of Exeter to monitor the effects of the beavers on the habitat using water quality tests, flora and fauna surveys and fixed-point photography.

The impact



The wetland habitats created by beavers store 56 litres of water per m² of land. This has the potential for reducing the impact of flooding downstream.



During storms and heavy rainfall, peak flows were an average 30% lower leaving the site than entering.



During storm events, each litre of surface water leaving the beaver-modified site has 3x less sediment than the water entering the site.



The diversity of both plants and invertebrates within the beaver site increased, with the number of beetle species more than tripling since the beavers were introduced. This increase in prey availability has led to more species of bat being recorded, including rarer species such as barbastelle bats.

The future

Devon Wildlife Trust will continue to monitor the effects of beavers on this site but rely on donations to continue this groundbreaking work. Go to our website to find out more www.devonwildlifetrust.org

Project summary

Area of habitat: 3ha

No of beavers: 1 family

Wild or enclosed: Enclosed

Timescale: 2011-ongoing

Partners: Derek Gow Consultancy, The University of Exeter

Funding: Viridor Credits Environmental Company and the Truell Charitable Foundation paid for the fencing costs and Westland Countryside Stewards funded the University of Exeter research work. The enclosure is also covered by a Higher Level Stewardship agreement.

Frogspawn in beaver pond

© Mark Elliott DWT

“Beavers have changed the landscape. **By constructing 13 dams within the area of the project, the land will now hold up to 1 million litres of extra water.** This has been shown to dramatically slow the flow of water coming out of the site, potentially reducing flooding downstream”

Peter Burgess, Devon Wildlife Trust

www.derbyshirewildlifetrust.org.uk

Ham Fen Beaver Project

Kent Wildlife Trust

The project

In 2001, Kent Wildlife Trust released beavers into an enclosure (30ha) near Sandwich to restore Kent's last remaining area of fenland habitat.

The impact



The beavers have transformed the old fen from dry secondary woodland to a mosaic of willow, alder and herbaceous plants. They've created conditions suitable for the reappearance of species not seen on the reserve for decades (southern marsh orchid, water vole, otter) or even centuries (few-flowered spike rush).



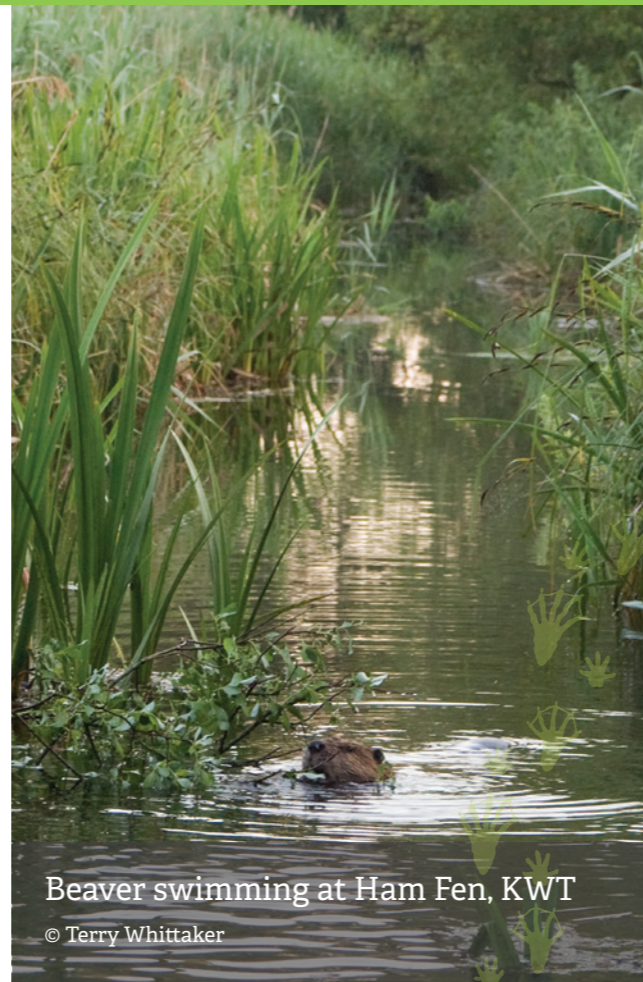
Beaver activity has dramatically increased the amount of deadwood in the site, restoring a key ecological component absent from most of our managed landscapes.



The benefits of beavers for conservation management and flood attenuation have been demonstrated to thousands of people through guided walks, talks and beaver-watching events.

The future

Kent Wildlife Trust are looking to extend the area of species-rich fenland habitat, not only at Ham Fen but also in the wider landscape. The beavers are laying the foundations that will allow Kent Wildlife Trust to explore the reintroduction of other lost species, such as the fen orchid and marsh fritillary butterfly. Go to our website www.kentwildlifetrust.org.uk to find out how you can help Kent Wildlife Trust to continue to restore this wonderful habitat, for wildlife and people!



Beaver swimming at Ham Fen, KWT

© Terry Whittaker

Project summary

Area of habitat: 30ha

No of beavers: 10

Wild or enclosed: Enclosed

Timescale: 2001-ongoing

Funding: This project relies on the generosity of members and supporters



Beaver Dam at Ham Fen, KWT

© Vicky Aitkenhead

*"The beavers have transformed the landscape. They've created a more meandering watercourse, wetting the wider fen. **Species are popping up that haven't been recorded here for decades**, like the southern marsh orchid."*

John Wilson, Kent Wildlife Trust

A message from our Living Landscape Officer

Exciting times are on the horizon for the Willington Wetlands Nature Reserve.

The reintroduction of beavers supports our wider rewilding agenda, with the reintroduction of natural processes forming a key aspect of rewilding. Beavers are keystone species, the way that beavers transform their environment has knock-on effects for a huge variety of species, creating spaces for wildlife from the smallest of invertebrates, to otters and birds such as kingfisher and bittern.

The beaver is our largest rodent, with a flat tail and webbed feet, small ears and small eyes with a third, transparent eyelid to protect their eyes underwater, they are well-suited to a semi-aquatic lifestyle. Being herbivorous, they feed only on plants such as willow in the winter, and aquatic plants, bark, roots, leaves and shoots in the summer.

Preferring not to travel far on dry land, the majority of a beaver's work is focused along aquatic margins. The felling of trees to create dams, and the creation of standing deadwood through bark stripping for food reduces tree cover and shading on pond, river and stream margins. Submerged, emergent and marginal vegetation can then establish, and is maintained through beaver grazing in the summer. Higher numbers of marginal and aquatic plants then attract dragonflies and damselflies, butterflies, bees and a whole host of other invertebrates as well as newts, frogs and toads.

Beaver dams store high volumes of water, increasing the retention of water on a site. The leaky dams slowly release the water throughout the year, mitigating droughts in the summer, and reducing downstream flooding in the winter. The pools which form in front of the dams become refuges for fish, which then attract birds such as kingfishers, bittern and egrets, which use these pools for hunting.

So when we say we are reintroducing beavers to the Willington Wetlands Nature Reserve, that is just one small part of our project. We are restoring eco-system services in the Trent Valley, we are bringing back natural flora and fauna to the Trent Valley, and we are reconnecting people to the Trent Valley.

George Bird
Living Landscape Officer





Derbyshire
Wildlife Trust

About **Derbyshire Wildlife Trust**

We are a small charity with big ideas.

We want to help nature to recover from the decline that for decades has been the staple diet of scientific studies and news stories.

We believe passionately that wildlife and natural processes need to have space to thrive, beyond designated nature reserves and other protected sites. To achieve this it is vital that the richest wildlife sites are protected and sustained as a starting point from which nature can spread back into our wider landscapes


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