

We left Arborfield in the last article with a rather sorry looking river which had suffered from too much engineering and not enough maintenance in the past which in turn had led to the loss of some important spawning habitats.

In 2010, some money was committed by Thames Water to put right one of the problems. At that same time, plans were being hatched to carry out a much larger programme of amelioration which would improve the overall habitat for fish and wildlife and allow fish migration upstream. This article details some of the works completed

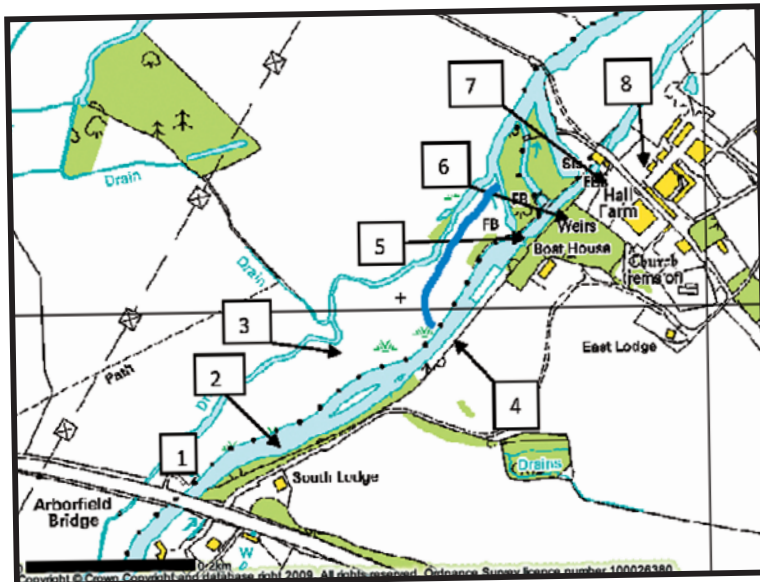
to restore flow and create new habitats, mainly with an eye on creating new spawning grounds and suitable habitats for young or the year fry to grow on and over-winter.

The first step was to restore flow down the dry weir and to at least create some kind of habitat for fish to spawn in and for fry to grow on. In engineering

Restori



An old tree stump at the end of the new channel was used to create a small island and woody debris as shelter for small fish.



The main features of the restoration works. Key: 1 – penstock sluice replaced with concrete sill which provides flow into the “drain” which is actually a small stream. 2 – BAP (Biodiversity Action Plan) feed A; a water feed for the wet woodland which is a habitat of nature conservation interest. 3 – BAP feed B. 4 – bypass inlet. This is the new stream being constructed. The approximated path of the new stream is shown as a blue line. 5 – small fixed crest weir. This is the weir which was “notched”. 6 – large fixed crest weir. 7 – stop log weir. This was lowered to reduce river height. 8 – mill structures. The crest of the mill structure was lowered and replaced to ensure similar flows to those before works took place.



Woody debris was built into the new channel as it was dug. This will provide essential habitat and shelter for fish.

ing Arborfield



Part 2: How things
got put right

terms, this was relatively simple to do and was achieved just by “notching” the weir to ensure that some water would flow down it under most flow conditions. This would solve the problem of the absence of flow under normal spring and summer conditions which had led to the channel being mainly dry and the (potential) spawning gravels being exposed in most water conditions. It also helped to keep the river level low

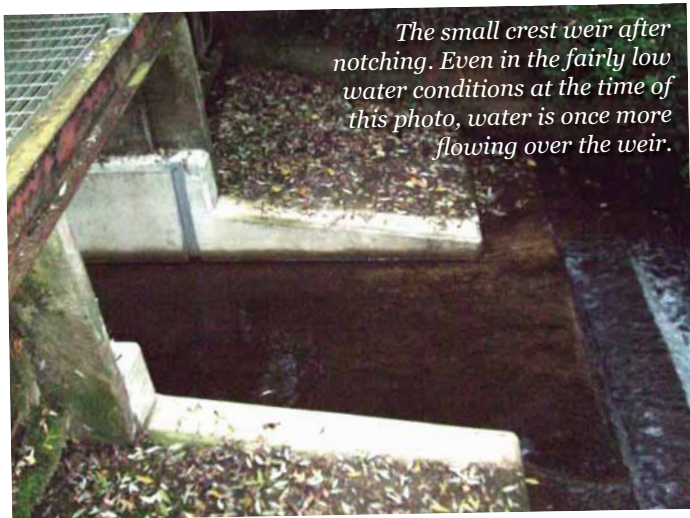
which was important for reducing erosion of the perched bank upstream. Thames Water got this done in short order and soon water was flowing over the weir and into the channel. This is shown in the photos below.

After that, the major works began, although not before a great deal of planning and permitting. One of the problems in carrying out work of this sort is that you need to

get all sorts of permits to establish that the works will not adversely affect the flood risk at the site and that the positive habitat improvements will not be to the detriment of other wildlife and habitats of conservation interest. There were seven pieces of legislation to take into account before anything could be done. Note that fish have not yet come into the equation! Obviously, forecasts of how the works would benefit the fishery were important to ensure the permissions were obtained, especially when these were linked to sustainable improvements and restoration of lost habitats. In this case, the loss of spawning sites up and downstream of Arborfield was a key problem to address and was one of the strongest arguments we put forward in support of the

improvements. All this took time which was frustrating as we wanted the works to be completed in 2010 so that the spawning gravels would all be in place and ready to use for chub and barbel in 2011. Eventually, after a great deal of planning, many site visits and a lot of work by Dominic Martyn (EA Fisheries Officer for the Loddon catchment) all the permissions were in place and it was then time to plan the works in detail. All had to be planned, the site surveyed, the works drawn up and exact details of what was going where had to be done in precise detail. Oh, and there was the small detail of how the money was going to be raised to pay for it all! Eventually, all this was completed and it was time to prepare the ground. A plan of the main works is shown below.

It was decided to



The small crest weir after notching. Even in the fairly low water conditions at the time of this photo, water is once more flowing over the weir.



Pegging out the site. It all looked a lot nicer in the dry weather of autumn.

construct a completely new channel about 200m in length which would carry flow and link the main river up and downstream of the weirs. This would serve a number of purposes including:

- 1) Allow free passage for fish up and downstream of the most significant barrier to fish migration in the Loddon catchment;
- 2) Create new spawning and nursery grounds for fish;
- 3) Improve the fish element of the ecological status for this Loddon waterbody as required by the European legislation 'Water Framework Directive';
- 4) Construct a nature like fish and wildlife bypass channel that will restore the rivers connectivity up and downstream of the weirs.

A backwater has been dug as to add value to the project by providing suitable backwater refuge habitats downstream of the bypass channel for a variety of fish to improve their chances of survival. Additional bonus habitat features created by the EA's contractor Cain Bio Engineering include riffle and backwater habitats around the site to provide



Abandon hope! There was no point trying to work under these conditions and so work had to be stopped until the soil dried out.

wet as this too had suffered from the drop in height of the main river. Getting the biggest bang from the buck was important so the channel was designed to create as many habitats as possible for the fish. Obviously, the key habitats to create were spawning gravels and areas for small fish, especially areas where

shelter and the flow discharged into an existing channel which would back up in high water, providing shelter for small fish.

Obviously, works of this kind require some serious logistics to make them happen and a temporary gravel "bridge" had to be constructed across the lower river channel to allow

Work went well initially but eventually the weather turned and the winter of 2010 bit hard bringing work to a halt in January 2011. The ground became too wet for plant to move around and so works had to be suspended until the ground dried out allowing the accuracy required in the finished product. This was rather frustrating as we had hoped that the spawning gravels would be in place ready for 2011. Quite a lot of progress was made on digging the channel but, as some essential completion works could only be carried out with the channel dry, it was not possible to remove the temporary coffer dam at the top end and allow water through. However, as it took no flow and so erosion was not a risk, the lower end of the channel was flooded and small fish took up residence straightaway so hopefully, that will have served as a refuge for small fry already and done its bit to boost recruitment.

The Barbel Society provided some funds for the restoration of spawning gravels to be installed in the

“A backwater has been dug as to add value to the project by providing suitable backwater refuge habitats downstream of the bypass channel for a variety of fish to improve their chances of survival”

higher confidence in achieving the tight ecological and fisheries objectives.

The channel will also restore flow to part of the lower river channel and taking away some flow from the weir pool below the old mill which had too much water going through it, making the tail waters unsuitable as a habitat for young of the year fry. The new channel would not only carry water to the lower river channel; it was also designed to make sure that the wet woodland remained

young of the year could over-winter. Too often, high flows in winter lead to the loss of a successful spawning as the small fish are not robust enough to survive in the high flows we tend to get in heavily modified rivers these days. A plan of the channel as originally conceived is shown below with some of the key areas highlighted. As you can see, the bottom end of the channel made use of some existing structures such as a very large tree trunk which was retained to provide some additional

heavy plant to get access. A large works area was also constructed to provide hard standing for the plant and storage for the tonnes of materials to be put into the channel and lower river channel on completion which ranged from gravel to large boulders. This is not the kind of works which can be done by a few volunteers with shovels and wheelbarrows! It is also the kind of work which requires a lot of manpower over a period of weeks and cannot be rushed.

lower river channel (marked as “drain” on the plan) above and below where the new channel will enter. This too fell victim to the weather and it was not possible to get the gravel in place before winter and so it will be put in as soon as the land is firm enough for plant to work on, probably in June this year. That should provide a major boost for the barbel amongst other fish and wildlife and enhance the population over a substantial length of the Loddon as the smaller fish spread out downstream. With luck, this will make up for the loss of spawning habitat in other areas.

The site requires landscaping and the finishing touches and it will soon mend once the last of the heavy works have been completed. It is a pity that the spawning gravels will not be in place in time for spawning in 2011, but they will be monitored in 2012 to see what fish make

use of them and to assess what impact they have had. The wet woodland should regenerate quickly, especially as it will now have the water essential for its survival and in a couple of years, the whole site should look natural and with only a few clues as to

there in the end.

Now of the big question; how much did it all cost? A lot is the answer to that and that is something you might like to think about in the age of the Big Society. If, as has been hinted by government, more responsibility for works

DEFRA (through WFD funds) and the Environment Agency (through Flood Risk Management). A small amount of money may be needed from the fisheries budget for additional works this summer but we got £289,000 worth of spend in total which is in addition to

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its engineered origin. I will report on all that in due course. These two articles only give the briefest of outline of the work involved in getting this project up and running. It took two years hard work to get started and to obtain the funding. During the investigations, a letter was unearthed from old EA files which identified the need for restoration work at Arborfield. That letter was dated 21 April 1995! We get

such as this is devolved to the Big Society (you lot, in case you were wondering), who is going to pay for it and where will the money come from? Given that some of the funding sources which paid for this work have already been axed, money may be much harder to come by in the future. Anyway, let's just be thankful to the following bodies which provided the funds to restore Arborfield which were the Barbel Society, Thames Water,

the rod licence money. The Barbel Society funds may look small in comparison to the other spend, but they did provide a very important source of money for a job which otherwise might have been missed out. One more thing; all this could not have taken place had we not had a dedicated EA Fisheries Officer making sure it went ahead and securing funding from government. Let's hope it all meets with the approval of the barbel!

Just another river? No!

This is a special place, and it's the Barbel Society's syndicated fishery at Topcliffe on Swale.

All yours to fish for £35!

