



Habitat Advisory visit to the Leigh Brook
and Cradley Brook, Worcestershire,
undertaken by Vaughan Lewis, Windrush
AEC on behalf of Worcester Flydressers
June 2002

1.0 Introduction

This report is the output of a site visit undertaken by Vaughan Lewis, Windrush AEC to the Worcester Flydresser's fishery on the Leigh Brook and Cradley Brook, Worcestershire on 12 June 2002. The visit was sponsored the Wild Trout Trust.

Comments in the report are based on observations on the day of the site visit, and discussions with Roger Smith, Worcester Flydressers. 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 fisheries

Leigh Brook

The Leigh Brook is a tributary of the River Teme, entering the Teme at Leigh Court (SO 784536). The Worcester Flydresser's fishery on the Leigh Brook covers four beats, running from Pettyford Bridge (SO767524) upstream to beyond Hopton Court at SO754521. Worcester Flydressers has 30 members who fish on an any-day basis on both Brooks.

The river has a sandstone-dominated geology. As a consequence of this and past dredging activity, the river had an incised channel with friable banks. Dense stands of riparian trees including ash *Fraxinus excelsior*, hawthorn *Crataegus monogyna* and oak *Quercus robur* on both banks cast heavy shade on the channel. Short sections of bankside trees had been cut by the Flydressers in order to reduce shading.

Some of the alder *Alnus glutinosa* trees present showed clear signs of being infected with *Phytophthora*.

In-channel habitat was excellent, with a well developed pool - riffle sequence. The riffles were dominated by gravel of a suitable size for brown trout *Salmo trutta* spawning. Sediment loading on the riffles was moderate, with the gravel being relatively unimbedded. There were adequate lengths of juvenile and adult habitat present. Small stands of water crowfoot *Ranunculus spp.* were present where bankside tree cutting had taken place.

Stone turning revealed a good macroinvertebrate fauna including cased caddis and flattened stone clinging Ephemeroptera nymphs. The fishery is renowned for a good mayfly hatch. A number of bullhead *Cottus gobio* were also noted. This species is cited under Annex II of the EC Habitats and Species Directive, highlighting its importance in a European context.

Fish stocks in the Leigh Brook were excellent, with rods regularly catching more than 10 brown trout in a session. Fish average between 5" - 10" in length. The natural fish stocks are supplemented by 100 - 150 10" hatchery reared brown trout annually. A catch and release policy is operated on the fishery.

A few grayling *Thymallus thymallus* began to be caught by rods two seasons ago. These fish are believed to have originated from a stocking carried out to the Teme by the Environment Agency (EA).

Salmon *Salmo salar* are known to spawn in the Leigh Brook, with 2 fish seen during winter working parties in 2001/2.

There were extensive stands of Himalayan Balsam *Impatiens glandifera* present over much of the fishery. Some coppicing had been undertaken in this beat to good effect.

Limited stock erosion was evident on the LHB and RHB in Beat 3 due to stock crossing the river and the presence of a scramble track on the LHB. The water was noticeably coloured.

A considerable amount of large woody debris (LWD) was present in the channel as a result of fallen trees and branches.

Cradley Brook

The Cradley Brook is a tributary of the Leigh Brook, joining at Batchelor's Bridge (SO735504). The Worcester Flydresser's fishery has 5 beats, running from Wold Mill (SO732474) to adjacent to Bearswood Common (SO731494).

Fish stocks are dominated by brown trout, with no grayling and access to salmon precluded by an impassable downstream weir. Club members catch good numbers of wild trout averaging 5"-10". At the EA's request, the Brook has not been stocked in order to protect the integrity of the native strain of brown trout.

The clarity of the river was substantially better than in the Leigh Brook, possibly reflecting less erosion of fine sediments in the catchment and the influence of local limestone strata.

The in-channel habitat was excellent with a well-developed pool-riffle regime. The riffles were dominated by large gravel and pebbles of a size generally over large for trout spawning. However, there were pockets of suitably sized gravel present throughout the riffles. Generally, the gravel was heavily imbedded, with a moderate loading of fine sediment.

The dense tree fringe on both banks provided abundant cover within its root system whilst casting heavy shading over the channel. Long sections of the river were bounded by wide copses'/small woods causing tunnelling.

Considerable amount of LWD was present within the channel.

Riparian land use was dominated by lightly stocked permanent pasture or arable fields. As a consequence, there was little evidence of overgrazing.

3.0 Discussion and management recommendations

Leigh Brook

Key habitat issues on the Leigh Brook relate to overshadowing of the channel and local overgrazing. This shade is restricting the growth of marginal vegetation, with associated damaging impacts on the rate of erosion, the provision of marginal cover for fry, and water flow velocity. In order to reduce overshadowing whilst retaining the valuable erosion protection provided by tree root systems, thinning of the riparian tree canopy is required. The club has already started this process, with some limited coppicing having taken place.

This process should be continued with rotationally coppicing undertaken in order to create an overall dappled shade over the river. Cutting on the south side of the channel is particularly beneficial, as light incidence is greatest from this direction. 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. A felling licence is required from the Forestry Authority for all significant tree felling, including coppicing. Timber arisings from the coppicing could be utilised to create stick pile otter holts. These are used by otters for temporary lying up or in exceptional circumstances, for breeding.

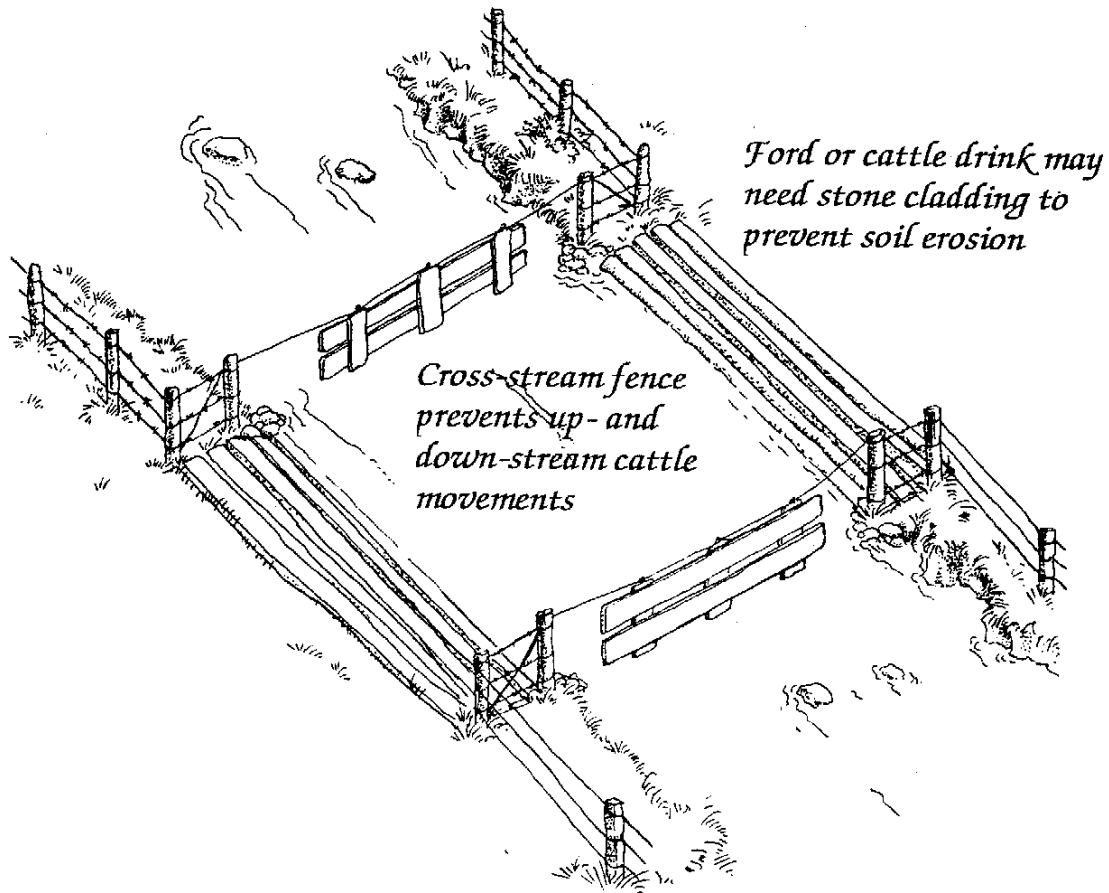
Where possible Large Woody Debris (LWD) should be retained in the channel. Large woody debris (LWD) is an integral component of stream ecology. The benefits for retaining it are clearly laid out in the recent EA R&D document, "Large Woody Debris in British Headwater Rivers". Key conclusions of the report 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 erosion on the Leigh Brook resulting from cattle crossing the river can be addressed by creating a formal cattle drink/ford lined with suitably sized stone bed material. The crossing should also be fenced using water gates (see diagram) to prevent stock access into the rest of the river.



Sediment eroded by the activities of scramblers on the LHB can be attenuated by the provision of a grassed buffer strip between the track and the river. Ideally, this should be at least 10m wide in order to optimise the entrapment of fine sediment.

The success of brown trout egg hatching can be enhanced by cleaning of spawning gravels. The quality of the gravel can be improved by establishing a regime of cleaning spawning gravels each September. This can be achieved by either manual raking, or by the use of high-pressure water jets. Care must be taken to clean riffles rotationally, with only short sections being treated annually. It is important that the EA are contacted prior to any cleaning of gravel, due to the possible discoloration of water in the river resulting from the operation. The same concerns dictate that downstream neighbours should also be forewarned of the operation.

Given the apparently good population of self-sustaining brown trout present in the Leigh Brook, the value of augmentation stocking is questionable. The introduction of hatchery reared fish can have significant detrimental impacts on native fish stocks and, if possible, is best avoided. To this end, it is recommended that no fish are introduced during season 2003. Angler catches should be monitored and reviewed against past catches. If no

significant decrease is noted, no further stocking need be undertaken and the money saved re-directed into habitat enhancement works.

Cradley Brook

Tree management is the key issue with respect to habitat management on the Cradley Brook. Coppicing should be undertaken as described for the Leigh Brook. However, in places the riparian tree fringe on the Cradley Brook is much wider than that found on the Leigh Brook. In these locations, the benefits of riparian coppicing are questionable; shading will still be cast by trees further from the bank. It is suggested that a short section of south bank should be coppiced and the results monitored.

The present no-stocking policy should be continued to protect the integrity of the native fish stock.

4.0 Potential sources of grant aid.

A number of sources of funding for habitat enhancement work could be pursued by the club:

- Wild Trout Trust. The WTT has a small pot of money allocated for use in habitat enhancement projects. I would suggest that the club contacts the Trust's project officer, Edward Twiddy via the web site www.wildtrout.org or by post at 92-104 Carnwath Road, London, SW6 3HW.
- Heritage Lottery Funding. This is a fund that generally supports large scale projects and is probably not ideal for small local initiatives.
- Land fill tax credit. All landfill operators are obliged to operate an environmental taxation system. Part of the income from this scheme is available to fund environmental schemes via the ENTRUST system. This is the not-for-profit body that administers the Landfill tax credit scheme. You can find your local office and consult the online database of registered environmental bodies at www.entrust.co.uk
- Agri-environment schemes. These include initiatives such as Countryside Stewardship and Environmentally Sensitive Area payments to farmers for schemes such as fencing, buffer strip creation and low intensity grazing schemes. Contact your local DEFRA office for details.
- Other funding may be available from the Environment Agency and your local authority.