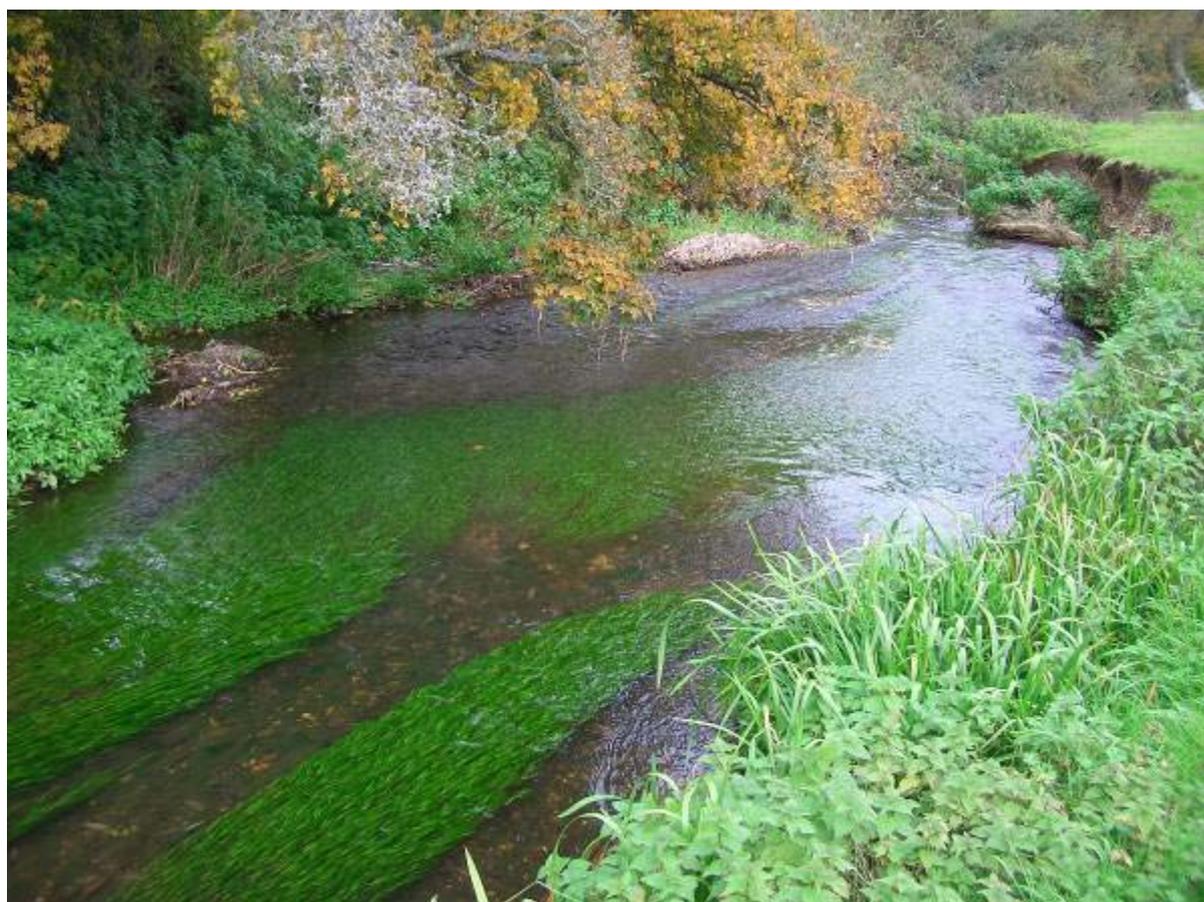




River Wey North – B.P. Bentley Fly Fishers



An advisory visit carried out by the Wild Trout Trust – October 2010

1. Introduction

This report is the output of a Wild Trout Trust advisory visit undertaken on the Wey North on waters controlled by the B.P. Bentley Fly Fishers. The advisory visit was undertaken at the request of Mr. David Darrah who is a serving committee member of the club.

The B.P. Bentley Fishers is a well established fishing club who control fishing rights on approximately 4 miles of the North Wey in the Bentley area.

Comments in this report are based on observations on the day of the site visit and discussions with Mr Darrah.

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. Catchment overview

The Wey North forms the upper northern arm of the Wey catchment. The river rises from the chalk aquifer in the Alton area and flows east and then south to join the Wey South at Tilford. The Wey is a tributary of the Thames, draining a catchment of 904 km² in Surrey, Hampshire and West Sussex.

The river has been extensively modified for agricultural irrigation, milling and for flood defence purposes. The aquifer which forms the headwaters of the river is heavily abstracted and the river receives substantial quantities of treated sewage effluent via Alton, Bentley and Farnham waste water treatment works.

Despite these and other pressures, the Wey North supports an excellent quality mixed fishery, which in part is due to the productive water chemistry but also the good quality habitat available on many sections.

The Wey North has many of the characteristics found in a true chalkstream, such as relatively stable flows, clear water and a range of plants such as water crowfoot (*Ranunculus* sp) and starwort (*Callitriche* sp) which are synonymous with a chalk river environment.

Chalkstreams are classified as Biodiversity Action Plan (BAP) habitats in need of protection and, where possible, improvement:

<http://www.ukbap.org.uk/newprioritylist.aspx>

3. Fishery overview

The sections of the North Wey controlled by the Bentley FF have been primarily managed as a stocked fly fishery for many years. The river here is known to support strong populations of wild brown trout and the club is keen to support and improve the wild component of the stock.

In addition to trout, the upper reaches of the Wey North support mixed coarse fish stocks including chub (*Leuciscus cephalus*), dace (*Leuciscus leuciscus*) and roach (*Rutilus rutilus*). Pike (*Esox lucius*) are absent from the upper Wey North and their presence in the upper catchment is largely restricted by a number of impassible milling structures located downstream in the Farnham area.

4. Habitat assessment.

Three main sections were inspected. The top beat which starts below Mill Court, near Upper Froyle; a long section of the middle river between Station Road, Bentley down to below Marelands; and a lower beat lying downstream of the road bridge at Turk's Mill, otherwise known as Harrop's Bottom.

4.1 Top beat

The top beat supports some excellent habitat for wild trout. The channel here is comparatively straight and shallow in form and was almost certainly re-aligned to facilitate agricultural irrigation as part of an old water meadow system. The reasonably steep gradient promotes brisk water velocities flowing over a predominantly gravel bed. Some good-sized beds of water crowfoot (*Ranunculus* spp) and water moss (*Fontinalis* sp) were observed on the shallower gravel runs. Beds of mainly starwort (*Callitriche* sp) were also colonising some of the slower flowing marginal sections, where soft sediments have accumulated. The margins are classic chalkstream: low, boggy and supporting a diverse community of aquatic emergent plants. Unfortunately all of the photographs taken of this top beat were too dark to be of any use in this report.

Numerous small trout were seen as well as small shoals of coarse fish. Although the section supported some excellent spawning and nursery habitat, high quality holding lies for adult trout were comparatively limited. The reach was quite open with little in the way of overhanging tree cover. The lack of bends and associated pool habitat will restrict the year-round trout holding capacity of the reach but this section may be particularly important for adult fish migrating from downstream to spawn. The provision of further holding lies for adult trout will make this section even more productive for spawning and help to increase its potential for holding larger adult trout and therefore improve its angling potential.

Suggestions on how to create improved holding and spawning opportunities are discussed in the Conclusions and Recommendation sections of this report.

It was not clear if this section is currently stocked by the club. With a little work this section would support wild fish in every available niche, rendering expensive

stocking superfluous and likely to restrict the development of the wild population in a critical location, right at the head of the fishery. This issue is discussed in more detail in section 5 of this report.

4.2 Station Road to Marelands.

The section of river immediately downstream of Station Road bridge supports some excellent habitat with a classic pool/glide/riffle sequence. Some marginal trees and shrubs provide important shade and cover, promoting the ideal dappled light and shade effect which is known to suit trout populations in most river systems. Further downstream low-level tree cover was scarce and is an area where significant improvements could easily be made.



A great holding pool downstream of Station Road Bridge scoured by the influence of the mature ash tree.

Decent quality habitat continues for a considerable distance downstream, however, some cattle damage to the LB margin was evident. It was noticeable that a section further downstream that had been fenced to exclude livestock contained better quality in-channel habitat.

Some light grazing of margins can provide an ideal habitat in the chalk stream environment. However, unrestricted access by too many large cattle can have serious implications for in-channel habitats. Trampling of the banks can leave bare soils prone to winter erosion, eventually causing the channel to become wider and shallower. Alternatively, cattle poaching can result in the existing margin being pushed in, leaving a narrow but overly deep channel. Examples of

both scenarios can be found on Bentley FF water. This issue is discussed in more detail in sections 6 and 7 of this report.



Some low, bushy cover provided by the willows on the RB promoting some valuable and comparatively rare overhead cover.



The fenced section below protecting a nicely balanced section of channel. The odd low sallow on the outside of the bend would further improve this section.

4.2 Marelands

For the purposes of this report I have divided the Marelands beat into three: the top section running down to the weir below Marelands house; the Central section from this top weir running down to the Iron bridge or White bridge; and the lower Marelands beat running down towards Turk's Mill.

4.2.1 Marelands top beat

The section of river above the top weir was in poor shape. The channel has not recovered from previous land drainage works, and the impounding effect of the ornamental weir has resulted in a long section of comparatively deep, slow flowing water over a predominantly silt and thin gravel bed. The whole reach provides little in the way of shade, with in-channel cover provided solely by thick beds of marginal emergent plants such as sweet reed grass (*Glyceria maxima*) and burr reed (*Sparganium erectum*). Where the channel has been pinched, it is understood that the emergent plants form an impenetrable tunnel of vegetation rendering access for angling very difficult in high summer.



A deep, slow section of channel on the upper Marelands beat. This section is over grown with marginal emergent plants in high summer but will also provide no winter cover for wild fish once the emergent shelves die back. This section, like most of the Marelands beat, is ripe for improvement.

There is considerable concern amongst the committee that the Marelands beat is being damaged by excessive cattle poaching. This was indeed evident on several sections. The habitat on this section is also affected by the weirs, and the river will struggle to recover unless some radical measures are taken to reduce the impounding effects of the two substantial weirs, possibly coupled with raising the existing river bed.



Top weir at Marelands



A short section of high quality spawning and nursery habitat just downstream of the top weir.

4.2.2 Marelands middle beat

It is understood that the club are planning to exclude livestock from a substantial length of channel through a fencing programme. Again some bank damage caused by trampling cattle was evident. It should be noted however that some of the narrowing effect caused by the cattle has resulted in some increased central channel water velocities. The previous channel width, as created by land drainage works, is far too wide to sustain good quality trout habitat. Restricting cattle access and then embarking on a programme of tree planting to shade-out some of the rampant emergent plant growth would be a sensible option. If this were coupled with promoting more variation in channel depth, either by winning gravels from the adjacent meadows or importing fresh gravels, then the river could be transformed. These options are discussed in more detail in the recommendations section.

Some willow planting has been undertaken on the RB just upstream of the bottom weir but these trees are either of the crack willow (*Salix fragilis*) or white willow (*Salix alba*) variety. These trees will grow rapidly and unless pollarded at a low level will not provide the low scrubby marginal cover the river desperately needs. A better option is to plant with sallows (goat willow *Salix caprea* and grey willow *S. cinerea*) or possibly with scrubby thorns.



A small heavily pruned shrub which should be allowed to form a low bush. At present it barely provides enough cover for one small trout and if allowed to develop would be a great holding lie.

4.2.3. Marelands bottom beat

Bisecting the Marelands beat is the substantial weir at Iron bridge. It is understood that both this weir and the upstream weir are structures with historical significance. This is unfortunate from a habitat point of view because both structures are having a substantial impact on the whole Marelands beat. Exploring options to at least reduce the impact of these structures would reap considerable benefits for in-channel habitat quality.



As well as potentially fragmenting fish populations this weir impounds the Wey for hundreds of metres upstream

Downstream of the Iron bridge the river has a meandering planform but again has limited variation in depth profile and little in the way of in-channel cover. One or two modest shallow glides are present but in general the channel form is dominated by deep glide between marginal beds of emergent reeds. Although not inspected it is assumed that the whole reach is again impacted by a structure at Turks Mill.

It is understood that the Mareland beats are some of the most popular on the entire fishery, and that the bulk of the stocking the club carries out is on this section. Access for angling is obviously very good but the reach as a whole provides a poor environment for wild trout and could be greatly enhanced to provide improved holding for stocked fish as well improved opportunities for wild fish habitat.

4.3 Harrop's bottom beat

The very bottom beat lies downstream of the road bridge below Turks Mill. This section is an absolute delight (cover photo) and supports a wide variety of habitat types for all life stages of trout.

It is understood that the club have taken the decision not to stock this beat and it certainly has the potential to provide sufficient spawning and nursery habitat, as well as providing some superb quality adult holding areas to sustain a viable un-stocked fishery. The gradient on this reach is substantial and there was some evidence of bank erosion. This was not thought to be a serious issue although there was one section where the river looks as though it will eventually cut through a long loop to form an oxbow. If the club deem that this natural process is undesirable then measures to re-enforce the upstream margin with a willow planting programme may be pertinent.



Lovely pool/riffle/glide sequence supporting some high quality spawning opportunities for trout.

The reach as a whole supported a diverse mix of in-channel and marginal plants as well as a valuable dappled light and shade regime promoted by the marginal trees. The reach could be further improved through the introduction of pieces of large woody debris (LWD) pegged onto some of the shallow gravel runs. An inspection of the gravels revealed that they were quite compacted and silt laden. Using pegged down pieces of LWD to locally sort gravels into loose ramps will boost spawning success. An early autumn programme of gravel cleaning or raking on key sites would also help to improve egg to fry survival rates.

Overall the bottom site provides a glimpse of how the river could and should look if it were not so heavily dredged and impounded.

5. Trout stocking.

There is no doubt that the middle reaches of the Wey between Station Road and Turks Mill could not currently sustain a viable trout fishery without supplementary stocking. The upper and lower reaches of the fishery definitely support sufficient habitat quality to sustain a wild trout fishery, where stocking could be considered unnecessary. On any unstocked reaches the fishing effort should be light and the fishing managed on a mainly catch and release basis.

It is understood that current stocking practises are undertaken by introducing six batches of fertile diploid trout, with the first introduction in mid-March. This is very early to introduce stocked fish into a section affording very little cover, leaving the fish exposed to predation and likely to move off to find more secure lies. A better return on the club's investment might be achieved by stocking later (mid-April at the earliest) once the marginal vegetation has recovered and making efforts to spread the stock out as much as possible. More frequent introductions with lower numbers of fish would probably result in a better catch return, albeit at a slightly higher cost of stocking.

There is mounting evidence that interbreeding between domesticated farmed trout and wild fish can lead to lower fitness and survival amongst the offspring, reducing the numbers of river-bred fish in the population. Recent changes to the Environment Agency's National Trout & Grayling Strategy reflect this concern, and by 2015 all farmed trout stocked to rivers will be required to be sterile all-female triploids, or derived from local broodstock.

6. Conclusions

The top beat of the Wey down below the Hen and Chicken pub supports some excellent quality spawning and nursery habitat. This section could be further improved through the provision of some large woody debris flow deflectors to promote improved lies for adult fish and to help scour and sort river bed gravels. See photo on page 13.

The provision of the occasional low level scrubby goat willow, particularly on the outside of any bend will further improve the fish holding capacity of the reach. With a few simple improvements there is no reason why this stretch of river could not be managed as a wild trout beat without the need for any supplementary stocking.

The top of the middle reach running just downstream of Station Road also supports some good quality habitat. This reach again would benefit from a programme of tree planting and possibly further stock fencing.

The issue of fencing river banks from grazing livestock is an emotive one. There is no doubt that some very light trampling of river margins can provide habitats for a range of invertebrate species that could potentially be valuable to the fishery. The difficulty is that cattle in particular tend to congregate in favoured

areas when they can have serious impacts on soft, undefended margins. Conversely margins that are completely fenced off can develop thick scrub unless appropriate maintenance regimes are in place. The ideal scenario is a very wide buffer zone with access gates so that some limited grazing can be undertaken on the inside of the fenced zone, thus reducing maintenance requirements. Temporary electric fencing can also work. Striking the right balance is often difficult and grazing regimes requires constant evaluation to produce the ideal marginal habitat.



The middle beats at Marelands offer the biggest opportunities for enhancement

Marginal tree shading was at a premium throughout the middle reaches. Where some mature trees existed, better quality habitat could be found. Marginal trees are an incredibly important component of good trout habitat. They are often responsible for forming critically important in-channel features such as pools and riffle sequences. They provide stability for the bank and are a source of external terrestrial food items for trout and other fish species. The root systems are an important refuge area from predators, and the cooling effect of some shading is now widely regarded as vital on many lowland rivers threatened by climate change with lower summer flows and higher temperatures.

There are significant opportunities to promote improved lies for trout by undertaking a programme of winter tree planting. Pushing in stakes or whips of goat willow at water level which should subsequently sprout and grow will provide some much needed low scrubby cover, particularly on the outside of bends and over pool habitat. They may be considered a nuisance to some anglers and they will need maintenance by the club but the trout will love them and they will be much less inclined to migrate out of the reach.



An example of the type of cover afforded by a low willow that would work well on the Wey North. The willow will shade out the reed and provide a good summer lie and a winter refuge area.



Two pieces of LWD configured to form an upstream "V". Structures like this scour local pots in the shallow bed and promote a clean, loose ramp of gravel downstream. A few of these on the top beat would promote better lies and improve spawning potential.

Long reaches of the Marelands beat are under the influence of the two weirs. It is understood that there are some sensitivities over these structures and it may not be possible to lower or notch the weirs to effect habitat improvement and better access for migrating fish. The weir below the Iron bridge in particular looks as if it could well be a block to fish migration. A simple easement could be constructed on this weir by way of building a notched box constructed from stone or block work on the downstream side of the weir face. The weir sill would also need to be notched to reduce the head loss into the box section below. Resources to undertake such a project may be available from the Environment Agency or the River Wey Fishery Action Plan which holds a budget which can be allocated for projects designed to improve habitats or fish populations.

Beds of marginal emergent plants can encroach across the channel during periods of low flow. Getting the balance between maintaining fishable access and providing a decent fringe of marginal plants is very important. Marginal plants provide superb bank defence and can help to promote better quality mid-channel habitats by concentrating flows through a constricted channel. They are also a critically important habitat for the adult life stages of many aquatic invertebrates. Removing some of the plants that can potentially block central channel areas is a good compromise.

Undoubtedly the best option for the Marelands beat is to plan for a bold and radical restoration. This is entirely achievable but it is doubtful if any project aimed at improving in-channel habitat for fish would be successful unless coupled with some modifications to the various impounding structures. If agreement could be reached to lower the head then work to raise the river bed with imported gravels would produce stunning results. The Marelands reach could easily accommodate 6 new riffles, with associated pool habitat. Each riffle would need to be at least 30m long. A rough calculation would suggest that approximately 300 tonnes of gravel rejects would be required for each site. To have the material delivered and installed would cost in the order of £8k per riffle but costs per riffle could be cut if the scope of any project was more ambitious.

Reclaiming a sustainable regime where a more natural river morphology could be established will offset the issues associated with excess marginal plants, boost wild trout production and create habitat where stocked fish are more likely to stay. Addressing targets set by the government for achieving good ecological status under the Water Framework Directive might enable a project to attract some funding. Coming up with a sound plan and agreement from local landowners and then putting forward a modest budget might attract partnerships that could see the project pot grow. The first step is agreement from interested parties that such a scheme is necessary and desirable.

The bottom beat below Turks Mill is in very good shape. Some willow spilling might be required to reduce the risks of bank erosion if deemed excessive. Some light bank erosion is perfectly acceptable and a natural process that often frees up fresh gravels for spawning, but defending key areas to avoid the river completely breaking through might be necessary in the future.

Further improvements to some of the very shallow gravel riffles could be achieved through the imaginative use of LWD flow deflectors and the use of loose tree brushings pegged into the margins to create improved winter cover for juvenile trout. These and other techniques are set out in the WTT Chalkstream Habitat Manual, available as a free download through the Trust website, www.wildtout.org

7. Recommendations

- Leave as much fallen woody material in the channel as possible.
- Do not be tempted to peel the marginal reed fringe back too far. A narrow but briskly flowing channel will suit trout better than a wide, deep and slow-flowing one.
- Plant some additional willows (sallow) or thorns to promote low overhead cover on long open sections, particularly over pool habitat or on the outside of bends.
- Consider introducing more structure into the channel on the top and bottom beats, particularly on shallow gravel sections by using LWD flow deflectors to scours pots and promote ramps of loose gravel for improved spawning opportunities.
- Protect vulnerable cattle-damaged margins through a programme of permanent or temporary fencing. Low density grazing on the inside of fence lines can work well when large buffer zones are installed.
- Explore the options for reducing the head loss (difference in height between the upstream and downstream water levels) on the weirs along the Marlands beat.
- Consider and evaluate a habitat improvement project designed to radically improve habitat diversity along the Marelands beats. Winning local gravels from river side scrapes or introducing imported material to construct riffle and pool habitat will greatly enhance the river. A partnership approach to look for sponsors is recommended.
- Consider options for building a low cost “easement” on the weir below Iron bridge, coupled with a reduction in head to improve local fish migrations. The WTT can advise on options.
- If not already involved, consider signing up for some training in undertaking simple surveys as part of the Anglers Monitoring Initiative with the Riverfly Partnership. This is an excellent initiative and will give a much better understanding about the productivity of your fishery and an indication of long term water quality performance.
- Raise awareness amongst the membership over the importance of catch and release for wild trout conservation.

- Use infertile triploid brown trout as stock fish to avoid the known harmful effects of interbreeding between wild and farmed fish. Consider stocking later in the season (mid-April onwards) and introducing fish little-and-often rather than in large batches. If not already done, monitor catches to evaluate the return on stocking.

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 EA's Development Control Officer.

7. 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 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 advisory and practical visit programmes.

Disclaimer

This report is produced for guidance only and should not be used as a substitute for full professional advice. Accordingly, no liability or responsibility for any loss or damage can be accepted by the Wild Trout Trust as a result of any other

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