River Mole and Yeo
West Wiltshire Flyfishers Guild

An advisory visit carried out by the Wild Trout Trust – 30th October 2008

1. Introduction

This report is the output of a Wild Trout Trust advisory visit undertaken on the Rivers Mole and Yeo on behalf of the West Wiltshire Flyfishing Guild.

The advisory visit was carried out at the request of the WWFG who control four and a half miles of fishing rights on the River Mole and the adjoining River Yeo. Both sections of river have been subject to an ambitious enhancement scheme aimed at reducing heavy marginal tree shading through a programme of selective tree coppicing. This project has been financed by the Environment Agency in partnership with the Taw Fisheries Association, Wild Trout Trust, WWFG and local land owners and managed by local Environment Management Officer Mr Jerry Boyd.

A key element of the advisory visit was to try and identify further improvement works that the fishing club can implement.

During the site visit the author was accompanied by the representatives of the WWFFG Mr John Williams and other members of the fishing club's committee as well as Mr Boyd from the Environment Agency.

The comments and recommendations made in this report are based on the observations of the Trust's Conservation Officer, Andy Thomas and discussions with the Mole/Yeo representative of the WWFFG Mr John Williams and other members of the fishing club's committee as well as Mr Boyd from the Environment Agency. Fishery survey data collected from sites sampled on the club's waters was obtained from Mr Dave Hoskins from the Environment Agency's Environmental Appraisal Team.

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. Fishery Overview

The rivers Mole and Yeo are classic Devon spate rivers forming key headwater streams of the Taw system. Both rivers are extremely important salmon *Salmo solar* spawning and nursery streams and are primarily managed and used by the fishing club as an unstocked wild brown trout *Salmo trutta* fishery.

On the day of the visit the river was in spate conditions, making any assessment of spawning gravels impossible. Despite the very heavy rainfall the previous day it was very noticeable that both rivers were not as turbid as might be expected following such a heavy rainfall event across what is predominantly a clay catchment. This is largely due to the nature of the catchment land use, which appears to be predominantly grazed by cattle in the lower flatter levels with the headwaters running through moorland. With little in the way of arable farming,

the rivers are not subjected to excessive sediment rich run-off often associated with clay catchments.

3. Habitat Assessment

Both sections of the Mole and Yeo are typical of upland rain-fed rivers running off a moorland catchment area. The instream habitat is generally very good with a natural pool-riffle sequence and a wide variation in depths. There are deep pools, glides, gravel shoals, and broken shallow runs – a good balance of habitat for all life stages of trout.

Long sections of both rivers have been heavily shaded in the recent past with dense stands of alder *Alnus glutinosa*, ash *Fraxinus excelsior* and sycamore *Acer pseudoplatanus*. There was a paucity of willow *Salix spp.* apart from on a short section of the Yeo which looks as if it may at one time have been re-aligned for milling purposes. No weirs or structures that could restrict free movement of fish were observed during the inspection.

The programme of tree works already undertaken was designed to allow more light into the channel. This has undoubtedly benefited the river. There was clear evidence of coppicing along significant lengths of both rivers which, coupled with a programme of fencing, has given rise to improved low bushy cover interspersed with blocks of shading. Research has indicated that productivity of streams can be severely restricted by heavy shading. Riparian trees and their associated root systems play a vital role in protecting river banks from excessive erosion. Sensitive coppicing also preserves the life of some trees. Alder in particular can be preserved by coppicing when it becomes tall and leggy and vulnerable to collapse, especially when it becomes infected with *Phytophthora* disease which is rampant in some parts of the country.

A section where coppicing has taken place adjacent to good quality spawning and nursery habitat

The programme of coppicing and stock fencing has been very extensive. There were some sections however, where the fence line had not been taken back enough to provide adequate protection for the bank. Although the fence does not adversely impact on angling (most fishing is carried out via wading), a larger buffer strip between fence and bank top would have encouraged thicker growth of riparian vegetation which provides more protection from diffuse pollution. A thicker fringe of riparian vegetation would also help to knit the soils together and combat marginal bank erosion.

Fence post hanging in “fresh air”. A wider buffer strip avoids constant re-alignment of fences and provides better protection for river and bank.

Several cattle drinking stations were observed throughout the reach. On the whole these did not appear to be excessively large or located in areas likely to damage sensitive habitats. One possible method of removing the need for any drinking stations would be to use a pasture pump which can be set up back from the river bank allowing safe and reliable drinking for cattle without the associated bank damage and threat of pollution. These devices do not require power or excessive maintenance but they are only suitable for beef cattle. Cattle soon get used to operating the pump and where they have been installed use the device in preference to conventional cattle drinking bays. These devices have been mainly used on rivers with stable water levels. Care needs to be taken to ensure that the delivery pipe is kept in the water at all times. This may be

difficult to achieve in a spate river like the Mole or Yeo. An alternative would be to consider mains supplied drinking toughs.

Bullock operating a pasture pump. A good method of protecting the river bank.

Due to the high flows it was difficult to see much in the way of in-channel features. The coppicing regime undertaken would have provided plenty of opportunities to use large sections of tree trunks and branches to improve trout habitat. Retaining Large Woody Debris (LWD) in a spate river can be difficult although there were some good examples of fallen, or half fallen live trees providing excellent in-channel habitat.

LWD is a general term referring to all wood naturally occurring in streams including branches, stumps and logs. Almost all LWD in streams is derived from trees located within the riparian corridor. Streams with adequate LWD tend to have greater habitat diversity, a natural meandering shape and greater resistance to high water events. Therefore LWD is an essential component of a healthy stream's ecology and is beneficial by maintaining the diversity of biological communities and physical habitat.

Traditionally many land managers and riparian owners have treated LWD in streams and rivers as a nuisance and have removed it, often with uncertain consequences. This is often unnecessary and perhaps harmful to high quality

streams such as the Mole. Stream clearance can reduce the amount of organic material necessary to support the aquatic food web, remove vital in-stream habitats that fish will use for shelter and spawning and reduce the level of erosion resistance provided against high flows. In addition LWD improves the stream structure by enhancing the gravel bed and diverting the stream current in such a way that pools and spawning riffles are likely to develop. A stream with a diverse river bed profile made up of and pools and riffles is ideal for benthic (bottom dwelling) organisms as well as for fish species.

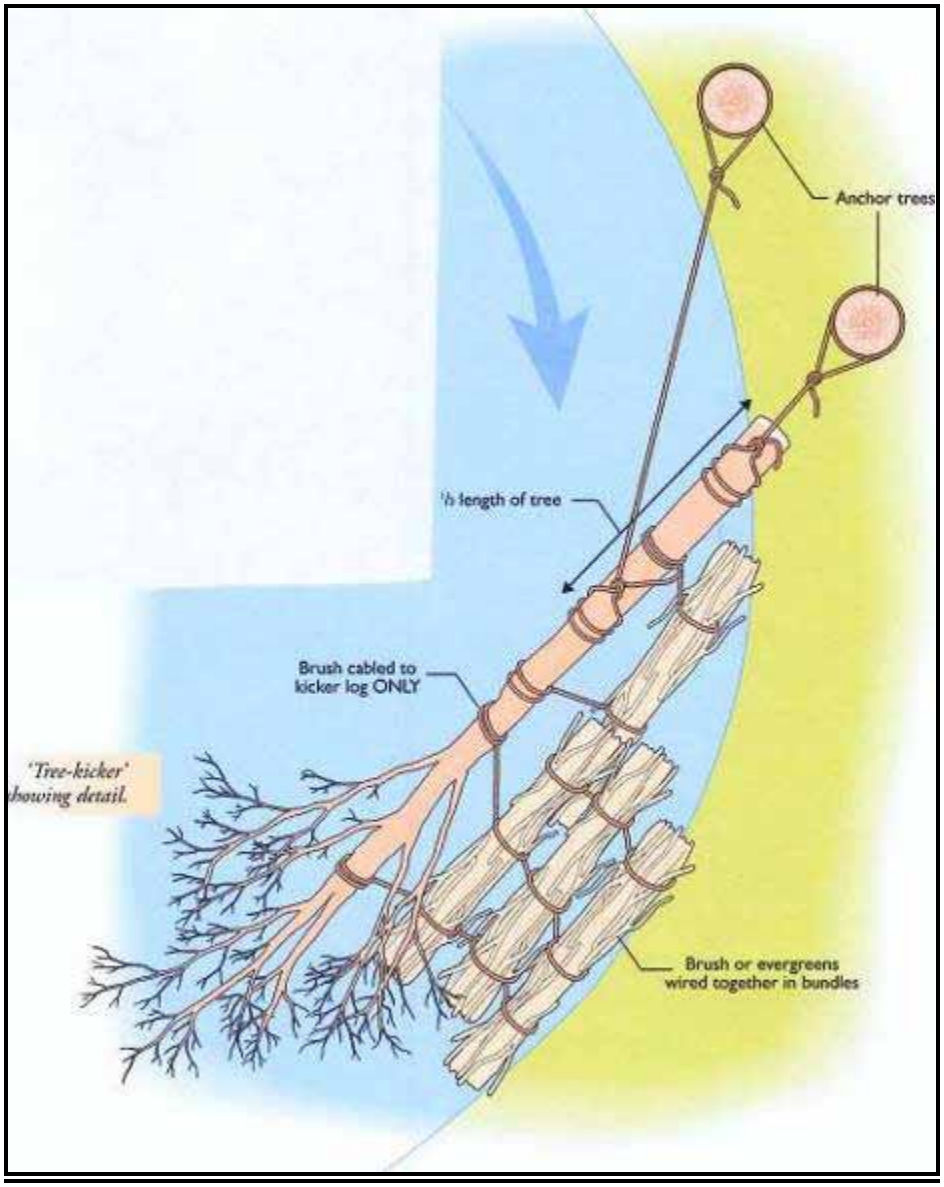
A perfect example on the Mole of how a live fallen tree can be stable and provide cover and habitat diversity

Should further tree coppicing be planned it may be possible to suggest that some species are hinged into the channel. The technique employed is to make a long, near vertical cut through the trunk, similar to that employed during hedge laying and winch the tree over into position, topping and securing as necessary. The technique works best with willow but can also be used on alder and ash trees. The undershot scour found below such fallen trunks promotes pool habitat and often blows up fresh gravels into ideal spawning ramps at the tail of the pool. To stop the tree from washing away in a spate it is recommended to secure them to adjacent live tree with cables.

In most areas the banks were relatively stable. There were a few areas where erosion may be of some concern but generally the banks were well vegetated and relatively stable. One section of the Yeo had undergone some works using vertically driven poles designed to address erosion, however this did not appear to be working very well.

An eroding bank on the Yeo

One technique that can be employed to slow down the rate of erosion on the outside of deep bends is to use a “tree kicker”(see diagram below). These are whole fallen or cut trees that can be wired to existing live trees and back filled with brashings or faggot bundles. The “kicker” will rise and fall with varying water levels and help to absorb erosive high velocity flows thus helping to reduce bank side erosion.



Tree Kicker used to combat erosion

We recommend that the fishing club should adopt a policy of retaining LWD in the river channel wherever possible. The West Country Rivers Trust provides a useful guide to the management of natural LWD:

1. *Is* the debris fixed, if yes then continue to 2, if not continue to 5.

2. Is the debris causing excess erosion by redirecting the current into a vulnerable bank? If yes then go to 5 if not then go to 3.

3. Would fish be able to migrate past it (take into account high river flows). If yes got to 4, if no go to 5.

4. **Retain the woody debris in the river**.

5. **Re-position or extract the debris.**

Note: If the debris dam needs to be removed but there is still a significant amount of the root system attached to the bank then it is recommended that the stump be retained for its wildlife habitat value and its stabilising effect on the bank.

Current Environment Agency policy nationally is to encourage LWD in headwater streams with an associated low flood risk, in order to slow discharge rate through a reach and encourage out of bank flow during high water events. This provides a degree of attenuation helping to reduce flood risk in more populated downstream reaches. Consultation with the local Environment Agency Flood Risk Management Team would be of benefit in order to establish a management protocol for the fishery with respect to LWD.

One area of concern relates to the presence of a large clump of Japanese knotweed *Fallopia japonica*, which was seen on a section of LHB on the River Mole about 500m upstream of its confluence with the Yeo.

A large clump of Japanese knotweed on the LHB of the Mole

This plant, along with Himalayan balsam *Impatiens glandulifera,* are non-natives and considered to be a real threat to bank stability, especially on spate rivers. Both plants suppress other ground vegetation and coupled with winter die back leave areas of bank bare and vulnerable to excessive erosion.

The eradication of knotweed is generally best tackled through the application of herbicide by qualified personnel. Any application of a herbicide within 8 m of a river will require a written consent from the Environment Agency. An application form WQM1 is available at:
www.environment-agency.gov.uk/subjects/conservation/840870/840941/

3. Fish Populations

Both the River Mole and Yeo are considered to be very important rivers for salmon spawning. The Environment Agency has carried out timed run and semi

quantitative electric fishing surveys of both rivers and have temporal monitoring sites on both systems. Survey data provided by the EA's Ecological Appraisal Team indicated that the site located on the Mole downstream of South Molton Waste Water Treatment Works was performing well. The site at NGR SS 723 256 is thought to be near the top of the WWFFG water and was the most productive site for 1+ trout out of 22 sites fished on the Taw system in 2005 and more productive than any sites fished during the 2001 survey. Sites sampled here and at Grilstone also produced juvenile salmon as well as 0+ juvenile trout.

4. Conclusions

The extensive programme of tree coppicing has undoubtedly benefitted the fishery and provided the right balance of light and shade that is so important in promoting in-channel productivity.

From the survey data supplied by the EA it would appear that salmonid recruitment is not being suppressed by the conurbation of South Molton lying just upstream of the fishery.

Opening a dialogue with the landowners over gradually increasing the width of the riparian buffer strip will also help to stabilise the banks and reduce amounts of diffuse pollution running in from adjacent meadows.

If further coppice work is planned it is recommended to look into the possibility of hinging live trees into the channel to provide further habitats for all life stages of brown trout. This would be particularly beneficial on areas with spawning potential. Fallen LWD will promote local scour and sorting of spawning gravels and provide brash cover over shallow nursery zones which will help to reduce predation pressures.

Sites currently identified as providing good spawning potential should be raked or pressure washed every autumn to leave gravels loose and silt free prior to spawning. Time spent looking at where trout spawn is often very useful in helping to plan further improvements. Gravel washing will have a temporary impact on invertebrates so do not clean areas that are not suitable for spawning. Note: These areas soon recover and clean loose gravel opens up habitat opportunities for stone loving insects as well as boosting egg to fry survival rates. Research carried out by the Centre for Aquaculture and Fisheries Science (CEFAS) has shown that salmonid egg survival on known spawning sites can be significantly improved by reducing sediment loads.

Gravel cleaning using a backpack leaf blower

5. Recommendations

- Introduce an annual programme of spawning enhancements by raking and cleaning known spawning sites each autumn.
- Encourage local scour on potential spawning sites through the use of pegged down LWD.
- Continue the programme of thinning any heavy canopy of tall shading trees to promote dappled light and utilise material for improving in-channel habitats. An ideal balance to aim for is 40% shading.
- Seek support and help from the local land owners in protecting banks by encouraging a gradual increase in the width of the riparian buffer zone.
- Retain and promote low scrubby marginal cover for both adult and juvenile trout.
- Continue to explore methods of reducing sediments loads and diffuse pollution in partnership with local land owners. Introducing pasture pumps and reducing the number of cattle drinks would be a great contribution.
- Remove the area of Japanese knotweed

It is a legal requirement that some works to the river may require written Environment Agency consent prior to undertaking any works, either in-channel or within 8 metres of the bank. Any modifications to hard defences will require a land drainage consent on any river designated as “main river”. Advice can be obtained from the Development Control Officer.

6. Making it happen

There is the possibility that the WTT could help to start an enhancement programme. Physical enhancement works could be kick-started with the assistance of a WTT 'Practical Visit' (PV). PV's typically comprise a 1-3 day visit where an approved WTT 'Wet-Work' experts will complete a demonstration plot on the site to be restored. This will enable project leaders and teams to obtain on the ground training regarding the appropriate use of conservation techniques and materials, including Health & Safety equipment and requirements. This will then give projects the strongest possible start leading to successful completion of aims and objectives.

The WTT can fund the cost of labour (two/ three man team) and materials (max £1800). Recipients will be expected to cover travel and accommodation expenses of the contractor.

There is currently a big demand for practical assistance and the WTT has to prioritise exactly where it can deploy its limited resources. The Trust is always available to provide free advice and help to clubs, syndicates and landowners through guidance and linking them up with others that have had experience in improving trout fisheries.

Acknowledgement

The WTT would like to thank the Environment Agency for supporting the WTT advisory and practical visit programme.