



Habitat Advisory visit to the Barlow Brook,  
Derbyshire, undertaken by Vaughan Lewis,  
Windrush AEC on behalf of Barlow Brook  
Flyfishers  
May 2002

## 1.0 Introduction

This report is the output of a site visit undertaken by Vaughan Lewis, Windrush AEC to the Barlow Brook Flyfisher's fishery on the Barlow Brook, Derbyshire on 25 May 2002. The visit was sponsored by Orvis, as part of its commitment to support habitat enhancement schemes through the offices of the Wild Trout Trust.

Comments in the report are based on observations on the day of the site visit, and discussions with Brian Clarke (Barlow Brook Flyfishers) and Alan Mullingar (Environment Agency). Throughout the report, normal convention is followed with respect to bank identification i.e. banks are designated Left hand Bank (LHB) or Right Hand Bank (RHB) whilst looking downstream.

## 2.0 The fishery

The Barlow Brook is a small tributary of the River Rother, Derbyshire. Its geology is dominated by underlying Millstone Grit, with the Brook experiencing an associated flashy flow regime. Barlow Flyfishers own the majority of the fishing rights for approximately 1km upstream and 1km downstream of Furnace Farm Bridge (SK351754). The short lengths of fishing that the club does not own are leased from the riparian owners.

In addition, the club has negotiated access to fishing on the Barlow Brook within the boundaries of the Barlow Fishery, owned by Rex Ward (SK336757-SK 344754).

The river contains a self-sustaining stock of brown trout *Salmo trutta* and bullhead *Cottus gobio*. The latter species is cited in Annex II of the EU Habitats Directive, highlighting its conservation importance in a European context. An unsuccessful trial introduction of grayling *Thymallus thymallus* was undertaken in 1996. Other species of conservation importance present in the Brook include white-clawed crayfish *Austropotomobius pallipes* and water vole *Arvicola terrestris*.

### 2.1 Upstream of Furnace Farm Bridge

This section of the Brook was heavily shaded, with mature trees including sycamore *Acer pseudoplatanus*, alder *Alnus glutinosa*, ash *Fraxinus excelsior* and hawthorn *Crataegus monogyna* present on both banks.

The channel had a well developed pool-riffle regime, with a number of riffles dominated by gravel and cobble. These provided excellent spawning and juvenile habitat for brown trout, particularly as the gravel was relatively un-imbedded. A significant benthic growth of diatomaceous algae was present, suggesting a combination of low flows and high water temperatures during the summer, coupled with organic enrichment.

Some 400m upstream of Furnace Farm, post and rail stock fencing had recently been erected by a riparian owner. The fencing projected significantly into the main channel, forming an obstruction and posing the risk of gathering large amounts of debris during high flows. In addition, the design of the fencing allowed access to stock over a long length of bank, considerably increasing the chances of erosion. It is understood that the fencing had been erected without the necessary Land Drainage consent from the Environment Agency (EA). The EA are believed to be pursuing this matter.

A large pile of garden waste, dominated by grass clippings was noted tipped on the RHB a short distance upstream.

Some localised erosion of both the LHB and RHB was noted near to the garden waste.

### 2.2 Downstream of Furnace Farm Bridge

The channel was heavily shaded in places by mature trees. These formed part of Cobnar Woods, a council owned holding of significant conservation value. The channel exhibited a good pool-riffle regime, with a number of riffles dominated by gravel and cobble. These provided excellent spawning and juvenile habitat for brown trout, particularly as the gravel was relatively un-imbedded. A significant benthic growth of diatomaceous algae was again noted.

Adult trout habitat was abundant, being provided by undercut banks, tree root systems, large woody debris and deep glides/slacks. Sections of bedrock were present within this reach. Well established, gravel dominated point bars are present on the inside of a number of meanders. A series of small weirs built by the club were present at the upper end of this reach.

A number of small trash dams comprised of large woody debris were present.

No instream macrophytes were present in this section. Attempts to introduce water crowfoot *Ranunculus spp.* had proved unsuccessful. Small stands of water moss *Fontinalis antipyretica* were present.

The channel gradually became deeper, with a lower flow velocity towards the downstream limit of the club's fishery. This was due to the backwater effect of an old stone and concrete dam. This retained a head of approximately 1.5m, with a high level channel on the LHB feeding an adjacent coarse fishing lake. The weir as constructed was impassable to fish.

The invertebrate fauna of the Brook appeared both diverse and abundant, with Baetid nymphs, stone-cased caddis and freshwater shrimp *Gammarus pulex* abundant.

Riparian habitat was generally good. Grazing was present on both banks with cattle on the RHB and horses on the LHB at the upper end of the section. A combination of light stocking density and partial fencing prevented any significant damage to the bank structure. Alder trees along the Brook exhibited symptoms of *Phytophthora* infection, with dead and dying individuals noted.

Below the downstream boundary of the club's fishery, the local council owned the Brook. The channel was deeply incised in places and heavily shaded by Cobnar Woods. There was significant unofficial angling, particularly by children. In-channel habitat quality was excellent, with adequate sections of good quality spawning, juvenile and adult habitat.

### **2.3 Rex Ward's water**

The Barlow Brook ran past a series of very intensively managed trout and coarse fishing ponds that comprised Barlow Fishery. Effluent discharged from these ponds to the Brook via a recently installed settlement lagoon. A second discharge entered the Brook in this reach from Barlow STW. It is understood that a recent de-watering operation at Crowhole Reservoir, resulted in a significant discharge of silt to the Barlow Brook.

In-channel habitat quality and abundance in this reach of the Brook was similar to that found in the downstream reaches.

### **3.0 Discussion and management recommendations**

The Barlow Brook was an excellent small stream fishery. It showed a good structural diversity with respect to instream habitat, with self-sustaining stocks of brown trout present. However, a number of issues were identified during the site visit that should be addressed to optimise the fishery value of the Brook:

- The Brook was significantly shaded by riparian trees. Establishing a regime of limited, rotational coppicing would be of great benefit. Increasing light penetration into presently tunnelled river sections would be of benefit to instream vegetation and valuable fringing marginal vegetation. The conservation value of the existing trees should not be under-estimated and great care should be exercised in the selection of trees to be cut
- The arisings from the tree trimming should be used to create faggots, roughly 2m long with a diameter of approximately 300mm. Once manufactured, the faggots can be used to locally narrow the channel. They should be pinned in place using wooden stakes and backfilled with secured brushings. The top of the faggots should be set at approximately 100-150mm above mean summer water level. Details of faggot techniques can be found in the Wild Trout Trust guide provided to the club. Note that the installation of faggots or any other work to the bed or banks of the Brook or within 8m of it, may require the consent of the EA.

- Large woody debris (LWD) is an integral component of stream ecology. The benefits for retaining it are clearly laid out in the recent EA R&D document, “Large Woody Debris in British Headwater Rivers”. Key conclusions of the report include:
  - An increase in both mean flow depth and velocity and variability of both parameters.
  - The development of high physical habitat diversity both in-channel and in the floodplain. Removal of LWD reduces both habitat quality and availability for juvenile and adult brown trout.
  - Although active LWD dams may impair upstream migration of fish at low flows, they rarely do so at high flows.
  - LWD have significant benefits to the control of run-off at the catchment scale.
  - River and riparian management has important effects on the distribution and character of dead wood accumulation within the river system.

The report also provides recommendations for the management of LWD, the most important of which is “although there are certain situations that may require wood removal to eliminate stream blockage, the wisest management is no management”. Building on this simple truism, it is recommended that before any future work to remove LWD from river channels is undertaken, the wider implications of the proposal on the whole river system are considered, rather than just the potential (in many cases unproven) benefits to salmonid populations. In addition, the impact of planned riparian tree work on the supply of LWD to the river should be considered. In some circumstances, it may be beneficial to allow trees to fall into the channel, provided the risk of increased flooding is acceptable.

- The incidence of *Phytophthora* infection of alder trees is likely to result in a significant long term reduction in the abundance of this species. This is clearly a double edged sword, with the resulting reduction in shading likely to be of benefit to the growth of fringing riparian vegetation, whilst the loss of binding root structure may have implications for bank erosion.
- The small weirs erected by the club have been well designed and built. They are currently not having any significant impact on the fishery. However, it is not recommended that any more are constructed as they may interfere deleteriously with the Brook’s natural geomorphological processes.
- The large weir at the lower end of the club’s reach is significantly damaging the fishery. It is responsible for upstream habitat degradation via the processes of over-deepening and silt deposition. It also prevents upstream fish migration. It is recommended that the EA should be approached with a view to promulgating a project to remove the weir. Ideally, it would be removed and a series of pools and chutes or riffles installed at a lower level. This would allow fish passage and reduce the damage to upstream habitat, whilst still allowing a water supply to the existing coarse fish ponds. This is a large and relatively complex scheme, with funding implications that are likely to be beyond the scope of the club on its own.
- Issues relating to fencing should be pursued. In particular, the EA should be asked to enforce the removal of the illegal fencing upstream of Furnace Farm. Stock fencing should be installed at locations where local damage is apparent.
- Steps should be taken to prevent future tipping of garden waste alongside the Brook. This poses a small but significant risk of organic pollution/enrichment to the Brook.
- It is understood that Barlow Fishery has had problems achieving its statutory discharge consent and has in fact had to install a secondary settlement lagoon. Similarly, Barlow STW has recently been upgraded. It is likely that the nutrient rich discharge from both sources is helping to promote the growth of benthic diatomaceous algae.
- Of primary importance is a thorough investigation of the present status of both discharges. They will have a statutory discharge consent standard that the operators are legally obliged to meet. Regular samples are taken by the EA and the water company. The results of these samples are placed, along with the consent standard, on a publicly accessible register at the EA offices. On payment of an administrative fee, members of the public can inspect the register and obtain copies of data. I would strongly recommend that the club approach the Environmental Protection team at the local EA office and ask for a copy of the data from the public register.

The EA should also be asked in writing whether the discharges have met their discharge standard over the past 5 years and if not, what action the EA are taking regarding the matter. There is a right of prosecution, both to the EA and the general public if any discharge is failing its consent.

- The club does not currently have any water quality, water resource, macro-invertebrate or fishery data for the Brook. It is recommended that the club contact the EA with a view to obtaining these data.