Enhancing fish spawning and nursery habitat on the upper Bristol Avon

The Strategic Environmental Planning (SEP) team from the Environment Agency's national office Evidence Directorate took time away from their spreadsheets on 18 September 2013 for a day's 'Environmental Leave', spent with wellies on restoring river habitat in the upper Bristol Avon. This reach of the Avon below Malmesbury was assessed under the Water Framework Directive (WFD) as at 'poor' ecological status (in the Environment Agency's 2009 River Basin Management Plan for the Severn River Basin District). It was assessed as at risk from diffuse pollution and nutrient inputs, with 'not high' hydromorphological status. So habitat improvement can make a positive contribution.

In 2012, the Wild Trout Trust (WTT) had undertaken a site visit on behalf of the Somerfords Fishing Association (SFA) covering a stretch of the river between Kingsmead Mill and Roaring Hatches, reporting on existing habitat with recommendations for improvements.

As part of its strategic interest in the whole of the Bristol Avon catchment, the Bristol Avon Rivers Trust (BART) works with appropriate partners to achieve its mission of 'A clear future for our river'. So it was keen to act upon the WTT's recommendations, in partnership with the landowner and club.

This is where the SEP team fitted in, as a keen working party to put the WTT's suggested improvements into effect. The Environment Agency nationally provides funding to the Wild Trout Trust, which the Trust spends efficiently to bring about tangible fish habitat improvements that contribute amongst other things to WFD targets. Under this mutually beneficial arrangement, Mike Blackmore from the WTT kindly met us on site, guided the restoration work and undertook tasks such as chainsaw operation and wading for which Agency staff were not trained.

The net result of the better part of five hours of sweat and skilled direction was the conversion of a bend in the river with good spawning habitat potential, but of suboptimal value due to shading out by trees and over-widening and siltation of the gravel bed, into functional spawning and nursery habitat. The key elements of this work included cutting out some of the shading by sallow bushes and willow trees, thinning selected bank top bushes to allow in additional light, building a current deflector to accelerate flows, pinning logs to the river bed to promote scour that opens up the gravel structure, and reinforcing the opposite bank to prevent erosion and provide additional fry habitat.

Mike Blackmore from the Wild Trout Trust 'hinging' a willow as a core element of a live willow deflector *(Image © Mark Everard)*

Swapping spreadsheets for wellies, some of the Environment Agency's SEP team hard at work building the willow deflector *(Image © Mark Everard)*

The basic structure of the flow deflector was achieved by 'hinging' sallows/willows into the river edge by cutting halfway through the trunk near ground level, the trees falling downstream still connected to their roots and thus remaining alive. These were secured using chestnut posts to ensure that the structure will remain in place during spate flows, packed with additional live willow off-cuts, and pinned down by wiring live willow cross-members to the posts which were then rammed further into the stream bed to compact the mass. This accelerated the flows of water over the gravel bed on the outer edge, creating additional habitat within and downstream of the structure in which both fry and mature fish could find refuge from strong currents and predators.

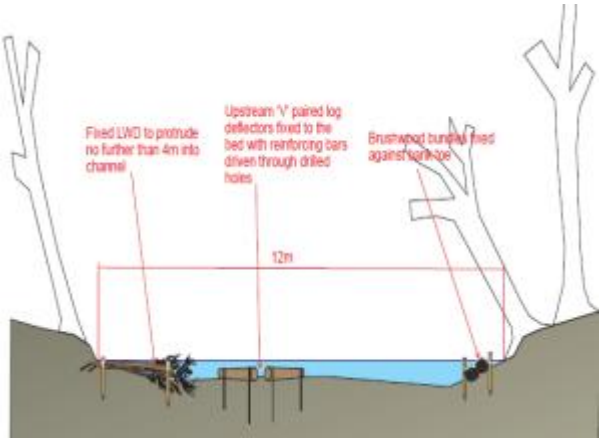
The gravel scouring structures comprised a pair of logs set as an upstream 'V', each log pinned with steel rods into the gravel bed in the fast and shallow water to promote scour. The purpose of this is to open up the gravel, driving out the excessive silt that had accumulated in its interstices and maintaining it in a condition suitable for the spawning needs of trout, grayling and other gravel-spawning fishes (such as dace and chub) in the reach of river.

To prevent erosion on the face of the opposite bank, as well as to provide refuge and feeding habitat, long shoots of ash and willow were packed down by faggots (wired bundles) of willow off-cuts, topping with faggots of hawthorn to deter the attentions of cattle, wired to posts that were then rammed home into the river bed for security.

Of course, all this work required Flood Defence consenting by the Environment Agency. Site conditions and the opportunities they present are rarely, if ever, exactly as drawn. However, the work completed on this site is almost identical to that drawn up in the application for Consent!

We now have to wait until the winter to see if any redds are cut by spawning trout in this improved habitat. But I am happy to report that, on visiting the completed work just two days later with fishing rod in hand, I found the large shoal of dace in residence and feeding strongly!

Completed job: deflector on the left, scouring logs on the riffle, and faggots against the right bank (Image © Mike Blackmore)



The Wild Trout Trust's drawing from the Consent application: almost identical! (Image © Wild Trout Trust)

Dr Mark Everard

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