

## River Restoration Centre Beaver Factsheet

### 1. Beavers – background and reintroduction

The Eurasian beaver (*Castor fiber*) is a large herbivore that was once widespread in England, Scotland and Wales. They played a crucial role in our wetland landscapes from prehistoric times until hunted to extinction in the 16th century for their fur, meat and scent glands. Beavers also declined significantly across Europe, leaving a small population (1000-2000) by the late 19th century. Since then there have been more than 200 formal beaver reintroduction projects (as well as numerous unofficial releases) in more than 26 European countries, where they have recolonized most of their former extent. Their ecology and management is now well studied, and beavers and people can co-exist even in urban areas and best-value agricultural land with management protocols to deal with any adverse impacts.

In Scotland, beavers have been a major topic of interest and debate since the mid-1990s, culminating in a national consultation in 1998. A trial reintroduction saw beavers being released at the Knapdale site in Argyll in 2009, the first licensed reintroduction of a mammalian species in Britain. A wild population has also become established on the River Tay and these were assessed in parallel and reported on in 2015 by Scottish Natural Heritage (now NatureScot). The two populations were allowed to remain and the species was declared native by the Scottish Government in 2019. A plan to achieve a favourable species condition for beavers was published in the Beaver Strategy 2022-2045 (by NatureScot in association with the IUCN).

In England a number of enclosed introductions have been made, and a wild population was found on the River Otter in Devon in 2015. Natural England (NE) agreed to permit these individuals to remain for a 5-year trial. In 2020, based on this trial, the decision was made to allow the beavers to remain and to extend their range naturally. A number of enclosed trials have also provided data and NE consulted on the reintroduction of beavers in 2021. Based on the fact that stakeholders and the public were largely supportive, the species was declared native in October 2022. The development of management schemes for England is continuing.

The Welsh Beaver Project, led by the Welsh Wildlife Trusts with support from Welsh Government, has been investigating beaver reintroduction since 2005. The proposal is to consult on plans for a 5-year trial of free-living beavers in the Dyfi catchment. Natural Resources Wales is expected to hold a public consultation on their return in due course.

The Irish Wildlife Trust advises that beavers are considered non-native in Ireland as they have not been present since the last Ice Age.

### 2. Ecology

The Eurasian beaver is a large, herbivorous, semi-aquatic rodent living in, and in the vicinity of, streams and rivers, marshes, ponds and lakes, particularly where there is broadleaved woodland. They are most active at dawn and dusk and live in family groups comprising an adult pair and their offspring. They are territorial and intolerant of animals from other family groups. The average size of a beaver territory is approximately 3 km of bank length, but this can vary from 0.5 to 20 km, depending on habitat quality, food resources and population density in the surrounding area. The potential favourable population for beaver in England is 5,200 family groups (NE).

Suitable beaver habitat may comprise areas of wet woodland, but in more developed environments they are opportunistic and will forage within grass verges, pasture and agricultural crops. The beaver is a generalist herbivore, feeding on the bark, shoots and leaves of woody plants; terrestrial herbs and forbs; ferns and aquatic vegetation. Beavers prefer river gradients of ca 3% - larger or steeper rivers are less favoured.



Beavers are highly adaptable and are able to modify natural, cultivated and artificial habitats to suit their needs. In particular, they may construct dams on watercourses from tree stems, branches, sticks and mud to create their preferred still or slow-moving water with stable water depths. Depth is a key factor – in general, beavers will not build a dam in water >1m in width or depth. Dams can be built in wider channels in summer when flows are lower, but these structures are often washed out in higher flows. Beavers also construct lodges or burrows for their dens, fell trees and excavate canals. These activities provide beavers with an aquatic refuge, allowing access to food and lodge entrances and for transporting building materials. This activity, particularly the construction of dams, can result in the creation or modification of wetland habitats. The evidence available suggests that the net effect on plant and animal diversity appears to be beneficial, notwithstanding significant adverse effects on some human interests.

### 3. Impact on river systems

Beavers are a keystone species because of their unique ability to adapt and create the habitat around them, and they can have a significant impact at a landscape scale. They can create tall herb fen, wet meadows and wet woodland in floodplains, helping to slow, filter and store flood water. A mosaic of beaver impoundments at different stages of development can provide a high level of habitat heterogeneity, and hence biodiversity. Beaver impoundments can also create important habitat features such as standing dead wood (after inundation), an increase in large woody material in the water, and a graded edge between terrestrial and aquatic habitats that is varied and rich in structural complexity. This ultimately results in high levels of biodiversity.

By coppicing riparian trees, beavers also maintain a scrubby riparian zone, slowing flows in floodplains. UK trials have demonstrated the increased spread of wetland habitat across river valleys. Wetlands are a key component of UK natural capital and are vital to the overall health of the water environment. The services they provide include moderating the extremes of floods and drought, assisting with aquifer recharge and controlling diffuse pollutants. They also yield economic products and provide attractive landscapes for people and wildlife. The importance of wetlands and river floodplains is increasing with the need for resilience against climatic extremes and land use change.

By reconnecting rivers with their floodplains and restoring wetland habitat, beavers offer a significant opportunity to repair rapidly and cost-effectively the historical physical modification that is the main reason why rivers in England and Wales (especially headwaters) are failing to meet good ecological status under the Water Framework Directive. Work in the USA indicates that river restoration schemes to slow flows can improve habitat for North American beavers (*Castor canadensis*), which then repopulate and continue the restoration process. The impact of beavers will be limited where hard engineering maintains river channels and where protection for infrastructure or commercial operations (including agriculture and fisheries) means that they need to be excluded. Riparian impact is lower in less favourable habitats such as rivers with a gradient greater than 15%, in larger rivers, and in the lower reaches of catchments where damming is less common.

Beavers can make significant contributions to restoring natural processes within river valleys, their activities providing public services in flood prevention and biodiversity gain, sustaining low summer flows, and capturing sediment and nutrients. They are also an iconic species, attracting the public's imagination and improving their engagement with rivers.

### 4. Legal status

Beavers are now classified as 'Least Concern' on the IUCN Red list of threatened species in Europe, but are still 'Critically Endangered' in England, and 'Endangered' in Scotland and Great Britain overall, following the review of Red List mammals by the Mammal Society in 2020. They are listed on Annex II and IV of the Habitats Directive, Annex III of the Bern Convention and on Schedule 9 of the Wildlife and Countryside Act 1981. This means it is an offence to release

beavers into the wild without a licence in the UK. Guidance issued jointly by Defra and the Welsh Assembly Government in 2011 means that releases into enclosures in Wales are also considered to be 'into the wild' for licensing purposes.

Beavers are now a European protected species under the Conservation (Natural Habitats, etc.) Regulations 1994 (SI 1994/2716)). A licence is required from Defra or NatureScot to kill or trap beavers, or to damage or destroy their breeding sites or resting places in England and Scotland. Dams may be modified or removed within 2 weeks and modification or removal of older dams in England can occur under a beaver dam modification licence (CL52).

## 5. Management implications

The current British landscape differs greatly from that last enjoyed by extensive beaver populations, so the potential impacts from their activity can be both positive and locally negative. Much of the habitat that they need and create has been drained and re-purposed for farming, housing and industry. The majority of UK floodplains and wetlands have been drained to enable intensive food and timber production, with an economic benefit to their landowners and tenants. The re-wetting of these valley areas through beaver dams may therefore have economic consequences in terms of flooding access routes and local crop areas as well as through direct feeding or felling damage.

The decline of many native fish species has led to greater concerns from anglers on the impact of any further change to fish populations, especially the perceived impact of beaver dams on fish migration. In practice, most beaver dams remain passable by fish. Some floodplain meadows and chalk river habitats have been legally designated so care is needed when considering where to reintroduce beavers and how to manage any adverse impacts.

The consensus of government consultations indicates that beavers will be subject to management, to maintain sensitive areas as 'beaver free' and to prevent local damage within beaver-occupied territories. Management principles and policies are therefore in development in Scotland and England, based on the UK trials and European experience. A Beaver Management Strategy Framework was proposed following the River Otter Beaver Trial to maximize the wide range of benefits that beavers can bring to the health and ecological functioning of the riparian environment while establishing the necessary means to minimize any adverse effects. A potential issue is that the public benefits gained will be at a potential cost to riparian owners, but the issues of responsibility and funding for any management needed have not yet been resolved. Results from Bavaria indicate that 20 m-wide riparian buffers can reduce the incidence of conflict by 95%, so policy and funding to make 'space for water' could contribute to reducing their economic impact, as beavers become integrated within the UK countryside.

With regard to river restoration schemes and strategies, beavers will require protection during riparian works, and licensing of activities where disturbance may result. Catchment and river restoration plans should consider the likely present or future influence of beaver populations. The likelihood of beaver population change and their riparian impact can be estimated using tools such as the Index of Beaver Habitat, the Beaver Forage Index and the Beaver Dam Capacity model, all developed by Exeter University.

Beavers are now spreading naturally in England, Wales and Scotland. Experience in Europe shows that they can co-exist with people with minimal problems, but monitoring is vital and carefully planned management strategies and mitigation measures may be needed to deal with any unforeseen adverse impacts in certain locations and circumstances.





## Sources of information

Defra consultation on approach to beaver reintroduction and management in England (2021)  
<https://consult.defra.gov.uk/natural-environment-policy/beaver-reintroduction-and-management/>

A review of the evidence on the interactions of beavers with the natural and human environment in relation to England (NEER017) (Natural England, 2021)  
<http://nepubprod.appspot.com/publication/5361572139761664>

Scotland's beaver strategy 2022-2045 (NatureScot, 2022)  
<https://www.nature.scot/doc/scotlands-beaver-strategy-2022-2045>

The River Otter Beaver Trial: Natural England's assessment of the trial and advice on the future of the beaver population (NEER018) (Natural England, 2021)  
<http://nepubprod.appspot.com/publication/6537677127286784>

River Otter Beaver Management Strategy Framework  
<https://www.devonwildlifetrust.org/sites/default/files/2019-07/River%20Otter%20Beaver%20Management%20Strategy%20Framework%20-%20final%20proof.pdf>

Licence to modify or remove beaver dams (CL52) (England) (2022)  
<https://www.gov.uk/government/publications/beavers-licence-to-modify-or-remove-dams-cl52/licence-to-modify-or-remove-beaver-dams-cl52>

Guidance – Managing the impacts of beavers in Scotland (NatureScot, 2019)  
<https://www.nature.scot/doc/guidance-managing-impacts-beavers-scotland>

Beaver licensing (Wales) (Natural Resources Wales, 2023)  
<https://naturalresources.wales/permits-and-permissions/species-licensing/list-of-protected-species/beaver-licensing/?lang=en>

Campbell-Palmer. R et al. (2016) The Eurasian Beaver Handbook: Ecology and management of Castor fiber. Exeter: Pelagic Publishing.