River Meon – Soberton Meadows

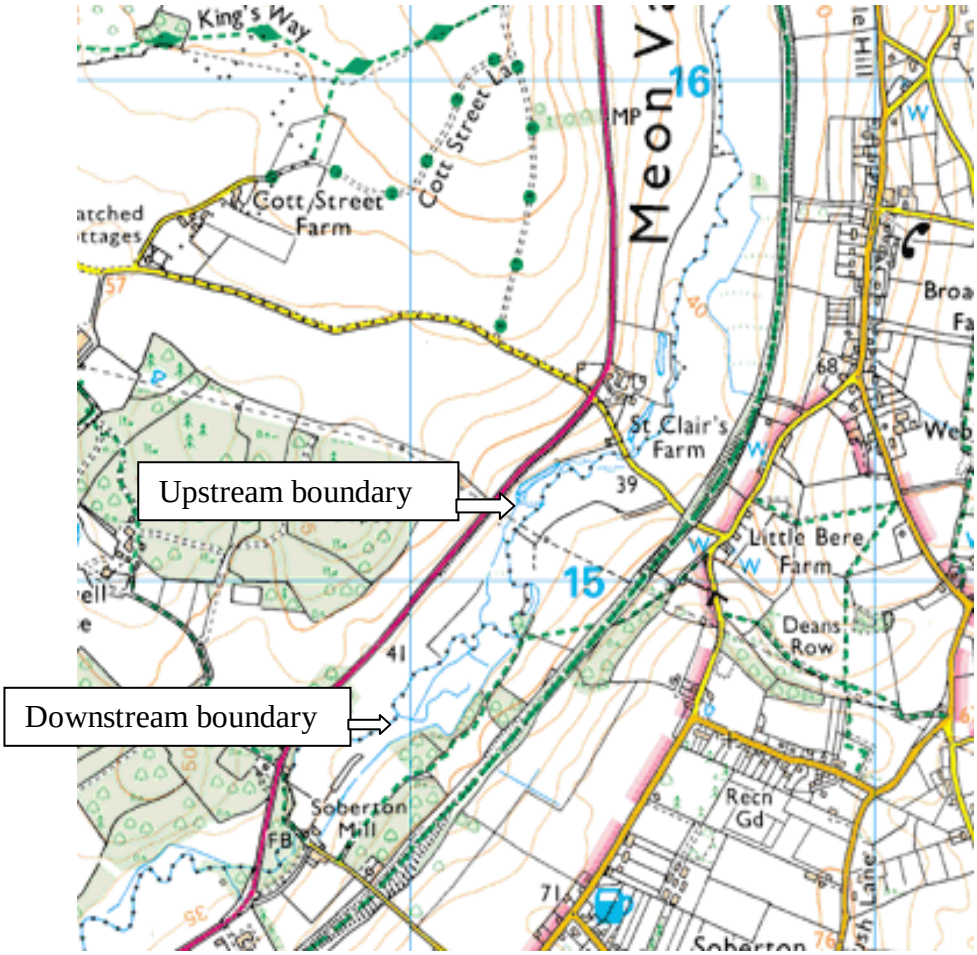
An advisory visit carried out by the Wild Trout Trust – March 2012

1. Introduction

This report is the output of a Wild Trout Trust advisory visit undertaken on a stretch of the River Meon at Soberton Meadows. The reach is approximately 600m in length running from NGR 602 151 downstream to SU 599 147.

The request for the visit was made by Mr. Robert Medway who owns the river and adjacent meadows. Comments in this report are based on observations on the day of the site visit and discussions with Mr. Medway.

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.



Soberton Meadows location map

2. Catchment overview

The River Meon rises from the Hampshire chalk aquifer near the village of East Meon and flows south for approximately 37km before entering the sea at Hill Head. The river enjoys a steep gradient for a chalk river, falling approximately 120m from source to sea. The middle and upper reaches of the river flow over deposits of Lower Chalk, which is less permeable than the Upper Chalk geology predominantly found in the rest of East Hampshire. As a result, the Meon tends to have a greater flow range compared to other southern chalk streams. The river at Soberton lies very close to a significant change in geology in the Meon Valley. Above Soberton Mill, the Meon runs over chalk; below the Mill, there is a rapid change to deposited material, principally London Clay and Reading Sand. These deposits dominate the Meon catchment south of Soberton Heath until the river enters the sea at Titchfield Haven.

For much of its length, the river displays the classic chalk stream characteristics of clear water, low soft margins and an abundance of in-channel macrophytes dominated by water crowfoot (*Ranunculus* spp.), starwort (*Callitriche* spp.*)* and water moss (*Fontinalis antipyretica).* As with most chalk rivers, the channel is heavily modified and in-channel habitats are heavily influenced by the numerous structures and milling impoundments found throughout its length.

Fishery surveys of the Meon conducted by the Environment Agency (EA) have concluded that the river is “a productive brown trout river”. The Meon is also noted for a strong run of sea trout although they are rarely targeted by anglers on this system. Sea trout are known to run upstream of Droxford during wet years and the EA have plans to improve access for migratory fish by improving existing fish passes on the lower river. The river also supports a range of coarse fish, eel and strong populations of brook lamprey and bullhead, both of which are designated as species of conservational importance under the EU Habitats Directive.

The Meon (Waterbody ID 107042016640) has been assessed as being in ‘Good Ecological Condition’ under the Water Framework Directive although the river is known to be both over abstracted and over licensed for abstraction under the EA’s own Catchment Abstraction Management Plan.

3. Fishery overview

The Meon at Soberton Meadows has no recent history of being used as a fishery, although the river is actively managed as a trout fishery on reaches both above and below the section inspected. Mr. Medway is very keen to manage the river to enhance its wildlife potential and to explore options for the generation of some modest income to help with the upkeep of the river.

The Meon as a whole enjoys a good reputation as a high quality wild brown trout fly fishery and sections both above and below Soberton are let to the Portsmouth Services Fly Fishing Club. One or two beats are also let to paying day rods on a semi-commercial basis. The beat at Soberton Meadows is probably too short to let as a commercial beat but it may well be of interest to a small local group, or

individual, where the reach could easily accommodate an afternoon's fishing for one, or possibly an evening for two, once or twice a week.

There was evidence of large trout, possibly sea trout, having spawned in the main channel. This section may well be an extremely important spawning site for migratory sea trout which are known to run the Meon in good numbers in the late summer and autumn. It is unlikely that the Soberton Meadows beat is viable as a sea trout fishery as fish will probably only arrive once the statutory close season has started on October 30th. The fishery could, however, spring the odd surprise at the back end of the season following heavy rainfall, when occasional sea trout are known to push upstream into this area.

A recently excavated trout nest or redd in the middle of the Soberton Meadows reach.

4. Habitat assessment

The Meon at Soberton meadows is made up of several channels, typical of many heavily modified chalk streams. The western arm carries the bulk of the flow and is characterised by a semi-natural, meandering channel which contains a valuable sequence of pools, riffles and glides. The bed substrate comprises mainly gravels and fine sediments.

Bordering the river is permanent grazing pasture to the west and a low lying, largely unmanaged parcel of land to the east. At the upstream end of the main channel is a small weir which provides a head of water for a third channel, not

included in this assessment, forming a high level milling leat serving Soberton Mill. A small channel that flows between the milling leat and the natural channel currently has its flow augmented by a series of breaches from the high level milling channel. This is an issue that Mr. Medway is currently discussing with the owners of the Soberton Mill.

Habitats for brown trout on the main channel are considered to be very favourable with a range of niches available for adult trout, including favourable spawning sites on the numerous shallow glides that form the tails of several good-sized pools. The pools themselves have probably been created by large bank-side trees that have either fallen into the river, or leant over at an acute angle and promoted significant river bed scour. The result has been the formation of a variety of deeper pools and associated shallow glides and riffles.

Trout of all sizes are not a shoaling fish and are constantly looking for their own small territory where they can safely hold station without being able to see their siblings and are safe from the threat of being eaten by a larger fish, bird or mammal. A varied channel form with lots of cover is therefore important if the reach is to hold good numbers of trout of all sizes.

Good quality juvenile trout habitat

Trout fry emerge from their gravel nests in February or March and generally migrate down and sideways to find well-covered shallow water. The dead and

dying annual herbs that flop into the margins provide good cover for juvenile trout and river margins next to shallow water should be left in a rough and shaggy condition whenever possible. As the trout fry grow on to become parr they again migrate downstream looking for bigger and more productive lies, sometimes in central channel locations where the water is again shallow. In chalk streams, submerged weed beds like the water crowfoot shown below, are particularly important for providing cover for trout, as well as being a critically important habitat for certain species of aquatic invertebrate.

Superb parr habitat where the beds of water crowfoot provide an ideal refuge for parr in the shallow riffle habitat.

For the weed beds to flourish, the channel will need to be open to some direct sunlight. Research has proved that trout thrive best in habitats where there is a mosaic of dappled light and shade. Some tree shading is very important and helps to moderate water temperatures and is particularly critical for trout during long warm spells, especially in a low flow year such as 2012. The ideal ratio to aim for is 60% shade to 40% direct sunlight. Direct sunlight is more important on the shallow riffle sites where the sunlight helps to encourage weed growth and invertebrate productivity. Low tree shading over deeper pools is considered to be important because it is here where the larger fish generally reside and low, overhanging shade provides cover in water where the increased water depth often limits light penetration and therefore weed growth.

Another example of trout spawning at Soberton Meadows

Wonderful juvenile trout habitat immediately downstream of a spawning site. Well covered shallow margins and water crowfoot growth in central channel locations. Good habitat for fry and larger parr.

A tangle of goat willow (*Salix caprea*) makes this an extremely attractive and "safe" lie for an adult trout. Trimming out the odd longer branch to facilitate a cast for angling but leaving a nice low fringe for cover is the key to managing a successful wild trout fishery. Remove all of the cover to allow access for angling and any trout will probably vacate the lie.

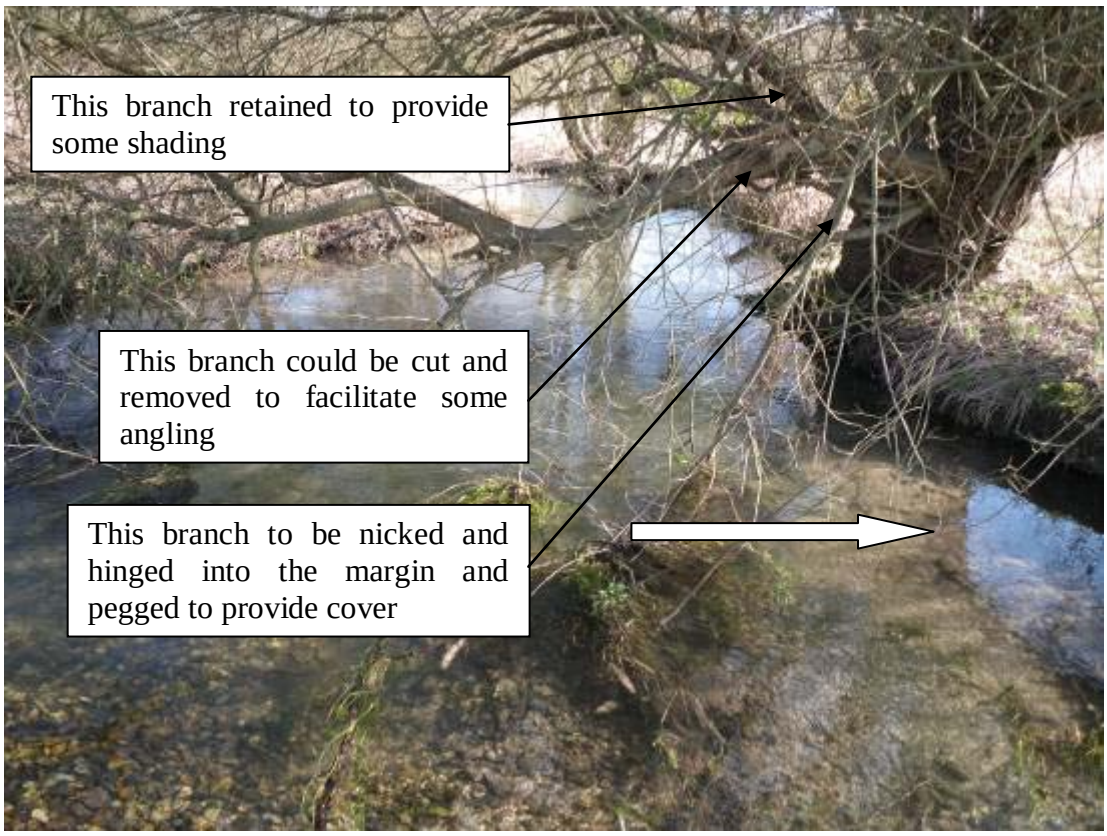
Some attempts have been made in the past to install flow deflectors, probably to try and create further holding habitats for adult fish. Evidence of some old steel pipes (photo page 9) driven into the margin suggest that this work was carried out a long time ago. It is not considered that pool habitat is particularly limiting trout populations here, however, the addition of the odd large tree trunk or branch pegged to the river bed could provide even more opportunities for creating high quality trout habitat. A few ideas of how this can be achieved are discussed in the conclusions and recommendations section of this report.

On one section of the LB, the channel has breached and significant water is lost to a small side channel. Attempts to staunch the flow leaving the channel have been made by placing bricks along the original line of the bank, however a considerable quantity of water is leaving the main channel via this route (photo on page 9). The small relic side channel taking the additional flow may have formed part of an old water meadow irrigation channel, or may have been associated with milling operations. Unfortunately, the dilution of flow away from the main channel will have adverse impacts on habitat quality on the reach where the flows have been reduced. This is a particular issue for the whole site, where not uncommonly the water resource is split into a plethora of channels. There is a very strong fishery argument for maintaining as much flow as possible in the natural channel that sits in the lowest part of the valley. Where the flows can be concentrated into the natural channel, the river will respond by creating the important geomorphological features that underpin many of the chalk stream

species of flora and fauna that make these river systems so special. Maintaining adjacent wet channels, or meadows may also be important for a range of non flow loving species. These conflicting requirements can pose a dilemma for land owners, however maintaining wet channels and meadows relies on securing high water levels and not necessarily high flows.

A line of old steel pipe that probably supported an old flow deflector which was commonly made from corrugated tin. A tree trunk pegged in at right angles to the flow and secured with a chestnut cleft would be an acceptable alternative.

The remains of an old flow control structure. This section of bank should be repaired with a small notch to provide a very small sweetening flow to continue down the channel to the left.



Only a light touch is needed to make the water fishable

Near to the top boundary a short section of spring fed channel enters from the LB. Small little side streams like this can often provide a good spawning and nursery sites provided there is enough suitable gravel available. Ideally brown trout will spawn on gravels in the 10 to 40mm range. In very small tributaries it is sometimes economical to import fresh gravels if the amount of suitable material is limited. When contemplating any gravel recharge it is important to source suitable material. Meon gravels are made of angular flint deposits and pea gravel; shingle or marine pebbles are not a suitable substitute.

Any enhancements made to the small side stream are unlikely to produce many trout destined for the main beat as most juvenile trout tend to drop downstream before colonising a reach.

5. Conclusions

The main river channel at Soberton Meadows supports some high quality habitat for all life stages of trout. Only a very light touch is required to open up the tree cover sufficiently to provide some low key access for fly fishing.

Priority actions for this section of river revolve around managing flow splits between the various channels. Retaining as much flow as possible in the main

low level channel will help to create optimum habitat for trout. A permanent repair to the leaking LB margin should be undertaken. A soft green engineering solution is recommended as being the best and most sustainable option. It is possible to form a new margin by creating a bund using hazel faggot bundles, or possibly coir rolls and then lining the inside with a biodegradable jute geotextile before back filling with imported gravels and top soil. A vital component of creating a resilient new margin is to plant the imported material with emergent plants such as sedge and reed, or pack it with green willow whips which will root and tie the soil together. Some local coppicing or pollarding of trees to ensure strong growth on the new margin is also recommended.

Installing a new faggot revetment on the Meon. The soil infill must be protected with a geotextile soilsaver to reduce the risks of the material getting washed out before planting becomes well established

As already suggested, only minimal maintenance work is required. Retaining low shaggy cover over the shallow margins is particularly important, as is retaining as much large woody debris (LWD) within the channel as possible. 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. 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. Any woody debris that is potentially causing bank erosion can easily be repositioned and secured to promote beneficial bed scour

As well as using LWD to promote bed scour, whole trees and brash bundles can also be usefully used to create in-channel refuge areas. Coarse woody debris brashings can either be laid, or pegged and wired into the margins of shallow runs. Long sections of the Soberton Meadows water provided excellent cover. However, there were some sections where the margins would benefit from pegged in brash bundles. These are particularly valuable in the winter months when cover from avian predators can be sparse.

Some efforts to improve gravel quality, particularly near the top end of the fishery, would pay dividends. Blocks of LWD pegged onto shallow gravel runs can help to sort and loosen compacted gravels. A few hours breaking up the gravels on known spawning sites with a fencing spike and raking out the sediments will help to boost spawning success. Work should be carried out during late September or early October, with work starting at the top end of the reach and working in a downstream direction.

A whole thorn tree dropped and secured into the margins of the River Loddon.

A short upstream facing “V” structure pegged onto a gravel run and designed to improve spawning opportunities. These structures also create small holding pots for spawning adults and holding lies for juvenile trout

6. Recommendations

- Resolve issues surrounding the flow splits and where possible prioritise flow into the natural low level channel.

- Create a new soft river margin in the section where the river breaks away from the LB. Maintain a small sweetening flow into the small channel via a defended notch in the bank.

- Use tethered brash bundles installed in the margins, especially in the margins of shallow runs to provide enhance winter cover.

- Consider undertaking some work to improve gravel quality and hence spawning success right at the top end of the fishery. Pegging in short sections of woody debris at right angles to the flow is a good option to keep gravels clean. An October programme of raking sediments from likely spawning spots is also recommended. Do not clean all of the gravel but 2 to 3m^2 sections on the tail end of likely looking glides, or in locations where previous spawning has been observed.

It is a legal requirement that some works to the river may require written Environment Agency consent prior to undertaking those 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 project. We could potentially help to draw up a project proposal (PP) which could be used to support any application for Land Drainage Consent. The PP might also be used as a document to be shared with potential partners as a vehicle for raising project funding.

Alternatively, physical enhancement works could be kick-started with the assistance of a WTT 'Practical Visit' (PV). This approach is probably more appropriate for works to the side carriers. 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.

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.