



Beaver ecology and management

Beaver basics

The Eurasian beaver is a large rodent native to Britain. It lives in and around freshwater and feeds on plants and trees. Beavers are a protected species. They can have many benefits for humans and the environment – such as improving water quality, drought resilience and flood prevention. Beaver activity, such as tree felling, damming and canal digging, can create dynamic wetlands which provide habitats for many other species. These behaviours can also cause conflict with human activities. Management of beaver activity may be required in some areas, such as near significant infrastructure, riverside properties and valuable agricultural land and trees.

This leaflet will guide you through management options and signpost to further information regarding licencing and support. There are well established methods for managing and mitigating beaver impacts, which have been trialled across Europe, North America and during the River Otter Beaver Trial in Devon, England. Low impact management techniques do not require a licence. Higher impact management methods are likely to require a licence from Natural England. Licence training is free for landowners, farmers and water, fisheries and forestry managers.

Common signs of beaver activity



Feeding

Beavers feed on woody and green vegetation, leaving a 45-degree angle on the stem. Large incisor teeth leave ridges in wood.



Lodge

Beavers live in lodges and burrows. Chambers and tunnels are unseen underground. If a chamber is exposed beavers are likely to cover the hole with sticks and sediment, creating a lodge.



Dams

Beavers build dams from sticks, large stones and sediment in small streams and watercourses. Look for sticks with a distinct 45 degree cut on the end (as for feeding signs). Sticks will be deliberately placed and tightly packed.



Legal protection and beaver management licences

On 1st October 2022, beavers were designated as a European Protected Species in England and listed in Schedule 2 of the Conservation of Habitats and Species Regulations 2017.

This means it is now an offence to deliberately capture, injure, kill or disturb beavers, or damage or destroy their breeding sites or resting places without a wildlife management licence from Natural England. Eurasian beavers are afforded similar protection in Scotland and across parts of Europe.

Three class licences can be obtained from Natural England to manage beaver activities.

Natural England Class Licences:

CL52: To modify or remove beaver dams >two weeks old or damaged burrows outside breeding season.

CL51: To modify or remove dams >two weeks old, burrows or lodges at any time of year.

CL50: To capture, transport and re-release beavers or modify or remove dams, burrows or lodges at any time of year.

Managing beaver activity

Natural England's five-step process:

1. Engage with your local Beaver Management Group, Natural England or other wildlife organisations for expert advice.
2. Where possible make space for watercourses and beaver wetlands to reduce conflict and maximise benefits to nature and society.
3. Undertake low-impact mitigation actions that do not need a licence such as tree protection or management of dams under two weeks old.
4. Where there is significant impact to property consider low-impact mitigation actions that DO need a licence such as managing dams over two weeks old.
5. If low-impact mitigation actions are not effective then consider higher-impact mitigation actions, such as modifying or removing a dam during the breeding season, beaver capture and translocation, or lethal control. These can only be conducted by specially trained and licenced personnel.

For more information on legal protection and licences:

www.gov.uk/government/publications/beavers-protection-and-management/protection-and-management-of-beavers-in-england



Aerial view of a beaver-created wetland in the River Otter catchment.

Credit: Alan Puttock

For further information email: beavers@derbyshirewt.co.uk

Making space for beavers

Credit: Alan Puttock

Beavers on farm and forestry land

Studies in Bavaria show 95% of issues associated with beaver activity arise within 20 metres of the water's edge. Planting these areas with native riverside trees and shrubs, or allowing natural regeneration to occur, will reinstate missing riverside habitats. This will increase bank resilience and limit the impacts of beaver foraging, burrowing and damming. Creating buffers along rivers can establish habitat for other wildlife, capture farm run-off, and assist with natural flood management.

Derbyshire Wildlife Trust's Derwent Living Forest programme is already working with landowners in the Derwent Catchment to increase wooded habitats which can support with making space for beavers along watercourses. A link to this programme is provided at the end of this document.

Funding for beaver management options

Countryside Stewardship revenue payments are available to create buffer strips and help maintain and restore riverside habitats on land. Contact us for advice on the best available funding options or visit www.gov.uk/countryside-stewardship-grants?

Capital payments are available for managing specific beaver impacts. These are open to anyone with an SBI (Single Business Identifier) number. For the latest information visit <https://www.gov.uk/government/publications/protection-and-infrastructure-grants-2024/applicants-guide-protection-and-infrastructure-grants-2024>



Beavers in gardens and ponds

Beavers are known to visit gardens next to rivers and streams, particularly gardens with ponds or favoured tree species. In these locations, depending on the size of the garden and proximity to property, it can be difficult to make space for beaver activity.



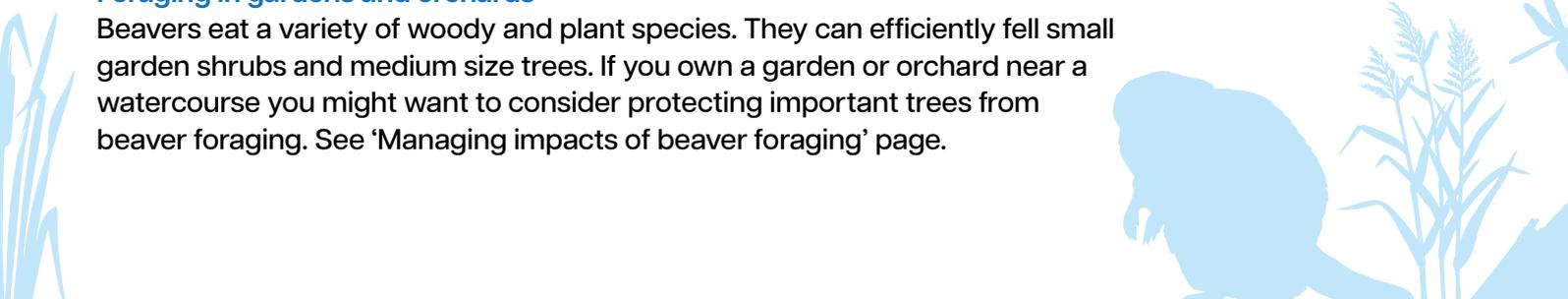
Garden ponds

Beavers prefer still or slow flowing water and will occasionally look to make use of large garden ponds as a temporary or permanent home. If you have a large pond in your garden (and it is near a river or stream) we advise monitoring for beaver activity and considering potential impacts of beaver burrowing or foraging. Management options for gardens can include exclusion fencing (temporary and permanent), bank protection and visual and/or audible scarers (though beavers can become accustomed to these).

If your pond is perched above property or important land then if beavers are present they could burrow in the impounding bank. Burrowing can cause erosion and/or weaken the bank. See 'Beaver burrowing' page.

Foraging in gardens and orchards

Beavers eat a variety of woody and plant species. They can efficiently fell small garden shrubs and medium size trees. If you own a garden or orchard near a watercourse you might want to consider protecting important trees from beaver foraging. See 'Managing impacts of beaver foraging' page.



Managing impacts of beaver foraging

Protect trees and vegetation from beaver browsing

Beavers will cut tree branches and fell trees to obtain food and material for dam building. In winter beavers predominantly feed on tree bark and in summer they consume a more varied diet including herbaceous plants. Beavers are known as 'choosy generalists' and have a strong preference towards willow, hazel, aspen and poplar. They will also forage on a variety of other species such as apple, alder, beech, oak, sycamore, leylandii, ash, cherry, holly, laurel, rhododendron and wisteria.

Favoured tree species that are considered 'important trees' and are near watercourses where beavers are present are likely to need protection to prevent future impacts. This might include veteran trees, crop trees, or trees that have a high amenity/biodiversity value or may cause damage if felled. If trees need protection this can be undertaken individually or as stands.

A brief guide to methods of tree protection



Tree wrapping

- Wrap 0.9 to 1.2m weld mesh around base of tree.
- Wire weld mesh can be bought in rolls or panels and should be at least a 1.2 – 2mm thick, with a mesh size of 5cm x 5cm.
- Fold cut ends of mesh back on the wire to secure the wrap.



Tree painting

- Use a sand and paint/SBR mix or commercial game paint.
- Apply to base of tree with paint brush up to at least 0.9m.
- Most mixes dry clear.
- Re-apply every 1-2 years.
- Does not provide physical barrier but effective in trials.



Exclusion fencing

- Cost-effective when protecting larger stands of trees (e.g. plantations or large orchards).
- Erect 1.2m post and wire fencing around the stand of trees, with a 90cm mesh skirt directed towards the water.
- Use at least 10x10cm mesh size to prevent beaver kits entering.

General tips and considerations

- **Consider distance of the tree from a watercourse.** Protecting important trees close to the water is recommended. Trees >20m from the water can be monitored and are less likely to be impacted.
- **Protecting trees can shift beaver foraging to other unprotected trees.** Consider whether the species is likely to be impacted and which trees could be left for beavers to feed on.
- **An alternative/complementary protection method can be used to establish an unfenced sacrificial planted buffer strip** of native willow to draw attention away from more important trees.
- **In an emergency chicken wire will provide temporary tree protection.** Leave 15cm between tree and any wire wrap.
- **Tree protection does not require a licence** but fencing by water courses may require other permits from your local flood permitting authority.

Managing and monitoring beaver dams

Beaver dams

Beavers build dams in streams and small rivers to increase water depth, protecting themselves from predation and ensuring the entrance to their burrows remain submerged. Beaver dams and wetlands can deliver significant reductions to downstream flood risk and alleviate impacts of drought. In certain scenarios, however, beaver dams can also cause localised flooding, with potential impacts on infrastructure, property and agricultural or forestry land.

New dams under two weeks old can be removed without a licence. Monitoring for beaver dams is recommended if there are concerns that impacts could arise in perceived 'high risk' locations. Dams older than two weeks require a licence from Natural England to manage. It is necessary to demonstrate the dam is causing serious damage to property, farmland, fisheries or infrastructure.

Methods for dam management



Dam notching

- Notching or removing a dam can be an effective, immediate method to reduce water levels to a desired level.
- Beavers will typically respond to modifications with regular repairs/re-building.
- Effort to repair a dam will depend on its importance in the beaver territory. If the dam protects a lodge or allows access to important food resources beavers will often put determined effort into repairs.
- Reacting quickly and frequently (e.g. removing a dam daily) is most effective.
- In some cases, dams may need long-term attention and other options can be considered.



Flow devices

- In specific scenarios a flow device can be a semi-permanent solution to damming issues.
- A pipe is placed through the dam, with the inflow positioned upstream from the dam and protected from blockage by a wire mesh cage.
- The outflow sits below the dam. Beavers might attempt to rebuild the dam but the pipe will allow through flow, maintaining a desired water level in the stream/wetland.
- Flow devices do not work in all landscapes and beavers can build dams above or below them.

Tips and licence considerations:

- Dam modification can increase tree felling, so consider if important trees nearby need protection.
- Flow devices should be carefully considered and require a permit from the local flood authority. They are not recommended in streams where there are important migratory fish.

Beaver burrowing

How to manage beaver burrowing activity

Beavers are strong burrowing animals that can excavate burrows and canals and create lodges for shelter and to evade predation. Entrances to burrows are mostly under water and can be difficult to detect. Burrows and chambers adjacent to ponds, rivers and ditches can weaken banks and occasionally contribute to collapse. Burrows can impact infrastructure, public access, grazing livestock and machinery. Most burrowing issues occur within 20metres of the watercourse.

Top tips and licence considerations

Monitoring activity

- Look for early signs of soil subsidence or burrow entrances in the water. A sediment plume is often visible in still water if beavers are regularly entering a burrow or lodge. Mark the top of collapsed burrows with canes/flags so they can be avoided.

Making space

- Establishing a buffer strip between the watercourse and agricultural/forestry land, footpaths or flood embankments will prevent the majority of potential issues. Planting buffer strips with fast growing, native species such as willow will help support bank structure.

Exclusion methods and bank protection

- In high-risk areas (e.g. near infrastructure) excluding beavers from the area using deterrents or fencing may be required. Alternatively wire mesh can be incorporated into the bank to prevent beavers from burrowing.

Filling in beaver burrows

- Short, non-chambered or unoccupied/collapsed burrows may be in-filled to prevent re-use without a licence. Filling in burrows that could still be used does require a specialist class licence, even where it is not in current use. Further advice can be sought from a local beaver management group.



Further guidance and support

There are several Beaver Management and Advisory Groups across England to help people live alongside beavers.

More information about beaver management groups:
www.beavermanagement.org/groups/

Practical advice for managing beaver impacts:
www.beavermanagement.org/get-advice/

Learn more about Derbyshire's Wild Beaver Feasibility Assessment & Consultation Initiative here:
www.derbyshirewildlifetrust.org.uk/derbyshire-beavers

Find out more about the Derwent Living Forest Programme here:
www.derbyshirewildlifetrust.org.uk/derwent-living-forest



Please get in touch if you have any questions at the email address below. (Email address in footer)

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