



**ADVISORY VISIT TO THE RIVERS LYDE AND
LODDON, HAMPSHIRE,
UNDERTAKEN BY VAUGHAN LEWIS,
WINDRUSH AEC LTD, ON BEHALF OF
GRESHAM FLYFISHERS
MAY 2005**

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1.0 Introduction

This report is based on a visit to the Rivers Lyde and Loddon, Hampshire, on the 6th May 2005 on behalf of Gresham Flyfishers. Information in the report is based on observations made during the site visit. Further details were provided by members of the club and by George Gerring from the Environment Agency.

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.

2.0 Fishery Description

Gresham Flyfishers has 65 members who fish reaches of the Rivers Loddon and Lyde. The club undertakes no regular stocking on the upper reaches of the Loddon and the whole length of their fishery on the Lyde, relying instead on natural production of brown trout.

River Loddon

The upper reach of the fishery was located downstream of Lower Mill. The channel was quite shaded in places, reducing the growth of emergent and submerged vegetation in the channel. Recruitment of brown trout is known to be reasonable in this section of the river, with redds seen during the winter and juvenile fish caught by rod and line.

A large raised berm was present on the RB of the river. This comprised a mix of soil and coarse flint gravel and presumably originated as a result of past dredging of the river.



Flint gravel deposited on the RB of the upper fishery

The middle reach of the Loddon straddled the outfall from Basingstoke sewage treatment works. It is understood that there have been periodic water quality problems associated with the discharge from this works.

Upstream of the sewage works outfall, the instream habitat was generally good, with excellent water clarity. The river channel had a relatively steep gradient with sections of riffle, shallow glide and deep glide habitat suitable for all lifestages of brown trout *Salmo trutta*. There were extensive stands of water crowfoot *Ranunculus* spp and lesser water-parsnip *Berula erecta*. The substrate was dominated by moderately well-sorted gravel. There was a significant coating of diatomaceous algae over much of the bed, indicating significant nutrient enrichment, perhaps from agricultural land within the catchment.

Overhanging marginal vegetation was well developed. There were short sections of channel that were relatively heavily shaded by riparian trees and shrubs (crack willow *Salix fragilis*, hawthorn *Crateagus monogyna*, elder *Sambucus nigra*, bramble *Rubus fruticosus*), particularly on the LB, reducing the abundance of marginal cover. Despite the presence of the trees and shrubs, Large Woody Debris (LWD) was relatively scarce within the channel. To counter the lack of LWD, the club had installed a number of simple wooden groynes in the channel.

Arable fields bounded the river on both banks, with the presence of wide, uncultivated buffer strips protecting the river from excessive erosion and run-off.

Further down the reach, the gradient flattened out, with an increasing coating of epiphytic algae on the water crowfoot and lesser water parsnip. The channel here was some 5m-6m in width.

The river bifurcated around an island containing an old duck decoy. There were extensive deposits of fine sediment in the bed of the LB channel.



Upper Loddon, showing extensive submerged weed, gravel substrate and wide buffer strip

Below the confluence of the 2 streams below the decoy island, the river was more open, with fewer riparian trees present. The channel gradient remained relatively steep. A series of groyne had previously been installed by the club. These were constructed from timber held in place by reinforcing bar driven into the stream bed.



Timber and rebar constructed groyne

There was considerable local sediment build up in and around the water crowfoot, with some of the submerged weed was coated with epiphytic algae.

A number of willow *Salix* spp. trees had been planted along the river bank. These had established and grown well. Some of the trees had been coppiced, with the subsequent multi-stemmed regrowth providing excellent low cover, without excessive shading of the channel or banks. Alders in this reach of the river showed evidence of *Phytophthora* infection.

A length of fencing installed some years ago had become semi-derelict and required replacing.



Single stemmed willow in the foreground, with a recently coppiced, multi-stemmed tree behind

The outfall from Basingstoke STW discharged on the LB of the river. There was no evidence of discolouration or excessive foaming, with the effluent visually appearing to be of good quality. The works effluent was augmenting the flow of the river significantly. Several fish > 0.5kg in weight were present in a pool downstream of the outfall.

Towards the lower end of the fishery, a large reed bed was present in the RB field. This was perched a significant height above river level and was showing signs of drying out. The elevation of the reed bed may indicate that the original river level had been significantly lowered over time, or that an alternative water supply to the reed bed, perhaps from a spring or ditch system, had been reduced or interrupted.



Discharge from Basingstoke STW

River Lyde

The club's River Lyde fishery was located adjacent to Deanlands Farm. The lower section of the fishery was very overgrown, with significant riparian tree growth (alder, hawthorn, crack willow) and associated shading. There was a considerable volume of LWD in the channel, which in combination with the tree growth rendered much of the river unfishable. There was a lot of fine sediment uniformly distributed on the bed of the river, with minimal growth of submerged vegetation.

The club had undertaken a considerable amount of work on the middle reaches of their Lyde fishery. They had effectively 'sky lighted' sections of the river by selective removal of tree limbs, in the process also increasing access for rod and line fishing. Where the channel was totally unshaded, stands of bur-reed *Sparganium* spp. had become established, in some cases partially occluding the channel.



Bur-reed in un-shaded section of the Lyde

The bed substrate was poorly sorted over much of the middle reach, with a considerable percentage of fine sediment present. There were small stands of water crowfoot and starwort *Callitriche* Spp. present in the channel.

Adult fish were generally located in the deeper water areas, a habitat type relatively under-represented in the middle section of the fishery. The extensive tree root systems and associated undercut banks were also providing valuable cover for adult fish.



Lower River Lyde showing heavy shading and fine sediment on the bed



Typical section of the middle Lyde

An area of fen type habitat was present on the LB of the middle fishery. The channel was slightly perched at this location, allowing water to seep from the river into the fen. Unsuccessful attempts had been made previously to seal the LB of the river to reduce this loss of water.

Land use adjacent to the upper section of the fishery was dominated by grass fields on the LB and woodland on the RB. The channel was more open, and incised (up to 1.5m from bank top to water level) as a consequence of past dredging work. The reduced shading had encouraged the growth of both emergent vegetation and water crowfoot. There was a good mix of shallow riffles, glides and deeper pools in this reach.

3.0 Fish stocks

No fish had been stocked in to either the upper Loddon or the River Lyde. Hatchery reared fish have been introduced by the club further downstream on the Loddon. Some of these undoubtedly migrate upstream from time to time.

Recruitment of brown trout was understood to be reasonable in both rivers, with small fish (<20cm) noted during the site visit.

Large brown trout were present in both rivers, with the Lyde in particular having fish of >2kg in weight.

Members general practice 'catch and release' with a view to conserving wild stocks within the two rivers.

Some removal of chub *Leuciscus cephalus* by electrofishing had been undertaken in the past, with a view to improving the stocks of trout present.

4.0 Recommendations

Generally the management regime promoted by the club was excellent on both the River Loddon and River Lyde. Notwithstanding this, a number of recommendations are made below that, if adopted, should prove of long term benefit to the fishery.

- Recruitment of brown trout in both fisheries was moderate. In order to enhance this, the quality of suitable spawning areas could be improved by establishing a regime of gravel cleaning each September. This could 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.
- In order to monitor the success of any gravel washing, it is further recommended that an annual count of spawning redds is undertaken by the club. Key spawning areas should be walked during November- January and observed redds logged and counted.

- In sections of both rivers, particularly the Lyde, the heavy shade cast by riparian trees, particularly those growing on the south, was 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 address overshadowing, the extension of the already established regime of limited, rotational coppicing would be of great benefit. Increasing light penetration into presently overshadowed river sections would be of benefit to instream vegetation and valuable fringing marginal vegetation. Note that the coppicing of the planted single stem willows by the Loddon will create multi-stemmed regrowth, that is of greater benefit for marginal cover, and also provides a ready source of brushings for future bank work using live willow.
- 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 may be required from the Forestry Authority. Care should be taken not to over-coppice. If shading is totally eliminated, the growth of the emergent weed could become very extensive during the summer months. The aim of any coppicing undertaken should be the creation of ‘dappled shade’ throughout both fisheries.
- In the event that emergent vegetation does increase and create significant difficulties for management of the fishery, then it can be controlled using either manual cutting or herbicide. The only appropriate herbicide cleared for use near to and in water is glyphosate (sold as ‘Roundup’, Roundup Pro Biactiv etc). It is a selective, translocated herbicide that is used to treat the actively growing plant once its leaves have emerged from the water. Glyphosate offers a cheap and environmentally sensitive option (it is inactivated on contact with water and sediment) for the treatment of emergent vegetation.

Glyphosate can be used to selectively remove small stands of emergent vegetation, creating runs and sections of clear water where required. It can be also be used carefully in order to shift sediment from strategic locations by training the river’s flow to scour these areas.

Detailed advice on the use of herbicides can be obtained from the Centre for Aquatic Plant Management capm.org.uk. The written consent of the Environment Agency is required for the use of all approved herbicides

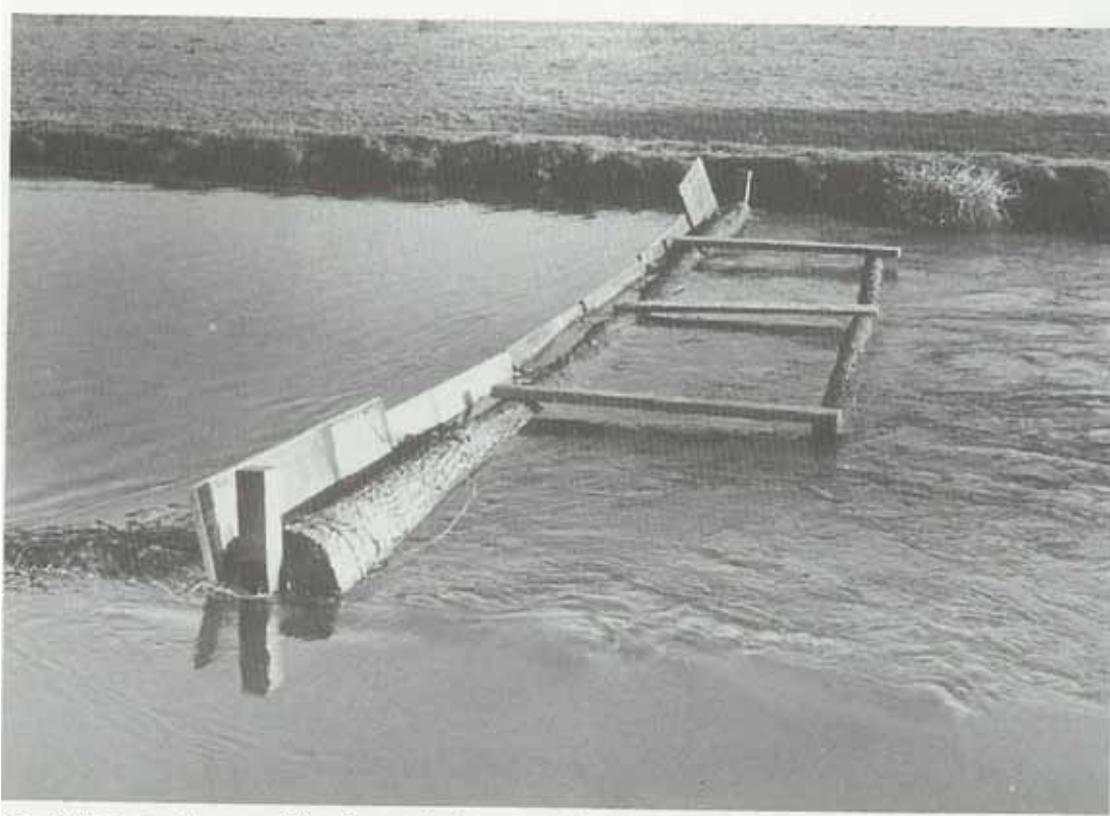
- The installed groynes were functionally efficient. However, similar, cheaper and more aesthetically pleasing flow deflectors could be created by using fallen or felled timber (see section on Large Woody Debris below).
- The use of Large Woody Debris (LWD) to provide feature to the channel is of fundamental importance to both fisheries. The benefits for retaining LWD 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.

Practical management options to increase LWD include making use of fallen timber in order to create simple flow deflectors by wiring/staking these to the bank. Timber can be used in this manner to replace the need for constructed groynes as previously installed by the club. It was interesting to note that on the Lyde in particular, there was a relatively thin layer of gravel, with soft marl present beneath this. It is very probable that scouring of the gravel layer by LWD fixed in the channel, will result in the creation of deep pools, an important and under-represented habitat type for adult brown trout.

It is important that the Environment Agency is made aware of any adopted policy to retain LWD in the channel, in order to prevent its removal during routine management operations undertaken by the Agency.

- There is very little point in undertaking any future removal of coarse fish from the River Loddon fishery. Research in several rivers in the UK has suggested that no long term benefits to the numbers of trout present can be discerned. It would be more productive for the club to accept the fact that the Loddon is a mixed fishery, and undertake management to improve it for all species of fish.
- Whilst it would theoretically be possible to reduce or even stop the loss of water from the Lyde to the fen, it would be logistically tricky and financially expensive. In addition, if successful, the conservation value of the fen itself might be reduced by changes to its hydrological regime. It is therefore recommended that no action is taken by the club with respect to this issue, unless the situation deteriorates significantly.
- The discharge from Basingstoke STW should be carefully monitored by the club. The works will have a statutory discharge consent standard that Thames 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 Environment Management team at the Frimley offices of the EA, Thames 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.
- The cleaning of spawning gravel and scouring of patches of sediment can be achieved by the use of a mud engine. This is a simple device (pictured below) that harnesses the rivers flow to create localised high water velocity. Operation is simple, with the engine being moved regularly in a downstream direction in order to clean short river lengths. It would be of particular use on the back channel around the Duck Decoy Island.



29 Silt control boom. The far tethering rope is visible below the bank; the near rope is

Mud engine

- The extensive deposits of gravel on the banks of the upper Loddon could in theory be excavated, screened on site to remove the fines and the resulting clean gravel introduced to the river. This would create a significant length of good quality trout spawning habitat, along with a wide marginal shelf area, ideal for the growth of wetland plants. However, this would be a large project, probably beyond the scope of the club on its own. It may be something however that could be considered in conjunction with the Environment Agency.
- The damaged fencing on the middle reach of the Loddon should be replaced. Seed corn funding for this or other aspects of management work may be available from the Wild Trout Trust. It is possible that the seed corn funding could then be used to release partnership monies from the Environment Agency.
- Note that the installation of faggots, LWD, timber groynes or any other work to the bed or banks of the river or within 8m of it, and the introduction of fish or their eggs all require the written consent of the EA.