

Beavers can do wonders for nature, but we should be realistic about these benefits extending to people

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Credit: Tyler Lastovich from Pexels

The beaver is a unique ecosystem engineer that can create a landscape that would otherwise not exist, thanks to the animal's ability to build

dams. As we experience more frequent heatwaves and drought, the potential role of beavers in safeguarding against these risks has captured widespread attention.

Beaver habitats are [claimed](#) to lower local stream and [air temperatures](#), and by [maintaining water supplies](#), provide insurance against [drought](#). Greater water storage may also improve the resilience of a landscape towards [wildfire](#).

However, it is important to consider the significance of beaver habitats as a solution to our changing climate from both human and wildlife perspectives. It's not as simple as saying beavers can protect [human society](#) against the effects of extreme weather.

Water storage and wildlife sanctuary

Beaver ponds and wetlands can cover wider areas and store more water than the stream that would flow without them. However, beavers are restricted to relatively small streams.

To achieve a [water capacity](#) large enough to supplement human supplies, beavers would have to construct an unrealistically large number of ponds across the same catchment. Even then, the water storage would be dispersed across many shallow ponds, making extraction for use in a water supply network unrealistic.

What an increase in beaver ponds can do is provide more refuges for wildlife at a local level, while allowing the slow release of water downstream during dry periods. Such refuges can be [critical](#) for wildlife during a drought, and so help preserve an area's biodiversity.

Greater [water storage](#) will also increase an ecosystem's resilience to climate change. This has been demonstrated during this summers

drought. Beaver wetlands in Devon's [River Otter](#) have irrigated the surrounding area and kept vegetation alive, preserving a habitat that many animals depend on.

Evaporative cooling

Bodies of water can also reduce the air temperature surrounding them because their evaporation has a cooling effect. However, unless the [water bodies](#) are very large, or high in number, this easing tends to diminish rapidly with distance from the water. This would make it difficult to rely upon beaver ponds for cooling benefits for human settlements.

Beavers also tend to open up the canopies of nearby forests by felling trees during the construction of dams. This can reduce shading and allow more direct sun exposure, which complicates any potential cooling effects.

However, felling can also increase habitat complexity, supporting a mixture of meadows and wet woodland. The natural disturbance caused by beavers can create floodplain woodlands that are wilder and wetter, allowing [greater biodiversity](#). In some cases, this can also slow the flow of water and improve water quality.

This same process of opening up the canopy can also increase local water temperatures. However, this can be heavily moderated by the [interaction](#) between surface water and groundwater.

This means the outcome for water temperatures will be highly river, dam, and pond dependent. For this reason, [research](#) into the thermal impact of beaver habitats has proved inconclusive.

Protection against wildfires

Wildfires have been extensive across Europe this summer. [Research](#) has shown how the preservation of beaver habitats can improve the fire-resistance of the landscape.

During wildfire, the area of vegetation density loss in beaver habitats was approximately [three times smaller](#) than in areas without beavers in the western U.S.

As the drought warnings kick in and the great and the good assemble to speak crisis I am sitting next to one of many of my farm wetlands created by the beavers. The solution is obvious. Let them be. Reintroduce them swiftly in numbers everywhere. They will reirrigate the land. pic.twitter.com/fCLAUrcpA5

— Derek Gow (@gow_derek) [July 26, 2022](#)

However, questions remain as to whether this protection could ever expand to the scale necessary for human settlements. Even if this is not realistic, beaver habitats provide crucial protection for local [habitat](#) and wildlife against wildfire.

Future of the Eurasian Beaver in England

This summer has also brought new climate extremes and a prolonged period of drought. With more of this predicted, the debate surrounding mitigation measures is growing. Beavers enjoy enthusiastic support in this regard.

However, it would be wise to temper expectations for the role of beavers as a drought solution for human settlements. Nevertheless, by offering a

local buffer against the ravages of drought, heatwaves, and wildfire, beaver habitats carry the potential to help stimulate nature recovery and reverse biodiversity loss.

In the U.K., beavers have recently received [legal protection](#), but face a future of expansion into human landscapes. The decades ahead will require some nuanced landscape decisions that can incorporate beaver habitats into large-scale nature recovery and restoration schemes. Beavers are showing that their impacts can offer added levels of ecosystem resilience to a changing climate that we would be wise to embrace.

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