



Habitat Advisory visit to the Lorrha
River, Lorrha, Co.Tipperary, Eire
Undertaken on behalf of Lorrha and
Rathcabban Anglers by Vaughan
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1.0 Introduction

This report is the output of a site visit undertaken by Vaughan Lewis, Windrush AEC Ltd to the Lorrha River, Pallas River and Brosna River on behalf of the Lorrha and Rathcabban angling club on 13 November 2006. The visit was undertaken on behalf of the Wild Trout Trust.

Comments in the report are based on observations on the day of the site visit, and discussions with members if. Throughout the report, normal convention is followed with respect to bank identification i.e. banks are designated Left Bank (LB) or Right Bank (RB) whilst looking downstream.

The Lorrha and Rathcabban angling club control several reaches of the Rivers Lorrha, Pallas and Brosna. The club has approximately 30 members.

2.0 Habitat description

The upper reaches of the Lorrha ran through an area of peat. The river had been repeatedly dredged for land drainage purposes, severely damaging its habitat quality with respect to brown trout. The remaining substrate was dominated by peat, sand and clay, with very limited amounts of gravel present. In conjunction with very low summer water flows in this reach, it is unlikely that it has, or will have, any significant value for spawning or juvenile trout.

Immediately upstream of the Lorrha village, the river had an incised channel, with the water level some 1.5m –2m below the surrounding land level. The channel had a relatively straight course, probably as a result of historic realignment for land drainage purposes. A high pile of spoil, including large limestone boulders, on the LH was evidence of further dredging activity.

Where the river's gradient was steeper, there were sections of faster flowing gravel dominated riffles, suitable for spawning and juvenile brown trout *Salmo trutta* and Atlantic salmon *Salmo salar*. In the reaches with a shallower gradient, the gravel was poorly sorted, with a high percentage of fine sand and sediment entrained within the hard substrate. This would act to reduce both the percentage of deposited trout eggs hatching following spawning, and the availability of habitat for early fry and parr stages.

The lack of Large Woody Debris (LWD) in the stream was partly responsible for the lack of bed scouring. Recent work undertaken by the local council on the LB of the reach had significantly reduced the amount of LWD present. In addition, a number of trees and shrubs had been grubbed out of the bank using a hydraulic excavator. Whilst this had reduced shading of the channel, it had also left bare banks, vulnerable to erosion and consequent mobilisation of fine sediment into the channel.

There was evidence of light cattle poaching on the RB of the channel, with riparian vegetation and bank structure damaged by stock.

Downstream of Lorrha village, the river was heavily shaded by bankside trees and shrubs. As a consequence, there was little instream, marginal or fringing riparian vegetation present, reducing habitat quality and availability particularly for juvenile trout. Where the tree canopy was more open, there were sections of reed canary grass

Phalaris arundinacea present. A moderate sized sewage treatment works discharged into the river. No information was available regarding the effluent quality discharged from this works.



Heavily shaded section of river downstream of the sewage treatment works

Further downstream the gradient of the river reduced with the channel running through an area of wetland. The river had been extensively dredged, leaving it over-deep with no gravel visible on the bed. Extensive beds of yellow flag *Iris pseudacorus*, sedge *Carex* spp. and reed canary grass surrounded the river, with the vegetation growth spreading into the channel in places. There was also a significant growth of submerged vegetation. A covering of duckweed was present over the surface of much of the river, indicating the generally slow water velocity.

The Lorrha discharged into Friar's Lough, a stillwater of some 5 ha, with depths varying up to 5m. All salmonid fish migrating upstream from Lough Derg and the Shannon system must pass through the lough in order to reach the Lorrha. The entrance and exit of the river into and out of the lough were partially occluded by an extensive growth of emergent vegetation. Growth would be likely to be more extensive during the summer period, further reducing free access to the lough and the river upstream.

In addition, it may be that water quality in the lough during the summer, particularly water temperature, may pose a partial barrier to migrating trout and salmon.

The Pallas river was a tributary of the Brosna. The channel was quite shaded by a variety of shrubs and trees including gorse *Ulex europaeus*, hazel *Corylus avellana*, goat willow *Salix caprea* and hawthorn *Crateagus monogyna*. The river had a relatively steep gradient, with the substrate dominated by gravel. Piles of spoil on the RB were evidence of previous land drainage activity. Surrounding land use was dominated by permanent pasture, with electric fencing erected to protect the banks from grazing stock. As a result there were well-vegetated buffer strips alongside the river. There was some water cress *Rorippa nasturtium-aquaticum* present along the

margins, with willow moss *Fontinalis antipyretica* the dominant submerged plant species. Some reduction in shading would be beneficial in promoting additional vegetation growth.

Further downstream, the local council had cleared several sections of the river using a hydraulic excavator. This had resulted in a loss of instream habitat, with much of the hard substrate having been removed. The banks had been destabilised, leaving it vulnerable to erosion. As a result of this clearance of sections of the channel, numbers of small brown trout had gathered in the resulting open pools. These were evidence of the river's recovery following a significant slurry pollution some 5 years ago.

Below these reaches, the river was less shaded, running largely through open grass fields. However, the bed remained relatively uniform, with little sorting of the gravel substrate or variation in depth.

Mink *Mustela vison* were present within all catchments. The club are controlling the numbers of this predator by the deployment of live traps.

3.0 Fish stocks

The Lorrha and Pallas contain stocks of wild brown trout *Salmo trutta*. The average size of rod caught trout is around 250g, with fish occasionally caught in excess of 1350g. Numbers of fish in both rivers are believed to have declined in recent years. In addition to trout, Atlantic salmon were historically known to spawn in the two rivers. Latterly a few salmon have been recorded in either stream.

Friar's Lough contained a population of mixed coarse fish including pike *Esox lucius*, eel *Anguilla anguilla*, bream *Abramis brama*, and tench *Tinca tinca*.

A strong population of white-clawed crayfish *Austropotomobius pallipes* was present in the river. This rare species is cited in the International Union for the Conservation of Nature (IUCN) Red Data book in recognition of its high conservation value.

4.0 Recommendations for management

- The upper reaches of the river had been significantly damaged by previous drainage operations. As a consequence of this and the very low summer flows in the upper river, it is recommended that no significant resources should be allocated here.
- The work undertaken by the council has reduced instream habitat quality, particularly in the Pallas river. It is recommended that no further work of this nature is undertaken, with the resources of the council directed towards undertaking rotational coppicing of riparian trees, and the introduction and management of Large Woody Debris (see below)
- 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 LWD are manifold and 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.

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.

Any future tree management along the banks should focus on the establishment of a regime of rotational coppicing rather than their grubbing out. This latter practice is very destructive, removing valuable trees and destabilising the bank. Rotational coppicing can be used to provide an uneven stands of trees along the riverbank and the dappled shade that represents the optimum conditions for the development of juvenile trout habitat.

- In order to gauge spawning success, it would be of great benefit if an annual count of brown trout redds could be made. This should be undertaken over the same length of water annually, during the period November – January, in order to allow inter-year comparisons of spawning success. Examination of the river at night using a torch would also allow numbers and size of individual fish spawning to be recorded.
- Electrofishing sampling of the rivers would be very valuable, both to identify good areas for spawning and juvenile salmonids, and also to quantify numbers of fry and parr of these species. The fisheries board may be able to assist with this work.
- The piles of excavated limestone boulders and stones could be utilised in order to improve the instream habitat. Where flooding considerations permit, the stone could be reintroduced to the river, increasing flow diversity and providing lies for individual trout, along with refuge sites for crayfish.
- Where grazing agricultural stock have access to the banks, there was considerable evidence of damaging erosion. The erection of a stock proof fence is recommended along these reaches in order to redress this damage.
- The quality of the effluent discharged from the STW should be ascertained from the local council. Ideally, a works of this nature and size should produce an effluent quality better than 30 mg^l⁻¹ biochemical oxygen demand (BOD), 20 mg^l⁻¹ suspended solids and 5 mg^l⁻¹ ammonia. In addition, it would be advisable to undertake some seasonal sampling of macroinvertebrates from the river upstream and downstream f

the works. By analysis of the sample and assessing the abundance of pollution sensitive species, these can be used to infer the chemical quality of the river. Further details of sampling methodologies and identification keys can be obtained from www.riverflies.org

- Free access into and out of Friar's Lough should be maintained. Rather than resort to damaging and relatively expensive dredging operations, it may be preferable to use the herbicide glyphosate. This chemical is approved for use in and near to watercourses and is inactivated by contact with water. Provided that all necessary consents are obtained from the regulatory authority in Ireland and the manufacturers instructions are followed, this is a safe and cost effective method of vegetation control.
- Salmon lies can potentially be created on the Brosna by the use of wooden groynes. These have proved very effective in lowland southern England streams that are not dissimilar to the Brosna. They can be easily be constructed from woven hazel or willow as in the photographs below.

