Advisory Visit

River Ribble – Lancashire

24/03/2015

1.0 Introduction

This report is the output of a site visit to Bowland Game Fishing Association (BGFA) waters on the River Ribble, undertaken by Gareth Pedley of the Wild Trout Trust. The visit was requested following an initiative by BGFA to stop stocking on the River Ribble and to redirect funding and concentrate efforts on improving habitat for wild fish. Two sections of the river were visited at Long Preston and Paythorne.

Normal convention is applied throughout this report with respect to bank identification, i.e. the banks are designated left bank (LB) or right bank (RB) whilst looking downstream (D/S). The Ordnance Survey National Grid Reference system is used for identifying locations. This report covers observations made at the two sections of River Ribble visited, and discusses options for future fish stock and riparian management.

Table 1. Overview of the waterbody details for the sections of river visited

	Waterbody details Upper Section	**Waterbody details Lower Section**
River	Ribble	Ribble
Waterbody Name	Ribble (Stainforth to Long Preston Beck)	Ribble (Long Preston to Stock Beck)
Waterbody ID	GB112071065614	GB112071065613
Management Catchment	Middle Ribble - Settle to Calder	Middle Ribble - Settle to Calder
River Basin District	North West	North West
Current Ecological Quality	Good (**Not assessed for biological quality elements** – Not high for hydromorphological Supporting Elements)	Good (**Not assessed for biological quality elements** – Not high for hydromorphological Supporting Elements)
U/S Grid Ref	SD 82368 57237	SD 84375 52274
D/S Grid Ref	SD 82870 56812	SD 83317 51648
Length of river inspected (km)	0.65	1.52

(http://environment.data.gov.uk/catchment-planning/WaterBody/GB112069061340)

Under the Water Framework Directive (WFD) classification, most of the ecological and chemical parameters for both waterbodies have been scored as 'good' or 'high', giving an overall classification of 'good'. This is a little disconcerting as no additional fish data appear to have been collected since the 2009 classification of 'moderate' to support a move to the classification of 'good' in 2013 . The reason for this move is not clear; however, it may be due to changes in the way that the data have been analysed in the current WFD cycle.

2.0 Catchment / Fishery Overview

The River Ribble originates on the western edge of the Yorkshire Dales, within the Yorkshire Dales Natural Area, and rises from an area of predominantly limestone geology with subordinate sandstones. Proceeding downstream, into the Forest of Bowland Natural Area, the geology of the catchment changes, becoming more heavily dominated by sandstone and mudstones; however, bands of limestone bedrock are a continued influence (www.naturalareas.naturalengland.org.uk/Science/natural/NA_search.asp). This sequence is reflected in the catchment of most of the Ribble's tributaries.

Despite the relatively permeable nature of the geology in the upper catchment, the limestone rivers of the Yorkshire Dales receive a high proportion of surface water. This, coupled with relatively steep valley gradients, leads to flashy rivers which rise and subside quickly following rain. This is in contrast to the majority of more southerly, lower gradient limestone rivers which are fed predominantly from groundwater and maintain high, stable base flows. Nevertheless, the high calcium content buffers the pH within the river water to neutral or alkaline in most sections, improving the productivity to the benefit of both invertebrates and ultimately fish.

Land use in the areas of the Ribble catchment which were visited consists predominantly of sheep grazing on medium to low productivity grassland, so even with a medium/low density of livestock, grazing can be relatively high intensity.

In the last round of Natural England's Countryside Stewardship Scheme (up to 2014), land on the LB of the Long Preston beat was in an Entry Level Stewardship (ELS) plus Higher Level Stewardship (HLS) area, and land on the RB was in an HLS target area. Similarly on the lower Paythorne beat, the land was either in Countryside Stewardship Entry Level plus Higher Level area (or HLS target area) (www.magic.gov.uk). With this in mind, it is hoped that the next round of schemes (2016) will also target these areas and subsidies may be available to landowners/tenants if they are prepared to enter land into options such as buffer-fenced river margins. It may also be that Catchment Sensitive Farming initiatives are running on this land and these options are well worth investigating with the local EA and Natural England.

The BGFA waters visited are reported by members to support good stocks of salmon, sea trout and resident brown trout, as well as the occasional coarse fish and smaller non-angling species. With the move to cease stocking, BGFA are very keen to take all measures possible to conserve and promote wild fish stocks.

3.0 Habitat Assessment

3.1 Long Preston beat

The negative impact of grazing along the Long Preston beat is significant. This is likely to have been occurring over many years as it has resulted in an almost complete loss of bankside trees and prevented recolonisation with shrubs or herbaceous vegetation which in turn leaves a serious lack of cover along the river (Figures 1 & 2).

Prolonged, intense grazing prevents natural regeneration of saplings which are often specifically targeted for to their high nutritional value. This means that when mature trees reach the end of their life or are washed away in floods, there is no understory to replace them.

In the absence of trees, the river is subject to a lack of shade (important to keep the water cool in summer) and of leaf litter and woody material input to the channel, both of which are important aspects of invertebrate food and refuge. A lack of large woody debris (LWD) within the channel also reduces the occurrence of features that would otherwise naturally create valuable areas of bed scour and deposition (helps retain sediments and detritus – invertebrate food). To compound the issue, grazing and trampling around the base of trees often leaves such areas completely denuded of grass or other vegetation and even more prone to erosion and wash-out.

Realignment of the channel from its course may also have contributed to the lack of trees by removing the river from the existing riverside tree-line and siting it in an open field location. This action not only removes the river from the trees, but leaves the watercourse with a deficit of trees as a seed-bank/source for recolonisation.

These factors contribute to a significant lack of low-level and trailing cover along the river margins and a lack of in-channel structure, both of which are important habitats for retaining fish within a reach. Reinstating these natural features is vital to optimise the fish carrying capacity of the river.

On heavily grazed banks with a lack of trees and vegetation, erosion is a significant issue. A grazed bank does not support the complex root matrices that are present within a naturally well-vegetated and tree-lined bank, and contains only a fraction of the root depth and variety. This leaves a lack of physical protection from vegetation above ground, and a lack of stability below the ground. In many areas the resultant erosion has led to further widening of a channel already over-capacity from dredging and realignment.

In river channels that are over-capacity, natural geomorphological processes are often compromised, inhibiting the formation and maintenance of natural features required for high quality trout habitat: e.g. deeper pools, gravel bars and riffles. Remnants of such features may be present but lack distinction; without constrictions in the channel producing scour, the resulting river bed becomes uniform and shallower as material accumulates from upstream. Accumulation of fine sediments within unsorted bed material, particularly gravels, makes them less productive spawning areas and compromises the survival of any eggs that may be laid within them.

It is possible to begin addressing these issues by stabilising the banks and reinstating some of the natural geomorphological river processes. To achieve this, stock exclusion from the riverbank is vital. This will allow herbaceous vegetation and trees to re-establish and result in natural variation in river width as bankside trees and LWD enter the channel. As a future habitat improvement, established trees can then be laid into the channel to further increase channel diversity.

In the short-term, there may be benefit in trying to establish areas of low and trailing cover with willow whip planting along the waterline (as far out of livestock reach as possible). Consider each new shrub that can be established as potential holding habitat for additional fish within the reach. This treatment would be beneficial throughout the Long Preston Beat, particularly the locations depicted in Figures 1, 2 & 3.

Figure 1. Upstream of Cow Bridge – a distinct lack of bankside trees and cover resulting in bank instability.

Figure 2. Downstream of Cow Bridge – a distinct lack of bankside trees, cover and hence, bank stability. Also note the obvious straightening and over-capacity channel.

Figure 3. Greatly over-capacity channel with a significant lack of trees, cover and in-channel structure or flow diversity.

Also of note in this part of the Ribble catchment is the freshwater pearl mussel (*Margaritifera margaritifera*), with significant populations reported in the Long Preston area (Semeraz, J. T. Pers. Comm. [email] 06 May, 2015). As with many of the native invertebrate species and salmonid stocks of the river, pearl mussels are highly susceptible to excess sedimentation. Issues such as bank erosion, livestock poaching and channel over-widening that increase fine sediment deposition pose a real threat to their populations. Again, buffer fencing to exclude livestock from the river bank and reduce erosion rates could greatly reduce this risk.

A short distance upstream of Cow Bridge, Long Preston Beck enters the Ribble on the LB (Figure 4). The Beck and its confluence with the Ribble are reported to be significant areas for spawning (particularly for salmon). The location within the catchment and the availability of mobile, large gravel and cobble substrate are likely to be major factors in this, and it does appear to provide reasonable spawning substrate. However, poor juvenile and nursery habitat in the immediate area will undoubtedly reduce juvenile output, so to counter this, buffer fencing and increasing the cover and in-channel structure should be promoted.

The incised nature of Long Preston Beck somewhat limits its suitability as a resident trout spawning area as high flows, unable to escape onto the floodplain, are likely to scour out the finer gravels

(10-50mm dia.) trout require for spawning. In the absence of cover/shelter, juvenile salmonids are also likely to be displaced from the beck into the main river by high flows. For this reason, it is important to look at other small local tributaries, where improvements may be made to trout spawning and juvenile areas; e.g. Teenley Spring, a small tributary a short distance upstream on the RB (Figure 5).

The Ribble Rivers Trust (RRT) have already undertaken fencing on Teenley Spring (starting a short distance upstream from Figure 5), where potential trout spawning substrate was present although compromised by sedimentation and channel over-widening. Where stock are excluded upstream, it would be worth the BGFA investigating the possibility of undertaking habitat improvements such as willow whip planting and increasing in-channel structure, to provide bed scour (gravel sorting) and cover to improve the juvenile habitat.

Figure 4. Confluence of the Long Preston Beck and the Ribble, where the coarse gravel and cobble substrate provide valuable salmon spawning habitat. However, the paucity of surrounding juvenile habitat significantly reduces the potential for natural recruitment in the area.

Figure 5. Grazed areas around the confluence of Teenley Spring and the Ribble. A short distance upstream, the RRT have undertaken stock exclusion fencing and within that area habitat improvements (inc. willow planting) would be greatly beneficial to improve the habitat as a trout spawning and nursery area. Note the gravel suitable for trout spawning, but compromised by sediment.

3.2 Paythorne beat

Grazing pressure on the majority of the Paythorne beat is lower intensity than at Long Preston and, correspondingly, there is a greater covering of grass on the banks and erosion is not such issue in most places. However, even at low stock density, where grazing of the bank is occurring it is preventing the growth of herbaceous vegetation and limiting the bank to a grass monoculture (Figure 6, 7 & 8). Grass is generally the only species that persists with long-term grazing pressure. Grazing pressure is also preventing the natural succession of saplings, primarily alder (*Alnus glutinosa*) and willow (*Salix* spp.), that should replace mature trees that are washed out or die.

The Paythorne beat is subject to significant channel modification through a series of man-made weirs which impound the river upstream and over-widen the channel (Figure 7). The fixed, raised channel cross-section that is created greatly inhibits bed scour upstream, preventing the natural maintenance of channel width/pool depth. This means that pools get progressively shallower over time as the uniform cross-section traps bed material supplied from upstream that cannot pass the slow impounded reach or raised weir.

Each weir also provides an impediment to fish moving up or down through the reach, particularly at lower flows, and creates an ideal feature for cormorants and goosanders to corral fish against, greatly increasing their hunting efficiency and hence predation pressure on fish stocks. The impounded, uniform bed and water conditions upstream also creates an ideal hunting ground for piscivores (fish-eating animals).

Weir removal may not be a popular option with some anglers, and it would be a massive undertaking but the benefits generally outweigh the costs. For instance, removal will facilitate some reinstatement of the natural geomorphological processes that maintain pool depths, and facilitate the natural downstream transition and sorting of bed material that is currently inhibited. In the short-term, removing the central 1/4 - 1/3 of each weir would be beneficial to reinstate some connectivity and reduce the effectiveness of piscivores.

Figure 6. Looking upstream at an open, over-wide section upstream of a weir. This area is lacking in bankside cover and in-channel structure that could greatly increase the fish holding capacity. Also note the difference between the heavily grazed RB (left of shot) and reduced stock access LB (right of shot). The poorly vegetated RB provides poor cover for fish and has at a much greater susceptibility to erosion.

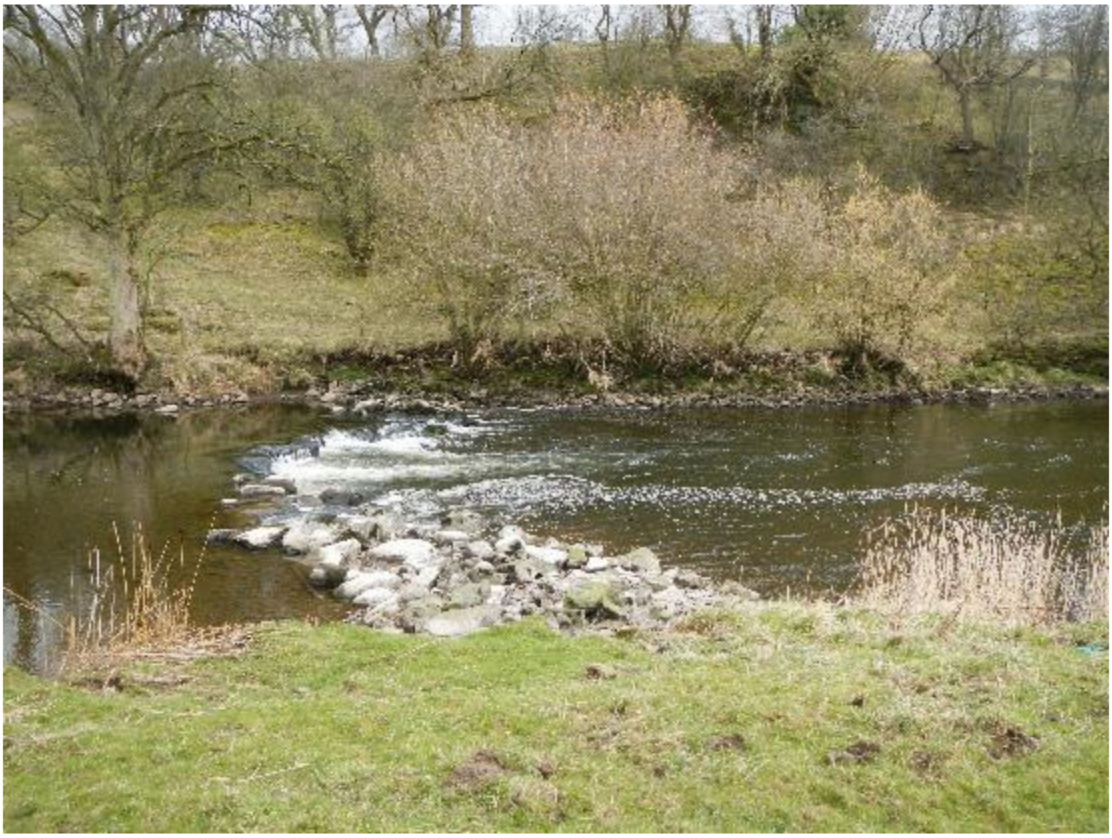

Figure 7. One of the several weirs which impound the river and reduces the potential for bed scour upstream.

Bedrock naturally limits scouring of the riverbed in certain areas, but free from the impoundment effect of a weir, those areas create valuable wide glide and riffle habitat that are vital for juvenile trout and salmon (Figure 8). Fry will inhabit the shallower, more sheltered margins with parr taking up residence in the diverse pockets of flow within the mainstream. These shallower areas may hold fewer adult fish than juveniles, but they are an essential component in the production of healthy wild juvenile trout and salmon stocks; they support many of the invertebrate species beneficial to anglers, and larger adult fish may move into them to feed, providing they have easy access.


Figure 8. Wider shallow glide and riffle areas provide vital fry and parr habitat.

Bankside trees are present along the Paythorne beat and, where left un-pruned, with low-hanging (<1m above water) and trailing branches, they provide valuable cover and fish lies, increasing the fish carrying capacity of the river. However, a general lack of low branches on the trees was noted throughout the beat. This is a result of well-meaning but very detrimental tree management aimed at improving angling access (Figures 9, 10 & 11). Compromising habitat to improve access is a common issue on river fisheries but can significantly limit resident fish stocks as well as the length of time that migratory fish will hold within a pool or area. Just as increasing the occurrence of marginal and in-channel features increases the number of fish a river can hold, removing them decreases it, leading to less natural production and ultimately to reduced fish stocks.

Rather than pruning, as in Figure 9, a far better course of action is to lay more trees and branches into the river. The problem depicted in Figure 8 could be rectified in this way, over time. Where canopies have been lifted by inappropriate pruning (Figures 10 & 11), coppicing to encourage low-level regrowth would be beneficial, as would planting along open sections of the bank to create fish refuge. Better vegetated margins will also greatly benefit terrestrial invertebrates. Low branches may make access trickier, but will greatly increase the fish carrying capacity, which will ultimately improve the angling - better slightly harder access but plenty of fish!

Figure 9. Recent tree pruning work that has significantly degraded habitat. Left *in situ*, the trailing branches would have provided valuable cover (blue shading), but also potentially increased sediment deposition in the river margin to narrow the channel, increasing flow velocities and scour mid-channel, and thereby increasing and maintaining pool depth.

Figure 10. Evidence of a history of tree maintenance and pruning of the vital low branches (red arrows). The yellow arrow demonstrates the lack of branches within >2m of the river,

following recent pruning, and is exactly the location within the pool that would benefit from low cover to provide habitat for adult salmonids.

Figure 11. The areas shaded blue demonstrate areas in which valuable fish-holding habitat has been lost through pruning of the low branches. Once a canopy has been lifted like this the only real solution is a low coppice to promote low-level regrowth.

A short distance upstream from the heavily pruned willow (Figure 9), a similarly located shrub (Figure 12) could be laid into the channel to greatly enhance in-channel habitat structure. Some of the mature willows at the tail of the pool could also be given this treatment (Figure 13). See how the smaller, lower goat willow (*Salix caprea*), between the larger willows, provided valuable in-channel cover around which fish will hold, while the larger trees just provide shade.

Figure 13 serves as a good example of the two predominant willow types present on the river and can provide guidance as to which should be used for habitat improvements. The taller trees to the right and left of shot are crack willow (*Salix fragilis*), a large, fast-growing species that, tends to crack and collapse under its own weight. These trees are useful for creating a natural source of in-channel LWD. The small goat willow in the centre, also known as pussy willow or sallow, is a much smaller, denser-canopied species, generally growing to around 4-6 metres, and is ideal as a shrub for low cover. Both species can be easily laid into the channel and will take (regrow) from whip cuttings driven into damp ground around the river margin or anchored in place within the water where they can root into the bank.

Figure 12. Small willow shrub that could be laid into the channel. The small area of erosion around the bankside edge is likely a consequence of sheep grazing and trampling. This could be stabilised with willow whip planting, but livestock would have to be excluded or they would eat any fresh growth.

Figure 13. A goat willow shrub (centre), low and bushy providing valuable cover, with much larger crack willows either side; some of which could be beneficially laid into the channel.

In some areas (Figure 14), low branches over the channel have been left uncut and it is important that these are preserved to prevent further denuding of habitat along the river margins. The material that has caught up on the branches demonstrates how they become submerged at high water levels and provide valuable shelter by slowing flows both within and immediately downstream.

Many open sections lacking in trees along the waterline (similar to that shown in Figure 15 & 16) were observed throughout the beat, particularly along the pools. All of these could easily be enhanced by planting along the bank line or laying any willows or hazel present there (Figure 16 – far bank centre of shot) down into the channel.

At the downstream limit of the section (walked as part of the AV), higher intensity grazing was evident on the LB (Figure 17) and as with all other areas with stock access, buffer fencing to exclude them would be beneficial. A gravel bar forming within the river also suggests that the channel has become over-wide at this point and that the reduced flow energy is allowing substrate deposition. Such deposition is a positive, natural process as the bar will help to re-energise flows by narrowing the wetted channel back to an appropriate width, provided that stock are excluded and the bar can become vegetated to stabilise it further.

Figure 14. In the locations where low branches are present, they should be preserved to prevent further loss of important habitat.

Figure 15. One of several locations that are open and lacking in bankside trees. These can be easily enhanced by planting willow whips along the bank line to create new shrubs.

Figure 16. The hazel shrub (centre of shot) could be laid down into the channel to enhance the river margin habitat.

Figure 17. High intensity grazing on the LB. Also note the gravel bar that is forming and becoming vegetated which suggests that the channel is over-wide and naturally re-narrowing.

4.0 Recommendations

4.1 Stocking

The move by the BGFA to stop stocking and concentrate on river habitat improvements is a positive move supported by the WTT and it is hoped that the money can be redirected to undertake habitat improvements that will benefit the wild trout and salmon stocks.

The native trout populations of Britain possess great genetic diversity, making them amazingly resilient to changing environmental conditions and able to adapt to a wide range of habitats. This has enabled them to thrive in our rivers since the last ice age (without human interference) and they should continue to do so in the future if we can limit our impact upon them and their habitats. However, in the latter part of this period (last 50-100 years), the human impact upon those fish populations has increased exponentially, with major issues arising from the way in which we manage riparian land (e.g. significant intensification of agriculture) and how we manage rivers (e.g. dredging to increase flood conveyance, and denuding vital habitat to reduce perceived flood risk or to ease angler access to rivers). All of these factors have a significant detrimental impact on the wild fish populations that rivers can support.

To compound the habitat related issues, direct interference with wild fish populations also increased, with large numbers of hatchery fish introduced to rivers. Stocked fish (both diploid and triploid), are affected by domestication and unnatural selection, even within one generation in the hatchery (<u>so this includes fish from wild brood-stock schemes</u>). Having grown and survived in an unnatural captive environment (concrete raceway, earth pond or tank) they are poorly adapted for the very different conditions of a natural river. Adaptation to a farm environment is cumulative, with the wild traits (genetic diversity and behaviours), and survival rates in the wild decreasing with each generation in captivity. The forced mating that occurs in a hatchery also bypasses vital chemical and visual aspects of wild selection that exist to ensure mate compatibility and maximise the fitness of wild fish.

It's a *'catch 22'* situation: if stocked fish don't survive long enough to reproduce in the wild, or are infertile (triploids), they are just an additional impact upon the ecosystem (as the river only has a limited amount of food and space); if they do survive long enough to breed then they have the potential to suppress wild fish production through 'hybridisation', as their offspring (<u>including crosses with wild fish</u>) have much poorer survival than the native, wild fish.

Well managed, natural river habitats (without stocking) have a far greater capacity to produce and support healthy fish populations, at all life stages. From emerging out of the gravel, wild trout disperse throughout the available habitat to find territories appropriate to their individual size and dominance. They constantly compete to maintain a "pecking order" which ensures the dominant fish maintain priority over the best lies, where drifting food is the easiest to intercept for the least energy expenditure. They will remain (often for years in the case of a large, dominant fish) until displaced by another more dominant individual or until they die (or are removed).

This ensures that the available habitat is always used to best effect. In addition, as salmonid survival is density dependant, the greater the habitat variation and abundance available (cover and in-channel structure), the greater the number of trout that will survive each year and the more fish a reach can hold. For this reason, maximising the occurrence of those features and avoiding unnecessary tidying/pruning ensures that the river holds the maximum number of fish possible under the given conditions (something not possible through stocking).

In contrast to wild fish, stocked fish are often transient and select less energy-efficient lies; they, therefore, lose condition and tend to leave or die within a few months (sometimes weeks) of being stocked. In the meantime however, they cause increased competition and potentially displace the wild fish.

It must also be remembered that, even without stocking, the river will be naturally re-stocked. Wild trout spawning and recruitment means that new fish are produced within, and enter into a river section each year for anglers to catch. The naïve fish may often be the smaller ones, but the overall greater population will provide sport for all sizes of fish. **(N.B. Introducing stocked fish can easily disrupt this balance - e.g. the habitat required for five 0.5kg stocked fish may have originally supported many more wild fish, in a range of sizes from parr upwards)**

Although it may appear counterintuitive, for all of the above reasons, stocking can often lead to less fish within a river by suppressing the wild population (particularly if undertaken year upon year) whereas wild fisheries have the potential to support much greater overall fish populations. Consequently, many angling clubs actually report increased catches after ceasing stocking (see case studies on the WTT website link below).

To further safeguard natural fish stocks, catch and release fishing is also advisable, for both resident and migratory stocks. This need not be mandatory but will greatly assist in preserving valuable wild spawning stock and improving natural trout production. Also consider the fact that the larger fish caught possess the characteristics necessary to survive well in the wild and, if these fish are returned, they have a good chance of attaining even larger size and further enhancing angling opportunities.

A more detailed, referenced explanation of this rationale can be found on the Wild Trout Trust website in the Trout Stocking section (www.wildtrout.org/content/trout-stocking).

4.2 Fencing

Effective fencing to exclude livestock from the riverbank will be key to achieving major improvements on the Long Preston beat in particular, but also anywhere else that stock have access. Ideally, the fencing should completely exclude livestock from the river bank, which may then require either solar pumps (Figure 17) or pasture pumps (Figure 18) to supply water for drinking at several locations.

Negotiations regarding fencing will have to be undertaken with the landowner and tenant farmer. It would be hoped that if they are helped to understand the major impact that grazing is having upon the watercourse they would support BGFFA in finding a solution for stock exclusion, although some incentives may also be required.

It is recommended that the Ribble Rivers Trust are contacted as an experienced ally in initiating any fencing schemes. They have an understanding of the potential funding that may assist with the cost of fencing and have a good knowledge of the wider catchment. It would also be beneficial to include the Environment Agency and Natural England in any discussions as they too may be able to find funding, and their Catchment Sensitive farming officers may be able to assist. The next round of Countryside Stewardship (2016) could also be key in securing support from landowners and tenants who may be eligible for subsidies on land placed into buffer strips. The additional incentive of a scheme that also provides subsidies on their other land may help to gain their support.

Photograph 17. Cattle excluded from a riverbank and watered via a pasture pump. The cattle draw water from the river through a pump which they activate themselves by pushing it with their nose.

Photograph 18. Solar panel powered pumps employed to fill standard water troughs. Photograph courtesy of Ribble River Trust.

4.3 Tree Work

4.3.1 Planting

Planting is recommended wherever there is a lack of low cover and structure along the river margins. It will be of particular use if trees are planted around the waterline and trained into the channel. Most native deciduous species would be beneficial but willow is by far the easiest to transplant and manipulate.

The quickest and easiest way of planting is with willow, by pushing short sections of willow whip into the ground. This can be undertaken at any time of the year, but will have the greatest success if undertaken within the dormant season, shortly before spring growth begins (ideally late Jan-March). Whips should be planted into soft, wet earth/sediment so that there is a greater length within the ground than out of it, to minimise the distance that water has to be transported up the stem; 30-40cm of whip protruding from the ground is sufficient.

Small bundles (faggots) of freshly cut willow can also be employed to rapidly increase marginal cover. If they are staked to earth sections of river bank, along the waterline, they have a good chance of rooting and becoming valuable, dense cover.

4.3.2 Laying

As described, where trees are already established along the bank, habitat improvements can be achieved by laying the trunks, or selected branches down into the watercourse to increase low cover and structure. The method is usually limited to species that can be easily manipulated without snapping (e.g. willow, elm, hazel, hawthorn and small alder), but some others can be laid carefully. Small to medium shrubs tend to work best, although quite large willow such as those in Figure 12 can be successfully laid.

The process involves cutting part way through the stem/trunk, a little at a time (like laying a hawthorn hedge), until it can be forced over into the channel (Figures 19 & 20). The depth of the cut should be limited to only that which is required to bend the limb over, as this will retain maximum strength in the hinge and maintain the health of the tree/shrub.

Photograph 19. Hinged willow.

Photograph 20. Hinged hazel.

4.3.3 Coppicing

Where trees are present but the canopy is well above the water level (>1m), coppicing can be undertaken to encourage low-level re-growth and rejuvenate the tree. This should ideally be done in locations like those shown in Figures 10 & 11. The treatment should be undertaken sparingly, as tree canopies also provide habitat for many other species, create valuable shade over a watercourse and supply terrestrial invertebrates and leaf litter to supplement food webs in the river. When undertaking coppicing, existing low cover should also be retained and care should be taken to ensure that work does not disturb bats or nesting birds, as this would constitute an offence under the Wildlife and Countryside Act 1981. Figure 21 (immediately after) & Figure 22 (2 years after) show how effective coppicing can be at reinstating low cover.

Figure 21. Recently coppiced alder (photo courtesy of the Environment Agency).

Figure 22. Alder 2 years post coppicing now providing high quality low-level cover and excellent features around which to fish (photo courtesy of the Environment Agency).

More information on the measures discussed and many other enhancement and restoration techniques can be found in our various publications on the Wild Trout Trust website, under the library tab (http://www.wildtrout.org/content/library).

5.0 Making it Happen

WTT may be able to offer further assistance such as:

- WTT Project Proposal
  - Further to this report, the WTT can devise a more detailed project proposal report. This would usually detail the next steps to take and highlighting specific areas for work, with the report forming part of a land drainage consent application.
- WTT Practical Visit
  - Where clubs are in need of assistance to carry out the kind of improvements highlighted in an advisory visit report, there is the possibility of WTT staff conducting a practical visit. This would consist of 1-3 days work, with

a WTT Conservation Officer teaming up with interested club members to demonstrate the habitat enhancement methods described above. The recipient would be asked to contribute only to reasonable travel and subsistence costs of the WTT Officer. This service is in high demand and so may not always be possible.

- WTT Fundraising advice
  - Help and advice on how to raise funds for habitat improvement work can be found on the WTT website - www.wildtrout.org/content/project-funding

The WTT officer responsible for fundraising advice is Denise Ashton: dashton@wildtrout.org

In addition, the WTT website library has a wide range of free materials in video and PDF format on habitat management and improvement:

http://www.wildtrout.org/content/index

We have also produced a 70 minute DVD called 'Rivers: Working for Wild Trout' which graphically illustrates the challenges of managing river habitat for wild trout, with examples of good and poor habitat and practical demonstrations of habitat improvement. Additional sections of film cover key topics in greater depth, such as woody debris, enhancing fish stocks and managing invasive species.

The DVD is available to buy for £10.00 from our website shop http://www.wildtrout.org/product/rivers-working-wild-trout-dvd-0 or by calling the WTT office on 02392 570985.

6.0 Acknowledgement

The Wild Trout Trust wish to thank the Environment Agency for the support and funding that made this visit possible.

7.0 Disclaimer

This report is produced for guidance and not for specific advice; no liability or responsibility for any loss or damage can be accepted by the Wild Trout Trust as a result of any other person, company or organisation acting, or refraining from acting, upon guidance made in this report.