

Habitat Advisory visit to the River Wye,
Derbyshire
undertaken by Vaughan Lewis, Windrush
AEC on behalf of Cressbrook and Litton
Flyfishers Club

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1.0 Introduction

This report is the output of a site visit undertaken by Vaughan Lewis, Windrush AEC to the Cressbrook and Litton Flyfishers fishery on the River Wye, Derbyshire on July 12th 2001. 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, discussion with the club bailiff, David Percival and information provided in an Environment Agency ecology report.¹. 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

Cressbrook and Litton Flyfishers control some 8 km of the River Wye, running downstream from Miller's Dale near Buxton to Cressbrook Mill. Structurally, the fishery can be divided into two broad sections. The upper river downstream to the Angler's Rest public house has an excellent gradient and instream features typical of an upland river. However, the lower river is significantly impounded by a number of large weirs and mill heads. As a consequence, the channel in this section is overwide and overdeep, with significant deposition of fine sediment. The two sections of the fishery are considered in detail below.

2.1 Miller's Dale downstream to the Angler's Rest public house.

The upper length of this reach of the River Wye runs through a steep gorge, with extensive areas of deciduous woodland, both on the riparian strip and the some of gorge slope. Much of this woodland is under the control of Derbyshire Wildlife Trust. Short sections of the channel are heavily shaded, resulting in suppression of instream and marginal growth. Generally however excessive shading is not of great significance, with stands of water crowfoot *Ranunculus spp.* present. The steep profile of the gorge prevents any agricultural activity on this upper reach, significantly reducing the risk of sediment input into the river. However there is a public footpath running adjacent to the channel, mainly on the LHB but crossing to the RHB for short stretches. The path is heavily used by walkers and is a potential source of sediment run-off into the Wye at times of heavy precipitation.

In-stream habitat diversity is excellent, with a well-developed pool-riffle regime. There is abundant gravel of a suitable size for spawning trout. The gravel is moderately embedded, with a low to moderate sediment load present. Larger gravel and cobbles are present in riffles and shallow runs, providing excellent habitat for juvenile trout. The good quality of the habitat is confirmed by the EA ecology report¹.

Significant quantities of fallen wood are present in the channel, forming a trash dam in at least one location. This large woody debris (LWD) is a vital component of all streams. It is of great importance in the geomorphological processes associated with the river, especially the retention of fine sediment and the sorting of bed material. This latter process is particularly relevant to the maintenance of silt free gravel suitable for spawning trout. LWD also provides excellent cover for trout of all sizes, and for a range of invertebrate species.

A significant perennial spring emerges via a small tributary stream at Wormhill. The spring has great potential as the site for a deep substrate trout incubation box. These small streamside hatcheries have the capability to produce large numbers of self-stocking swim-up trout fry from green or eyed ova. Overall costs per fry are relatively low. Key advantages include the fact that fry are larger than hatchery reared contemporaries and are not believed to suffer from detrimental behavioural modifications associated with hatchery rearing.

No introductions of hatchery origin stock fish have been undertaken on this upper section of the river for several years. However, the presence of a number of wild spawned brown trout *Salmo trutta* and rainbow trout *Onchorynchus mykiss* is empirical evidence of successful recruitment to the fishery. It is likely that fish stocked by the Buxton Angling club upstream of the Cressbrook and Litton stretch will have migrated downstream, augmenting naturally spawned stock. Recent studies on the River Dove focussing on the genetic make up of stock have shown that many of the "wild" trout spawning in the main river carry genetic markers showing that their ancestors were in part of hatchery origin. It is probable that the wild spawning fish in the Wye have a similar mix of wild and hatchery progenitors.

The EA ecology report¹ notes a significant decline in the number of juvenile trout (species unspecified) found in the Miller's Dale area during the 1999 electrofishing survey in comparison with the number found in 1991. Further, the report notes that the fishery quality as assessed by the national Fishery Classification System places it in the lowest quintile when compared to rivers of this type in England and Wales.

Fishing pressure on this section of the fishery is relatively light. Notwithstanding this, the adoption of a catch and release policy on the upper river would protect the valuable stock of wild spawning trout.

During the site visit, a distinct smell of aerated sewage effluent was noted on the upper river. Significant foaming was also noted downstream of several cascades and riffles. Both of these facts are indicative of a heavy loading of sewage effluent in the river. The Environment Agency ecology report¹ confirms that Buxton Sewage Treatment Works (STW) is having a significant detrimental impact on the ecology of this section of the Wye. River water quality and biological quality as assessed by the General Quality Assessment (GQA) and Biological Monitoring Working Party (BMWP) score are poor, with a GQA of C and a BMWP of 74. The GQA system describes category C as "fair", whilst the BMWP score is significantly lower than downstream scores (e.g. 170 at Ashford).

No data were provided on the level of abstraction either directly from the river or from boreholes within its groundwater catchment.

2.2 Angler's Rest public house to Cressbrook Mill

The character of the River Wye changes dramatically in this lower reach of the club's fishery. A number of impoundments including Litton Mill, "Freddy's" weir and Cressbrook Mill have a significant impact on the river's flow characteristics and geomorphology. As a consequence, the channel is overwide and overdeep for much of its length, with limited availability of suitable habitat for spawning or juvenile brown trout.

Heavy deposits of sediment have accumulated upstream of both of the main mill heads. The option of dredging/desilting the impoundment upstream of Cressbrook Mill has apparently been raised by members of the club. The cost (probably in excess of £50,000), the practical problems of sediment disposal and the very real possibility of contamination of sediment arising from the previous operation of the Mill combine to make this an unrealistic proposition.

Passage of fish is prevented by the mill impoundments, effectively spatially isolating the intervening reaches.

As a direct consequence of these facts and the heavy angling pressure on this more easily accessible reach, extensive stocking with hatchery reared trout is undertaken. Some 2,000 mixed brown trout and rainbow trout are introduced annually. Opportunities exist at the mill sites to utilise deep substrate incubation boxes to supplement trout stocks in the river.

3.0 Management Recommendations

3.1 Miller's Dale downstream to the Angler's Rest public house

Structurally, this section of habitat is excellent, with the current management regime protecting habitat quality. There are however, a number of minor points that could be addressed to further improve the current situation:

- Establish a management presumption for the retention of LWD in the channel. LWD should only be removed in the event that it poses a flooding hazard or becomes of significant impediment to angling access.
- Discuss the option of establishing a regime of limited, rotational coppicing with Derbyshire Wildlife Trust. Increasing light penetration into presently tunnelled river sections would be of benefit to instream vegetation and valuable fringing marginal vegetation.
- Establish 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 must also be recognised that this option may well favour increased spawning success of the earlier breeding native brown trout to the detriment of the later breeding, introduced rainbow trout. 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.

A number of other issues unconnected with habitat management should be considered. These include:

- Of primary importance is a thorough investigation of the present status of the discharge from Buxton STW. The works will have a statutory discharge consent standard that Severn Trent Water is legally obliged to meet. Regular samples are taken both 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 Trentside offices of the EA, Midland Region and ask for a copy of the data from the public register. The EA should also be asked in writing whether the works has met its 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 the works is failing. It may be that the EA have negotiated with Severn Trent water and OFWAT to have Buxton STW included in the Asset Management Process. This is the mechanism by which prioritised investment by the water companies in order to achieve environmental objectives is agreed with the water regulator and the EA. In the event of dissatisfaction with any of the EA's replies, I would recommend contacting the Angler's Conservation Association for further advice with the matter. I assume that the club is paying member of the association. If not, it should join as a matter of urgency.

There is little doubt that the discharge from Buxton STW is a significant and serious limiting factor on the biological (and hence fishery) quality of the river Wye through Milldale and below.

- A HABSCORE assessment should be undertaken by the EA in conjunction with a contemporaneous electrofishing survey. HABSCORE is a multi-variate habitat model that predicts the number of various size classes of trout in any given habitat. If there is a significant departure in numbers actually recorded from those predicted, it is likely to be due to poor water quality, thus reinforcing concerns regarding Buxton STW.
- The EA should be approached with a view to ascertaining what abstractions are taking place within the catchment, both directly from the river and from borehole sources.
- A policy of catch and release should be formally adopted in this section, in association with a continuation of the present "no-stocking" policy, in order to preserve valuable wild spawning trout.
- As an interim measure, discuss with the EA the possible use of one or more deep substrate incubation boxes at Wormhill Springs in order to boost juvenile trout numbers.

3.2 Angler's Rest public house to Cressbrook Mill

The impact of impoundments in this reach has resulted in a paucity of habitat suitable for spawning or juvenile trout. There is ample provision of suitable adult trout habitat. As a result, it is inevitable that this section of the fishery will continue to rely heavily on stocking in order to continue to provide recreational trout angling to members.

With respect to future management of this reach the following recommendations are made:

- The option of dredging the pond upstream of Cressbrook Mill is unrealistic.
- There are possibilities for the use of deep substrate incubation boxes at the existing mill sites.
- As part of any future planning application to develop the mill sites, the club should recommend to both the EA and local planning authority that a functional fish pass is installed as part of the re-development of the site. In the event that the mill is restored to functional use, it is imperative that the EA ensure the installation of suitable fish screen to intake and outfall structures.
- The forthcoming brown trout and grayling strategy currently being distributed in draft form by the EA for comment may entail some modification of current stocking practices. It is recommended that the club obtain a copy of the draft report and comments on it.

4.0 Summary.

The Cressbrook and Litton Flyfishers fishery on the River Wye splits into two significantly different sections. The upstream reach has excellent instream habitat quality for all lifestages of trout, and contains a generally self-supporting trout population. Its ecology is significantly impacted by the discharge from Buxton STW, with EA fishery surveys showing a decline in juvenile trout numbers since 1991.

The lower reach of the fishery has habitat that is significantly modified by mill impoundments and weir structures. The fishery in this reach is supported by extensive stocking with hatchery reared brown and rainbow trout. There are no realistic possibilities of establishing a self-sustaining trout fishery in this reach of the river.

References cited

1. River Wye Ecology Survey Environment Agency , Midland Region 1999