



River Piddle – Binnegar Farm



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

1. Introduction

This report is the output of a Wild Trout Trust advisory visit undertaken on the River Piddle at Binnegar Farm. The advisory visit was carried out at the request of Mr Giles Woolley, who leases the fishing rights on behalf of a small angling syndicate.

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

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. Fishing rights controlled by the syndicate cover both banks but fishing activity is mainly carried out by wading.

2. Catchment overview

The River Piddle rises at four major springs near Alton St. Pancras, initially flowing south before turning east at Puddletown and then on towards Poole Harbour, where it joins the River Frome at Wareham. The Piddle enjoys a reputation for being a comparatively natural chalk stream, although like most chalkstreams, the channel has been very extensively modified for milling and to provide irrigation systems for the network of old water meadows in the valley.

The Piddle offers excellent brown trout (*Salmo trutta*) fishing, with occasional salmon (*Salmo salar*) and sea trout, as well as coarse fish in the lower reaches.

3. Fishery overview

The Binnegar Farm fishery is formed from a carrier of the main Piddle which was probably originally diverted to provide a high level irrigation channel. Evidence of old water meadow structures can still be seen today. In total the fishery extends to approximately 2km of double bank fishing.

The fishery is very lightly fished and has been mainly managed for wild trout, although recently the river has been stocked with approximately 100 sterile brown trout averaging 340gms each following a decline in the catches of wild fish. The occasional sea trout is taken from this reach but these fish do not regularly contribute towards the catches made by the five rods in the fishing syndicate.

Angling is carried out mainly by wading which has enabled the syndicate to take a relaxed approach to bank maintenance. The syndicate is particularly keen to ensure that any maintenance regime is carried out in the best interest of the ecology of the river as a whole and not just aimed at improving angling opportunities.

Two key elements potentially impacting this reach of river are that of water quantity and quality and these issues are discussed in more detail in section 4.



The Binnegar Farm Fishery is formed by the southerly carrier leaving the main river just downstream of Budden's farm

4. Habitat assessment.

The lower section of river inspected was comparatively straight and reflects the fact that this is an artificial channel, originally constructed to convey water along a slightly raised or perched bank for the purpose of periodically drowning the adjacent meadows. Some of the old hatches and off-take structures are still to be found. Despite the highly modified nature of the channel, the river provides some good habitat for all life stages of trout. This is partly due to the comparatively steep channel gradient providing vigorous water velocities, complemented by the rich seam of river bed gravels, which provide excellent spawning opportunities for salmonid fish species in many areas.

A crucially important factor which has undoubtedly favoured trout habitat in this reach is the fact that an old hatch straddling the river has been permanently left with the undershot gates in the fully raised, or "open" position. So often this type of structure is either left partially down to provide raised water levels upstream or constantly manipulated to maintain a given upstream water level at all times, even during extreme fluctuations in flow. When these structures are closed they invariably reduce upstream water velocities, encourage siltation and degrade potentially good trout spawning and nursery habitats.



Old water meadow hatches with the main structure fully drawn and the drowning gate fully closed

During the inspection of the bottom section there was a discussion about the shaded nature of the channel. Some modest tree works have already been undertaken on this reach in an attempt to let in more light. It was apparent that most of the shading in the channel came from a large number of mature trees set slightly back from the bank margins, rather than from any low level cover. Low level, bushy cover at or just above the water level not only provides cooling shade, but also more secure lies for trout and a refuge from predators.

There has been much debate about ideal levels of riparian shading for trout streams and some recent research carried out by the Forestry Commission has highlighted how important shading can be in providing a significant cooling effect during hot weather. Trout are a cool-water species and significant shading of trout streams, particularly in lowland southern England is a critically important component of good trout habitat.

Research has also confirmed that some aquatic invertebrate species require exposure to direct sunlight, as do many aquatic plants which provide food and shelter for invertebrates and habitat for fish. In order to balance these requirements we would suggest that a dappled light and shade regime is most effective. Pooland holding glide habitat benefits most from low level shading, and sections of shallow riffle can be opened up to significant direct sunlight. As a general rule of thumb we recommend a ratio of 60% shade to 40% unshaded as a good model to aim for. It should be remembered that when a canopy is lifted and in-channel plants encouraged, these will also provide significant shading of the river bed.



Significant shading of the bottom section but precious little in the way of low level shade and in-channel cover

The comparative lack of marginal in-channel cover can be seen in the photograph above. The very occasional short section of undercut bank does provide some cover but on the whole there is precious little cover here for juvenile trout.

This section could be significantly enhanced by planting some low level shrubby trees such as willow or goat willow or perhaps even thorn bushes. Some light thinning of a few of the mature trees that are set back from the margin may be required to promote improved marginal low level cover. Another method for providing improved habitat on this reach is to introduce pieces of large woody debris (LWD) to promote river bed scour and enhance spawning opportunities as well as providing improved holding areas, particularly for adult trout. Additionally pieces of brash or coarse woody debris (CWD) could also be pegged into the margins to provide valuable refuges from predators such as fish-eating birds. These techniques are described in more detail in section 5 and 6 of this report.

Gravels throughout the reach were relatively compacted and silt-laden, which is probably restricting spawning success. Poor survival of salmonid eggs laid in chalkstream gravels suffering from siltation is well-researched and documented. The use of LWD flow deflectors to break up the gravels and promote ramps of clean well-sorted gravels is a proven method for enhancing spawning opportunities and promoting improved trout egg survival.



A low overhanging goat willow providing a superb refuge for trout on the Sussex Rother. Willows can be easily planted by cutting a stake or a "whip" off a live tree and simply pushing it into a bare margin at just above normal water level. Three or four of these would provide a "bolt hole" refuge on the lower section of the Piddle at Binnegar Farm.



Installing brushings designed to provide improved cover for spawning trout and their offspring on a tributary of the Wylfe. This could be a way of providing temporary cover until thicker marginal cover has established.

Further upstream the channel becomes slightly deeper in places and the shallow riffles are replaced by smooth glide habitat. Throughout the section there were

examples of good habitat being promoted either by large stones or pieces of marginal LWD.



A large stone in the centre of the channel promoting some surface boil and localised bed scour. A stone like this can make all the difference to whether a fish takes up residence or not.



A scoured pot created by the fallen LWD – a great lie for a trout

A short distance downstream of Binnegar Farm, a ditch discharges through a Norfolk reed bed into the carrier from the LB. On the day of the visit this ditch

was carrying an unacceptably high level of suspended sediments. It is understood that this ditch carries water that is pumped from a working quarry nearby. Presumably the company will have a licence issued by the Environment Agency to discharge water into this ditch and then on into the Piddle. It would seem unlikely that the levels of suspended sediments observed entering the Piddle would meet levels deemed acceptable for a high quality salmonid fishery. It is recommended that further investigations are made into the conditions of the discharge consent and whether the site is properly monitored. High levels of suspended solids adversely impact upon spawning success, macrophyte growth, invertebrate communities and the amenity value of the fishery.



Unacceptably high levels of suspended sediment entering the river

Approximately halfway along the fishery and adjacent to Binnegar Farm there is a weir. The purpose of the structure is not entirely clear but it is possible that it is a replacement for an old water meadow structure designed to raise upstream water levels or possibly installed to create deeper water for an abstraction pump approximately 300m upstream.

In addition to the slowing down of water velocities and the potential silting of available habitats, weirs often fragment fish populations that would normally move up river to exploit good spawning habitats, with the offspring then dropping back down to take up residence in good quality holding habitats. This natural process can be impossible on rivers with large impounding structures. This particular weir does not look as if it is high enough to be of major concern and following significant rainfall the tail height is likely to rise sufficiently to allow most fish to be able pass without too much difficulty. The removal or lowering of a central section would greatly improve the ability of fish to be able to pass the

structure under normal or low flow conditions and would speed up water velocities above the structure.



The weir at Binnegar Farm. Removing the central third of the weir would improve habitat upstream and facilitate improve fish access through the structure.



The pump located upstream of the weir. Lowering the weir could impact on the efficiency of pumping at this location.

At various locations along this reach, trees have fallen right across the channel. It is recommended that most be left in situ or if some are deemed to be a real

issue crop the trunk and pin the end into the river bed. Attached tree trunks that overhang the river in this way make superb flow deflectors and provided they are secured to the bank and bed, will promote some undershot scour that will inevitably dig a good holding pool with the additional benefit of throwing up a ramp of gravel, ideal for spawning.



Remove the downstream tree but retain at least one third of the upstream trunk in situ to promote pool creation.

A large weir marks the upstream limit of the fishery. At this location two structures originally controlled the flow, splitting it between the main river and the carrier. The structure at the head of the carrier is largely intact, however the structure which regulates flow into the main river has failed and significant flow is now directed down via the main channel. This is obviously of major benefit to the main channel and the fishery interests who own it. There may also be strong fishery and ecological arguments that support the current flow split. Unless this structure is either rebuilt or reinforced, it is highly likely that the percentage of flow dropping down into the main channel will increase at the expense of flows into the Binnegar carrier.

Arguments over flow splits can often lead to unnecessary disputes. It is recommended that a meeting is held with the owners of the adjacent channel and an agreement reached over how flow splits are to be managed in the future. A 40% to 60% flow split in favour of the main channel would seem reasonable but this should be measured (via the EA Water Resources team) and actions taken to secure the agreed amount of water for each party.



Formal structure to the left of the island regulates flow into the main channel. The gap to the right of the island appears to be a moveable feast.

5. Conclusions

Water quantity and quality issues need to be resolved on this fishery.

The first and possibly the most important one is to establish the flow entitlement into the carrier. There may be an existing covenant that specifies the flow split ratio but without a formal structure or occasional flow gauging to confirm the agreement then there is the danger that slowly but surely more flow will drop into the main channel. You may wish to discuss this issue with the Frome Piddle and West Dorset Fisheries Association who may be able to provide you with some advice and support. For information go to <http://www.riverfrome.com/>

The quality of waste water entering the carrier via the ditch needs to be investigated. The solution may simply be to improve maintenance on the ditch to provide increased settling capacity and an increase in time of travel. Many angling clubs now take part in the Anglers' Monitoring Initiative in order to maintain a close eye on water quality, which is reflected in the invertebrate populations. One excellent method of monitoring water quality is to link up with the Riverfly Partnership. The Partnership provides training and a robust method of assessing fly life through periodic sampling of macro-invertebrates. This is a

simple and effective way of keeping a close eye on water quality performance. More information can be found at www.riverflies.org

Overall impressions of the river were that it supports some excellent habitat for brown and sea trout. Further improvements can be made to habitat, in particular the provision of more marginal cover for juvenile trout on the shallow bottom section. Improved lies for adult trout throughout the reach can be created by using LWD flow deflectors and by manipulation trees that have already fallen. Effort should also be made to improve spawning gravel quality, particularly on the shallow upstream sections, where increased production will ensure that juvenile trout take up residence within your reach, rather than just dropping down to the next section.

Pushing in stakes of goat willow at water level will provide some much needed low scrubby cover, particularly on the outside of bends and over pool habitat. The willows will provide cooling shade during long hot dry spells and an external food source via terrestrial invertebrates.

On those sections where there are shallow gravel runs, some effort should be made in October to break or loosen the surface crust of the river bed prior to the trout spawning season. This can be achieved with fencing spikes and rakes, or high pressure pumps or leaf blowers to remove fine sediments which restrict egg survival.



Gravel cleaning can significantly boost spawning success on rivers with compacted gravels

Another good method of improving spawning success is to use pegged down pieces of large woody debris to help scour, clean and sort river bed gravels. This method is extensively used by the WTT as it not only helps to boost spawning success but also provides holding habitat and cover for a range of fish species. As the wood rots it also provides a primary source of food for aquatic invertebrates.



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.

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.

6. Recommendations

- Arrange a meeting with your neighbour to discuss the issue of flow splits and set up an agreement to measure and manage the flows in the future.

- Arrange a meeting with the quarry company to ask for remedial works to be put in place to avoid damaging levels of suspended sediments entering the river. Consider contacting the EA for assistance if necessary.
- Plant some additional willows (sallow) to give low scrubby overhead cover, particularly over pool habitat but also adjacent to juvenile habitats.
- Leave as much woody material in the channel as possible but also consider introducing more into the channel, particularly on shallow gravel sections by using LWD flow deflectors.
- Instigate an early autumn programme of gravel cleaning to boost trout egg survival rates.
- 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 you a much better understanding about the productivity of your stream 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.
- Do not be tempted to introduce fertile hatchery derived stock and always run the number of stocked fish down before the end of the season

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.

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