Advisory Visit

River Clun

Pheasant Tail Fly Fishers

23rd October 2008

1.0 Introduction

This report is the output of a site visit undertaken by Tim Jacklin of the Wild Trout Trust to the River Clun, Shropshire on 23rd October 2008. Comments in this report are based on observations on the day of the site visit, discussions with Francis Bohn of Pheasant Tail Fly Fishers (PTFF), and subsequent discussions with Ros Challis, Ecological Appraisal Team Leader, Environment Agency (Midlands Region, West Area).

Normal convention is applied throughout the report with respect to bank identification, i.e. the banks are designated left hand bank (LHB) or right hand bank (RHB) whilst looking downstream.

2.0 Fishery Overview

The River Clun rises near Anchor close to the Welsh-English border and is a tributary of the River Teme, joining the latter near Leintwardine. Surface geology of the catchment is dominated by Silurian sandstones. The lower reaches of the Clun, between the Teme confluence upstream to Broadward Bridge near Marlow, were designated a Special Area of Conservation (SAC) in 2005 for the threatened freshwater pearl mussel *Margaritifera margaritifera* (See http://www.jncc.gov.uk/ProtectedSites/SACselection/species.asp?FeatureIntCode=S1029).

The following is an extract from the Natura 2000 data form (available by following the above link):

Margaritifera margaritifera is dependent on low sediment and nitrate levels, fast flows of cool water and clean gravels. It is also relies on the presence of trout for part of its breeding cycle. Intensification of agriculture across the catchment is a significant threat to the long-term survival of the isolated population at this site i.e. enhanced sedimentation through poor agricultural practice leading to smothering of adult and juvenile mussels; eutrophication of waters through fertiliser run-off from adjacent land. In addition upstream domestic sewage treatment works are believed to give a significant nutrient loading. Recent increases in the occurrence of alder disease also poses a risk through loss of shading bankside tree cover. Some of these issues will be

addressed by revised authorisation, Review of Consents /AMP 4 processes. Sustainable agricultural management is being promoted via production of Whole Farm Plans, Environmentally Sensitive Area Agreements and Countryside Stewardship Agreements for landowners within the catchment.

It is clear that the conservation of the freshwater pearl mussel goes hand-in-hand with maintaining a healthy river environment and good fish stocks.

Two reaches of river were visited, the first at Beambridge near Aston-on-Clun and the second at Clungunford. PTFF have controlled the fishing on these sections of the Clun for many years (since the 1950s); part of the water at Clungunford is shared with Salopian Fly Fishers. The river contains brown trout *Salmo trutta* and grayling *Thymallus thymallus*, and no stocking is carried out by PTFF. Salmon *Salmo salar* have been successfully re-introduced to the Clun, although there is understood to be a partial barrier to adult migration downstream of Clungunford. Other fish species present include bullhead *Cottus gobio* and brook lamprey *Lampetra planeri.*

Pearl mussel, salmon, bullhead and brook lamprey are species listed in Annex II of the Habitats Directive (European Union member states must consider designating Special Areas of Conservation for Annex II species). Other Annex II listed species present on the Clun are white-clawed crayfish *Austropotamobius pallipes* and otter *Lutra lutra.*

3.0 Habitat Assessment

3.1 Beambridge (NGR SO 38822 81357)

Progressing upstream from the bridge on the right bank, the river has a meandering planform, a relatively steep gradient and a well-developed pool and riffle structure: a great 'baseline' habitat structure for a trout and grayling river. Surrounding land use is mixed farming with livestock in the fields close to the river; there is also some forestry on surrounding hills (Photo 1). The sandstone geology of the catchment means the banks are friable and prone to erosion. In some areas there have been attempts to reinforce the outside of bends with waste concrete and such like.

The river has a gravel/cobble substrate which is generally loose and un-embedded (good for spawning fish), but there was a moderate level of fine

Photo 1 Land use at Beambridge

Photo 2 A shallow scrape on a typical riffle area shows the fine sediments entrained in the interstices of the gravel just beneath the surface.

Photo 3 Tarry spots on alder trunks – a symptom of *Phytophthora* disease

Photo 4 Dead and dying alders being washed out and leaving banks exposed to erosion

sediment entrained within the gravel, which does not favour egg survival (Photo 2).

Himalyan balsam *Impatiens glandulifera* was present throughout this reach at moderate levels. This non-native plant is undesirable because its suppression of other ground vegetation, coupled with its winter die back combine to leave extensive areas of bare bank, contributing to excessive erosion.

The banks of the river are fringed with deciduous trees, mostly alder *Alnus glutinosa.* Many of the alders are suffering from the fungal disease *Phytophthora* (Photo 3) and are in various stages of degeneration, from lightly affected through to dead. On the lower section of this reach in particular, trees have died and been washed out leading to the exposure and rapid erosion of the friable banks (Photo 4).

Further upstream PTFF have access only to the RHB between the footbridge to the house on the LHB and the weir at grid reference SO 38206 81411, where double bank fishing recommences. From the footbridge to the upstream limit of the fishery a two-strand barbed wire fence has recently been erected on all banks where livestock could access the river (some banks are not used for livestock, being steep and wooded or not farmed). Also a number of alder trees have been coppiced through this section.

The level of the barbed wire is set high and allows sheep to get underneath and graze the banks. This may be beneficial in assisting the control of Himalayan Balsam, but is restricting the re-growth of the coppiced alder stools in many cases (Photos 5 and 6). Livestock watering points have been constructed, although one of these was incomplete and allowed livestock access to the river side of the fence (Photos 7 and 8). The upper section of the fishery appeared to have less grazing pressure and there were some good river margins developing here (Photo 9).

The weir had a head difference of approximately 0.75 m on the day of the visit, and had a cobble base at its toe to prevent bed scour (Photo 10). The weir would be passable in an upstream direction by larger trout (e.g. of spawning size), but it would be more difficult for grayling. The head provided by the weir supplies a mill leat, which also receives the flow of a tributary, the River Kemp.

Photo 5 Barbed wire fencing is allowing sheep underneath to graze the bank – helping to control balsam growth, but...

Photo 6 ...affecting the re-growth of coppiced alder.

Large Woody Debris (LWD) is present in the river channel in the lower part of the fishery, but is largely absent from the footbridge upstream suggesting it has been deliberately removed. The presence of LWD has been shown to be extremely important in several respects:

- An increase in the variety of flow patterns, depths and localised velocities.
- Development of high in-channel physical habitat diversity
- Significant benefits to the control of run-off at the catchment scale. Woody Debris helps regulate the energy of running water by decreasing the velocity. Thus the 'travel time' of water across the catchment is increased.

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 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 Clun. Stream clearance can reduce the amount of organic material necessary to support the aquatic food web, remove vital in-stream habitats that fish will utilise 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 substrate and diverting the stream current in such a way that pools and spawning riffles are likely to develop. A stream with a heterogeneous substrate and pools and riffles is ideal for benthic (bottom dwelling) organisms as well as for fish species like wild trout.

Fly life on the Clun is reasonably good, and includes Mayfly (*Ephemera danica*). However, a sheep dip pollution occurred several years ago and club members feel the hatches have not been as prolific since.

Photo 7 Gap in the fence (drinking point?) which allows livestock behind the fenced area

Photo 8 Fenced livestock watering point

Photo 9 Ungrazed river margin with developing tall vegetation and young trees

Photo 10 Weir, with cobble toe

3.2 Clungunford

Catch returns for this reach were available from the box at the access point; these recorded the capture of 25 trout and 17 grayling from 9 visits since 9th June, 2008 (2.8 trout and 1.9 grayling per visit).

The lower section of this reach was inspected first. The banks are largely unfenced and lined with deciduous trees, mostly alder but also willow, ash and poplar. Many alders are showing signs of *Phytophthora* disease. Both banks were grazed by cattle and there was much less Himalayan balsam evident compared with the Beambridge reach.

There is less of a pool-riffle sequence here and more of a steady glide; this contrasts with the upstream section which has some nice habitat features (vegetated side bars, pool-riffle sequence). There are some good examples of LWD in the river channel. Some limited tree planting has taken place (Photo 11). Some alders have been coppiced (underneath power lines crossing the river), but grazing is restricting the re-growth (Photo 12).

On the upstream section of this reach a new three-strand barbed wire fence has been erected on the LHB creating a nice, wide margin alongside the river. The new fence ends on the LHB at grid reference SO 39733 79401, and then continues upstream on the RHB; stacks of posts on this bank indicate it may be a work-in-progress. Unfortunately where the grazing pressure has been removed by the fence, Himalayan balsam reappears.

Behind the fence there are some nice areas of marginal vegetation developing (Photo 13), but in other areas livestock have access under the fence and grazing pressure alongside the river continues (Photos 14 and 15). Some coppicing of trees has taken place.

There are some areas of heavy erosion of the soft, friable banks on this section. This process is exacerbated by overgrazing by agricultural stock. In unfenced (or older, inadequately fenced) sections, the bank had poor vegetation cover, with extensive areas of bare bank. In areas where the bank profile was steep, this has resulted in block failure and the rapid loss of significant amounts of grazing land (Photo 16). Where the profile is shallower, constant grazing and trampling, has created areas of poaching and sources of fine sediment input to the river (Photo 17).

Photo 11 Tree planting, but enough to replace those being lost?

Photo 12 Coppiced alders (underneath power lines); re-growth is restricted by grazing.

Photo 13 A good width of fenced river margin with tall vegetation developing in the absence of grazing.

Photo 14 In contrast to Photo 13, the fence is having little effect because livestock can get through it.

Photo 15 Route under the fence for livestock.

Photo 16 Rapid erosion of steep banks (LHB).

Photo 17 Cattle access on shallow banks causing trampling and ingress of fine sediment

Photo 18 Large Woody Debris contributing to some excellent in-river habitat

There are some good examples of LWD in this section, providing the benefits described above (Photo 18). The LWD may also be providing an additional benefit as a refuge for fish from piscivorous birds – about 20 cormorants were observed flying along the river course during the visit.

Given the vulnerability of the banks to erosion, there is a balance to be struck with the management of LWD to maximise the ecological benefits and avoid erosion problems. LWD can be re-positioned to avoid erosion or even protect against it. A decision tree for managing LWD is provided in the next section.

4.0 Recommendations

· 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 banks 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.

There are some good examples on the Clungunford section of LWD and the good and bad effects it can have:

1. Just upstream of the midstream island (Photo 14) there is a fallen tree in the river which could be diverting the river down the LH channel, particularly at higher flows (Photo 19), and contributing to the erosion on the LHB bank back towards the new fenceline. This tree could be repositioned to divert flows down the RH channel away from the fence.

Photo 19 Repositioning this LWD to here could help divert flows away from the near bank where erosion is a problem.

2. Photo 20 shows a fallen alder protecting the LHB on the outside of a bend. The tree is slowing the current and causing deposition and colonisation with vegetation behind it. This could be replicated on other bends. For example on the RHB, some alders have been coppiced on the outside of a bend (Photo 21). This is beneficial as it has taken the weight off root boles preventing them from being pulled out of the bank. However, the flow pattern is still likely to cause

Photo 20 LWD on the outside of a bend, protecting the previously actively eroding bank

Photo 21 Coppiced alders on the RHB. This gap could be filled with a tree kicker.

erosion behind root boles; this could be prevented by filling the gap with LWD. A “tree kicker” could be used for this (Figure 1).

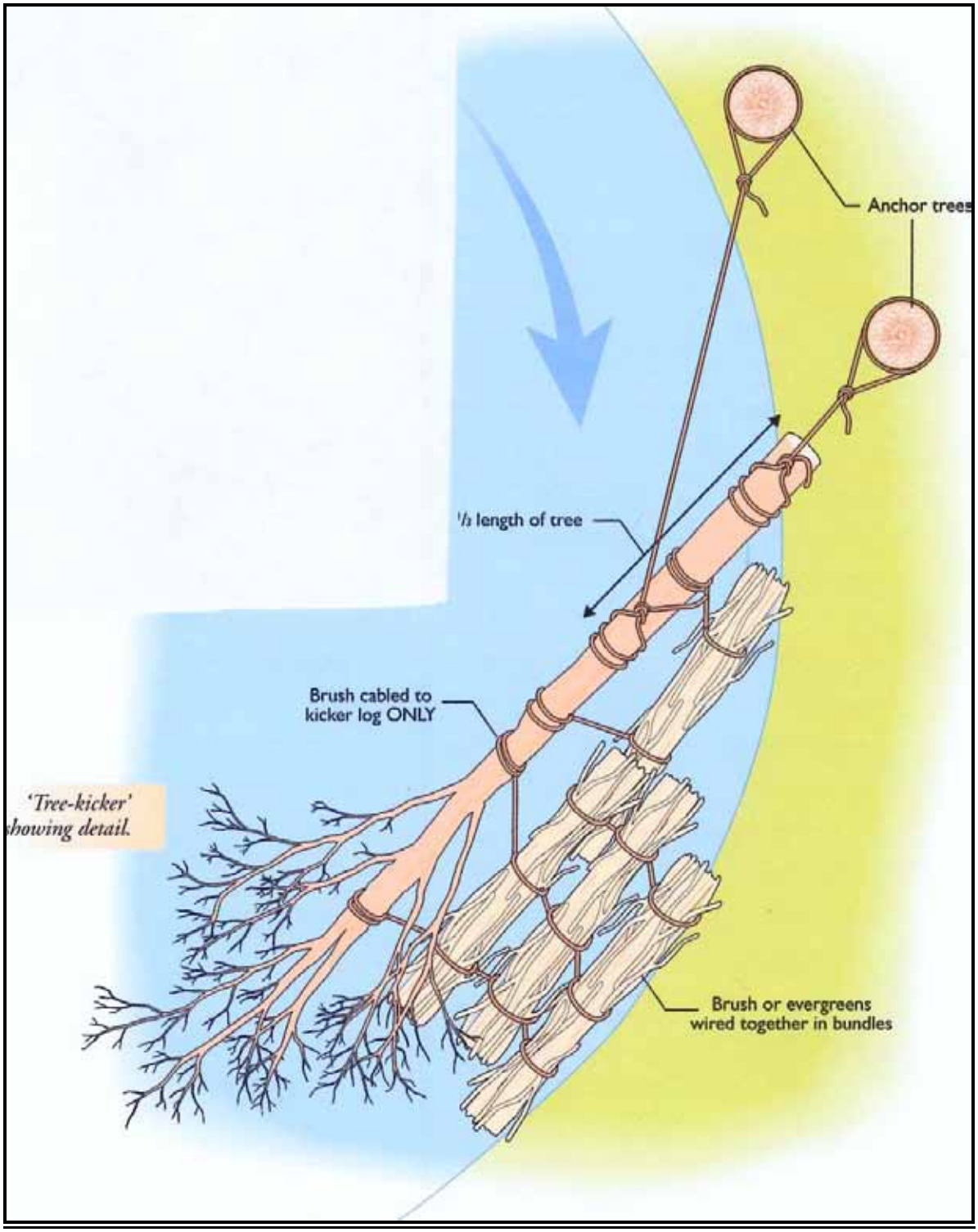

Figure 1 Example of 'tree kicker' erosion protection for high energy streams

· The main issue facing these sections of the Clun is the loss of trees and the destabilising effect this has on the river banks. Contributory factors to tree loss include alder disease and erosion of banks which have been overgrazed. These factors have been tackled in some areas by coppicing or singling of alders and fencing out livestock. It is recommended that this is continued and extended, and previously treated areas are re-visited and re-assessed.

Careful rotational coppicing of selected trees, particularly of alder, would enhance the growth of valuable fringing vegetation. Ideally the channel should not be opened up excessively; a ratio of 60:40 shaded to open channel is generally believed to be a good target. However, this target needs to be balanced with the likelihood of the loss of each tree to disease or erosion.

Depending on the extent and timing coppicing, it may be necessary to obtain a felling licence from the Forestry Commission prior to commencement of operations. Surveys for protected species such as bats, water voles and otters may be required prior to tree management, and a suitably qualified person should be consulted (e.g. the local Wildlife Trust, or Environment Agency Biodiversity team). Wood arising from this operation could be used for the tree kickers as described above.

Tree planting or the promotion of natural re-colonisation should be encouraged to re-establish a fringe of marginal trees, and provide a succession to those being lost. Critical to the success of this is protection of an un-grazed marginal buffer, ideally at least 10 m wide; Photos 9 and 13 show the type of situation that should be aimed for. Any tree planting should be carried out with native species of local provenance such as oak, ash or willow. Alder should be avoided because of the disease situation.

Coppicing of riverside alders has been carried out previously by the Clun Valley Alder Charcoal Project. (http://www.environment-agency.gov.uk/commondata/105385/gemi1001bggkee_892107.pdf - page 4). This was a partnership project involving, amongst others, Shropshire Hills AONB Partnership and the Environment Agency. The idea was to create environmental benefits through coppicing alders, and economic benefits through the manufacture of local charcoal. The current status of the project

is unknown, and it is recommended that the club contact Alan Jones, Fisheries Team Leader at the EA in Shrewsbury, for up to date information.

· Take part in the anglers' invertebrate monitoring initiative instigated by the Riverfly Partnership. Regular invertebrate samples provide a quick water quality "health check" and can provide an early warning of pollution problems. Details of sampling strategies and training days can be obtained from the Riverfly website at www.riverflies.org . Contact Bridget Peacock riverflies@salmon-trout.org for further details. Suitable nets for sampling macroinvertebrates can be obtained from Alana Ecology www.alanaecology.com Tel: 01588 630173

· Control Himalayan balsam. This can be achieved by physical or chemical means:

Physical Control

The main method of control, and usually the most appropriate, is pulling or cutting plants before they flower and set seed (usually in June or July). Working parties are the best means of doing this.

Limited grazing access appears to be controlling balsam in some sections of the fishery. This could be continued, but needs to be carefully controlled and balanced with preventing overgrazing of desirable species, damage to coppice re-growth or damage to river banks. Access in late spring or early summer before the balsam has flowered would be ideal. In areas inaccessible to livestock, physical or chemical control is recommended.

Chemical Control

Before using weedkillers alongside waterways it is necessary to contact the Environment Agency and obtain their written consent via form WQM1 (www.environment-agency.gov.uk/subjects/conservation/840870/840941/). It can also advise on suitably qualified contractors.

Himalayan balsam can be controlled with a weedkiller based on glyphosate, such as Roundup. Glyphosate is a non-selective, systemic weedkiller that is applied to the foliage. It is inactivated on contact with the soil, so there is no risk of damage to the roots of nearby plants, but care must be taken that the spray doesn't drift onto their foliage. Glyphosate is most effective when

weed growth is vigorous. This usually occurs at flowering stage but before die-back begins; with most weeds, this is not earlier than mid-summer.

It may take a couple of seasons to obtain good control due to the germination of more weed seedlings.

· The impact of grazing livestock upon the river banks should be reduced. Ideally this should be achieved by reduced stocking levels arising from Single Farm Payments and incentives to farm in a more environmentally sensitive way. Where this is unlikely to be achieved it is recommended that the fencing already present on some sections of the river is extended to limit livestock access and create buffer zones alongside the river; this is essential following coppicing or tree planting.

The existing new fences and coppicing work look as though they are the result of an agri-environment scheme, and may be part of the England Catchment Sensitive Farming Delivery Initiative. Working in partnership with such organisations and initiatives is the key to success, and some suggested contacts are listed below.

- Catchment Sensitive Farming officer for the Clun, Andrew Sherrott (andrew.p.sherrot@naturalengland.org.uk , tel. 01743 282031). The catchment sensitive farming project has undertaken work to reduce the impact of farming upon freshwater pearl mussels, and this will also benefit fish stocks and wider biodiversity (http://www.defra.gov.uk/FARM/environment/water/csf/pdf/case-study/clun.pdf).

- Shropshire Hills AONB Partnership (http://www.shropshirehillsaonb.co.uk/partnership/work.htm) could be a potential source of grant funding (e.g. via the Sustainable Development Fund - SDF). The Teme Rivers Trust (now Severn Rivers Trust) has an ongoing project funded by SDF to raise awareness about salmon, including a salmon in the classroom project focussing on the Clun.

- Environment Agency. Alan Jones (Fisheries Team Leader), Chris Bainger (Fisheries Technical Specialist) and Ros Challis (Ecological Appraisal Team Leader) are all based at the Shrewsbury office.

It is a legal requirement that all the works to the river require written Environment Agency (EA) consent prior to undertaking any works, either in-channel or within 8 metres of the bank.

5.0 Making it Happen

The WTT can provide further assistance in the following ways:

- Advice and support in formulating a worked-up project proposal and assistance with the preparation of Environment Agency Land Drainage consent applications.

- Works could be kick-started with the assistance of a WTT 'Practical Visit' (PV). The WTT will fund the cost of labour (two-man team) and materials. Recipient organisations will be expected to cover travel and accommodation expenses of the advisors. The use of specialist plant will be by separate negotiation.

Wet-work advisors can demonstrate one or more of the following techniques that are appropriate to the site such as

- Tree Planting

- Fencing (Installation & Repair)

- Flow Deflectors

- Introduction / Management of Woody Debris

Note: Recipients of the programme must have received a WTT AV and have obtained the appropriate consents from the Environment Agency, Natural England,etc, prior to arrangements being made to undertake the PV.

- Seed-corn funding to help kick-start the project. This can be in the form of an AV bursary (usually £500 - £1500) to help lever additional funding) and/or via the Rods for Conservation scheme. The latter is where the Trust can provide a prestige rod (Sage or Hardy) at cost price for the club to raffle to raise funds for the project.

Applications for all the above should be made via projects@wildtrout.org

6.0 Acknowledgements

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7.0 Disclaimer

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