



THE RIVER OTTER BEAVER TRIAL

Mike Blackmore, Wild Trout Trust Conservation Officer, on the trial reintroduction of Eurasian beaver to Devon's River Otter

© DAVID WHITE

As a kid I had a favourite book called *The Lazy Beaver*. It's a story about a pioneering beaver colony that settles on a riverbank and industriously sets about building a new town. All that is, except a young beaver named Bertram, who instead skives off all day and goes fishing. It's an amazingly well-illustrated book with fantastic drawings of beavers in hard-hats building Hoover-sized dams and multi-storey log-cabin lodges.

I remembered the book when sitting down to pen these words and thought maybe it would be something nice to buy for my 18-month-old daughter. Unfortunately, it turns out *The Lazy Beaver* sells online for between £150 - £200 depending on condition. Don't get me wrong, I love my daughter, but £200 is a bit steep for something she'll probably chew, tear and scribble on!

Plan B was to see if the old book was still around. Luckily for me, my mum isn't the sort of person that would throw away a perfectly good kids' book, no matter how tattered

it is (or how many decades ago her children left home). Wouldn't you know it, within a couple of hours I got a phone call. *The Lazy Beaver*, it transpired, had survived thirty years of professional childminding, pre-school teaching and two house moves!

Flicking through the dog-eared pages of my (now rather valuable) beaver storybook, I made some interesting discoveries. First, that *The Lazy Beaver* is an Italian book, translated into English (possibly explaining its rarity). Secondly, that there's a very good bit of blurb on the back page entitled 'About Beavers'. Despite the North American flavour of the illustrations, it seems likely that the Italian author, one Giovanni Gallo, is actually referring to his native Eurasian Beavers. As such, I submit that Signor Gallo may have, in 1982, penned the best description of the Eurasian Beaver to be found in modern literature:

"...Beavers are furry mammals, about 91 to 120cms long, that live in rivers and freshwater lakes near woodlands.

Beavers eat tree bark, leaves and roots, and water plants...

...The beaver is a rodent, or gnawing animal, and so has very strong front teeth. Beavers also have sixteen back teeth with rough, flat edges, used for chewing. The back teeth stop growing when the beaver reaches maturity, after about two years, but the front teeth never stop growing and never wear out.

Beavers that live in rivers build dams, which provide them with a quiet stretch of water in which to build their homes, or lodges (beavers that live in lakes do not usually build dams, except sometimes across the outlets of small lakes). First the beavers cut down trees by biting and tearing in a circle around the trunk. When the tree falls, the beavers gnaw off the branches, roll the log into the water, and push it to the dam site. Sometimes beavers dig long canals from the woods to the building area. The beavers carry mud from the river bottom with which they cement stones into a strong base for the dam. Then they pile logs and branches on the base, making sure that the log poles lean in the same

direction that the river flows for extra strength. The beavers plaster the tops and sides of the pile with more mud, stones and wet plants, and build until the top of the dam rises well above the water. Some dams are more than 300m long.

The way a beaver behaves is instinctive, or unlearned. Even when it has no place to build a dam or lodge, and no need to find food, the beaver will continue to chop down trees. That is why we say that a hard-working person is "as busy as a beaver", and why lazy beavers are seldom found outside of story books."

This footnote to a 1980s kid's book nicely encapsulates the reason beavers are so controversial. Beavers are incredibly industrious animals, compelled by an instinctive need to change their environment. Small wonder then, that their reappearance in an English river has sparked so much debate.

Of all the rivers in England, fate would have it that DEFRA would trial the reintroduction of beavers on a watercourse named after a different large riverine mammal. The River Otter Beaver Trial has been running for three years now and I'm still making a fool of myself, talking to people about the various complexities of "otter dams"!

The unfortunate nomenclature of the choice of venue hints at the impromptu nature of the trial. Beavers spontaneously appeared on the River Otter in the mid-late 2000s and nobody (officially) knows from whence they came. ►

Beavers are incredibly industrious animals, compelled by an instinctive need to change their environment. Small wonder then, that their reappearance in an English river has sparked so much debate

By 2012, local communities in the Otter catchment were apparently quite happily co-existing with the beavers until reports of them successfully breeding reached the powers that be. At this point DEFRA decided to intervene.

Rumours abound as to exactly what fate DEFRA had in mind for the Otter beavers. Some say they were destined for a dose of high-velocity lead poisoning, others that they would be humanely trapped and placed into captivity. In any case, local opposition stayed DEFRA's hand for another couple of years.

Now happenstance would have it that a team at Devon

for the sake of saving furry creatures. DWT, like most modern conservation organisations, understand that all wildlife exists in a balance and that the introduction of a new species (even one previously native) can drive wide-ranging changes both in terms of the local ecosystem, and the socio-economics of human activity. The trial is headed up by DWT's Mark Elliott, (an experienced river restoration man himself) and is bolstered by the cold impartiality of some quite respectable academic scrutiny. Clinton Devon Estate's role would be both as host to the beavers and as a stakeholder keen to ensure that pragmatic

before the first animal was released. Unfortunately, with DEFRA poised to act, the genie was at least three quarters out of the bottle. As many working in river restoration could tell you, the thing about monitoring is that you so rarely have the budget for it. Whereas the Scottish beaver reintroduction trial had the benefit of several hundreds of thousands of pounds set aside for monitoring, down in Devon they'd have to make do with a Natural England Licence and whatever pennies could be scraped together. Despite these constraints, the study has, and continues to be, undertaken in a highly scientific and objective manner.

issues, invasive species, river fly monitoring, water quality testing and litter picks. Fishery conservation seems to be experiencing a bit of a renaissance on the Otter. Such is the scale of the fishery interest on the Otter that the hosts of the beaver trial have set up a dedicated 'Fisheries Forum', meeting annually to discuss the trial findings with fisheries interests.

WTT sits on the forum and in October 2018 we were taken to see some of the impacts of the beavers first-hand. I recall there hadn't been much to report at the previous forum I attended and I remember thinking that the study



Figure 1: Beaver dam on a heavily engineered channel

Wildlife Trust (DWT) had been monitoring the effects of captive beavers in a fenced-off headwater since 2010. This was part of DWT's Working Wetlands; a water quality, wetland restoration and ecosystem services project. These beavers were provided by Derek Gow, already a living legend in water vole conservation, breeding and reintroduction, who also happened to know more than a thing or two about captive beaver husbandry. DWT approached DEFRA with a proposal to capture, tag and re-release beavers into the Otter catchment as part of a five-year study to observe their impact. This would be done in partnership with the University of Exeter, Clinton Devon Estates and the Derek Gow Consultancy. DEFRA agreed, evidently on the one condition that they wouldn't have to contribute any money toward the endeavour!

Despite what some people might say, this was not a simple case of wildlife enthusiasts saving furry creatures

management options would remain firmly on the table.

Nonetheless, cute and furry critters will always tug at the heart strings of the general public. Add flood-risk and angling into the mix and you have a recipe for a seriously emotive cocktail. In some respects, this has proven useful, helping to raise funds for the study, but it has inevitably also given rise to some conflict. There have, for example, been a few reports of people using the beavers as an excuse to hurl abuse at anglers. I'm sure it was water off a duck's back - after all, nobody hurls abuse quite like anglers! However, it's another example of just how little the general public is aware of the hand-in-hand nature of angling and conservation. Something we still need to work on.

Scientifically speaking, the biggest problem for the trial is a paucity of baseline data. In an ideal reintroduction trial, a site would be identified and a period, probably several years, of monitoring and analysis would be conducted long



Figure 2: 1.5-m high beaver dam creating a wetland upstream

The Wild Trout Trust (WTT) has some history on the Otter. As with most rivers in Devon and Cornwall, the fish communities of the Otter are predominantly resident brown trout with seasonal runs of sea trout and Atlantic salmon. Historically, salmon and sea trout have struggled to migrate upstream of Tipton St John but fish passage improvements now allow larger salmonids to traverse much farther upstream. Significant obstacles remain which limit the numbers of salmon and trout reaching the upper Otter, but overall fish populations are improving. Following WTT visits, one of the major fisheries on the Otter, Deer Park Country House, has gone completely wild and the other two main fisheries, Clinton Devon Estate and the Ottery Fly Fishing Club, have significantly reduced stocking; possibly looking at also going wild in the future. Partly galvanised by the beaver trial, the River Otter Fisheries Association has formed, taking on fish passage

might not be long enough, and the population density might not get high enough, for the beavers to need to build any dams. However, even without the benefit of Signor Gallo's wisdom, my most recent visit to the Otter catchment put that theory firmly to bed.

The first site we visited was a section of stream best described as a drainage ditch flowing through a relatively flat floodplain. Typical agricultural interventions had long ago dredged any form or feature from the stream and rendered it to a straight and uniformly box-shaped channel. In such a constrained and incised channel, the effect of a relatively small beaver dam was quite significant (Figure 1). Under the flow conditions observed on the day, the dam would be impassable to fish. Sedimentation within the impounded reach upstream was also quite substantial. In other words, the dam appeared to be having the same impact that a concrete ►

weir might have. This was a little troubling. Upstream, beavers had created a few more dams which had been mostly drowned out by this lower structure. In terms of floodplain connectivity and riparian wetland, the raised water levels have some real advantages. However, that is to accept that impounding a river is a solution to the bed having been artificially lowered; in this case, the improved riparian habitat is at the expense of in-stream habitat diversity. One interesting change within the impounded channel was that the beavers had dug a trench through the long-profile of the riverbed. It wasn't clear whether

mature white poplars. As a man who throws trees into rivers for a living, I must admit, they're good at what they do!

In the adjacent field, the river was cutting around the impasse creating a whole new channel, down to the natural gravel seam of the floodplain. This was introducing a steady supply of new gravel into the river which would doubtlessly do some good downstream.

In this case, the impact on fish depends on what happens next. If the banks of the new channel are afforded sufficient space and protection from grazing,

Another factor to consider is that beavers are as good at burrowing as they are at tree-felling. As a rule of thumb, beavers will tend to build lodges up in the headwaters and burrows in the lower river. We're yet to see if conflicts will arise where burrowing mammals the size of Labradors end up in perched mill leats or below weirs.

Long tracts of the River Otter are subjected to a quite brutal form of riverbank engineering whereby both banks are lined with rip rap boulders. There isn't much of the river which is afforded a wide marginal buffer from agriculture and I fear a significant change of attitude will

In the end, it will all come down to management. This is after all, the point of the trial. DWT and its partners are developing a scientifically-guided 'beaver management framework' to guide policy should beavers be permitted to remain. Practical management, including removal of both the beavers and their dams, are likely to be on the cards. Additionally, Scott West at Westcountry Rivers Trust has been working hard on a set of protocols for assessing and improving fish passage at beaver dams. No mean feat when you consider how innately 'bespoke' each one is. Alongside this management framework,



Figure 3: Wetland area upstream of the dam in Figure 2, with beaver-felled trees

this was to deepen the channel further or was simply a side-effect of them collecting mud. It got me thinking, if the beavers moved on and the dams collapsed, would the channel be left with a beneficial two-stage cross section? Would all that woody material end up creating nice fishy habitat features downstream? Will this be better in the long term?

Crystal ball gazing aside, fish habitat at this site, constrained as it was by land drainage and channel modifications, was not enhanced by the actions of the beavers. At the next site, beaver activity was something almost akin to the fantastical illustrations in *The Lazy Beaver*. A dam at least 1.5m high had completely cut off the river, creating a large wetland area upstream. Within this new pond, the beavers had set about knocking over whole

there's every chance that the beavers have created some valuable new habitat without hindering fish passage. The new channel could even provide better fish habitat than what was there previously.

This is when it struck me that the answer to the beaver question, like so much in river restoration, is a resounding 'it depends'. Give the river enough of a buffer from intensive land use and of course, beavers can be a real force for good. If the river can always cut around an obstacle, fish passage is unlikely to be a major problem and habitat diversity within the river corridor (including below the surface) is likely to improve. However, introducing beavers into an intensely-managed landscape where agriculture or infrastructure squeezes the river into a man-made canal, is unlikely to result in a happy ending.



Figure 4: The River Otter cutting a new channel around the beaver dam

be required to give the river the space it needs to accommodate beavers in the long term.

Beavers are essentially a force amplifier. In a river corridor with sufficient space, sufficient tree cover (and that hasn't been lined with rock), beavers could be very good news. In a constrained, engineered and intensively-managed river corridors, they might just exacerbate some already intolerable problems.

Then again, maybe that just what's needed? I am certainly not allowed to dig burrows around weirs in the dead of night or trespass onto farmland to drop mature poplars into rivers unconsented, but I doubt Bertram Beaver will lose any sleep over getting his Flood Risk Activity Permit! Could beavers force landowners to finally give the rivers the space they need?

the academics hope to publish some solid research papers to help guide policy.

The final decision will, I'm sure, be a political one. The trial will undoubtedly produce a lot of very solid evidence, but the fate of the Otter beavers will probably still come down to public opinion and its influence.

Of course, towards the end of *The Lazy Beaver*, Bertram's family get him to mend his ways and they steer his energy into making Beaver Bay a better place for everyone (it is a children's book). That's what I hope the Otter beavers can do. The outcome of the trial is an opportunity to manage beavers so their hard work can be applied in the right place, in the right way. I hope that busy beavers can make life better for all the other inhabitants of the river; humans included. □