



River Meon. Grange Farm Warnford



Advisory Visit December 2016

Key Findings

- **This section of the Meon represents a very rare chalkstream environment.**
- **The reach above would benefit from removing the weir.**
- **The long shallow, wide reaches could be enhanced with the addition of more woody material.**
- **Coppicing out certain clumps of riverside alder and using the material in the channel would have the added benefit of creating improved fish habitat and potentially increasing invertebrate productivity. The action could also potentially enable some aquatic emergent plants to establish, creating a few refuge areas for voles in transit.**

1.0 Introduction

This report is the output of a site visit to a 0.5km stretch of the River Meon at Grange Farm near Warnford in Hampshire. The reach inspected ran from NGR SU 62018 22107 down to SU62209 21597. The request for the visit came from Elaina Whittaker-Slark, Lead Ranger for the Western Downs Area of the South Downs National Park Authority (SDNPA). The Parks Authority are lead partners for the River Meon Partnership and are actively engaged in a number of conservation initiatives in the Meon Valley, including an ambitious water vole reintroduction project. This report is one of several where the key objectives are to support and encourage riparian land owners to manage their sections of river sensitively and sustainably for the benefit of wildlife.

Comments in this report are based on observations taken on the day of the site visit (December 2016) and discussions on the day with Ms. Whittaker-Slark and Mr. Andrew Nicholls who owns Grange Farm.

Normal convention is applied with respect to bank identification, i.e. left bank (LB) or right bank (RB) whilst looking downstream. Upstream and downstream references are often abbreviated to u/s and d/s, respectively, for convenience. The Ordnance Survey National Grid Reference system is used for identifying locations.

	River Meon at Exton
River	River Meon
Waterbody Name	River Meon
Waterbody ID	GB107042016640
Management Catchment	East Hampshire
River Basin District	South East
Current Ecological Quality	Poor Status
U/S Grid Ref inspected	SU613209
D/S Grid Ref inspected	SU612208
Length of river inspected	0.2km

Table 1. Overview of the waterbody. Information sourced from <http://environment.data.gov.uk/catchment-planning/WaterBody/GB107042016640>



Map1. Meon at Exton © streetmap

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.

Near Exton and Warnford (the location of this visit), the river flows over a predominantly chalk geology, but further downstream (near Soberton) glacial deposits of London Clay and Reading Sand become more prominent. 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 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. 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. In recent years, a small salmon population has become established in the lower reaches of the Meon, probably as a result of changes to water level control structures located near Titchfield.

The river also supports a range of coarse fish, eel and strong populations of brook lamprey and bullhead which, along with salmon, are designated as species of conservation importance under the EU Habitats Directive.

The Meon (Waterbody ID GB107042016640) has been assessed as being in 'Poor Condition' under the Water Framework Directive (WFD) and the river is known to be both over abstracted and over licensed for abstraction under the EA's own Catchment Abstraction Management Plan.

3. Habitat Assessment.

The section of Meon running through the Grange Farm holdings runs virtually entirely through a comparatively narrow section of wet woodland comprising of mainly alder carr *Alnus glutinosa*. An old semi derelict hazel coppice lies on slightly higher ground adjacent to the LB, which Mr. Nicholls is bringing back into production.

Sections of chalkstream running through wet woodland are exceptionally rare habitats and are thought to be typical of how our chalkstreams would have looked, prior to them being forced into man-made channels and harnessed for power generation and agricultural irrigation. This reach therefore represents a very rare example of a chalkstream in a comparatively wild and natural state.

Near the top end of the reach there is an old, semi derelict weir (cover photo and photo 1) which was probably installed to create a small head of water for either irrigation or improved access for live-stock drinking. The reach immediately upstream of this structure was not inspected but it is assumed that the weir will be responsible for significant sediment deposition in the reach above and is likely to be compromising the development of high quality in-channel habitat in the upstream reach. The structure is not considered to be a major impediment for fish migration, however, in a low flow autumn the structure may well delay upstream sea trout *Salmo trutta* migrations. Any delay in fish migration can result in increased levels of predation and put increased pressure on vulnerable populations.

Downstream of the weir, the river meanders through a comparatively wide and shallow channel, comprising of a mainly gravel/cobble bed and fine sandy sediments (photo 2). The dense tree canopy has enabled this wide channel to develop, not being constrained by typical herb-rich chalkstream margins found on managed sections of the Meon elsewhere.



Photo 1. Small weir at the top of the reach could delay fish migration in a dry autumn and will be adversely impacting on upstream habitat quality.



Photo 2. The channel D/S of the weir is wide and shallow. The heavy shading restricts any weed growth and sections without fallen woody material for cover will be a hostile environment for fish.

Potentially this section of river could be exceptionally good as a trout spawning and nursery area but large areas of the bed are too flat, with the bed gravels poorly sorted and heavily infiltrated with fine sediments. One or two small brown

trout redds (trout spawning site where eggs are deposited into shallow scrapes in the gravel) were observed but not as many as could be expected in such a gravel-rich reach.

Further downstream habitat quality was considered to be much better as a direct result of the presence of more fallen woody material (photo 3, 4 and 5).

Fallen woody material is an incredibly important component of habitat quality in any river system. Unfortunately it is also rarely found in the channel in chalkstreams, where some riparian owners and river keepers adopt a “tidy” approach to river management and maintenance and tend to haul it out of the channel. Fallen woody material is critically important for a wide range of reasons. It provides a primary food source for a wide range of aquatic invertebrates and provides valuable cover for fish, both adult and juvenile and is even more important on shaded sections of channel, where in-channel weed growth is usually poor.

In addition to providing cover and food, woody material also helps to promote topographical diversity to the riverbed and planform. Without any fallen trees, long sections of the river would be wide, flat and shallow. The fallen trees in this reach have promoted some local bed scour to create deeper pool habitat, ideal for supporting adult trout. In addition the wood has acted as a flow deflector and helps to grade the gravels blown out of the bed into sediment free ramps of clean gravel. These sites are then utilised by spawning fish.



Photo 3. Fallen trees help to squeeze the channel width and energise flow velocities, scouring pool habitat and also consolidating fine sediments. High quality habitat.



Photo 4 Deeper water promoted by the fallen tree provides a safe refuge for adult trout.



Photo 5. Trees that have fallen can help to promote meandering flow patterns which provides opportunities for both slowing and speeding flow velocities and storing fine sediments. Diversity in flow velocities promotes a variety of habitat niches for plants, invertebrates and fish.

4. Conclusions

As highlighted in the habitat assessment, this reach of the Meon represents a comparatively rare habitat. That said, although a wide, shallow, braided channel flowing through wet woodland is almost certainly what long reaches of our chalkstreams would have looked like pre-human intervention, for some of our key species the habitat currently available is limited.

The heavy shading will be limiting productivity within the channel and it is critically important that all sections of the Meon act as a conduit for wildlife wishing to migrate in both directions. To this end there are actions that could be taken that would significantly improve habitat quality in this reach and help to support species utilising the Meon in a wider context.

The first consideration is the management of the semi derelict weir at the head of the reach. There is no doubt that in the long run, the removal of this structure would significantly enhance habitat quality in the reach above, as well as reconnecting the natural transport of bed sediments to the downstream reach. Knocking out the central third of the weir to bed level will elevate upstream flow velocities and allow trapped sediments to be flushed through the system. This would also ease concerns over delays for fish migration. Initially the reach upstream of the weir would look awful with reduced water levels and exposed muddy margins. These will rapidly recover and it is highly likely that more diverse in-channel plants will flourish where sufficient light reaches the channel.

On the wide, shallow reach downstream of the weir, improvements could easily be made with the addition of more woody material. This would need to be secured to the river bed and potentially this work could be delivered in partnership with the SDNPA volunteers and supervised by the WTT. In addition to the benefits of creating a more diverse shape to the river bed, it is possible that if strategic stands of alder were coppiced from key riverside locations then there would be opportunities to let in shafts of light to the bed and banks. This reach is unlikely to be a haven for water vole because of the shading and lack of marginal vegetation. Creating a handful of small areas where both cover and increased plant growth can be promoted may help water voles in transition between population, or individuals moving out from established populations.

Further information on the use of woody material flow deflectors to promote bed scour and the sorting of bed sediments, as well as the use of brushwood to help stabilize soft margins is available on our website. More detailed information can also be obtained from our Chalkstream Habitat Manual, available as a pdf from the website, or as CD via the WTT Office.

5. Recommendations

- The removal of the weir will promote a marked improvement in habitat quality in the reach above.

- Recognise that for the first year or so the channel will look different as the river recovers.
- Coppice strategic clumps of alder to encourage shafts of light penetration and target these areas for brushwood margins to enable some aquatic emergent plants to establish and create vole “hotels” for any animals looking to explore new territories.
- Introduce woody material to the channel to promote bed scour/sorting and provide cover. Use large woody material to promote bed scour, parallel cover logs for adult trout cover, and brushwood to help stabilise the margins and provide micro habitat for small fish.
- As the watercourse is classed as ‘main river’, any work within 8m of the top of the river bank will require a consultation with the Environment Agency and quite possibly a permit for work.
- Engage with the River Meon Partnership via the SDNPA to contribute towards improving habitat on the river for wildlife. This group is a valuable source of information and support and they can help you to look after your section of the Meon.

6. Making it Happen

The WTT can provide further assistance to help implement the above recommendations. This includes help in preparing a project proposal with more detailed information on design, costs and information required for obtaining consents to carry out the works. If required, a practical visit can be arranged to demonstrate habitat improvement techniques. Demand for these services is currently high but WTT is able to provide further advice and information as required. Further advice on fund-raising can be found at www.wildtrout.org/content/project-funding

We have 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 www.wildtrout.org/product/rivers-working-wild-trout-dvd-0 or by calling the WTT office on 02392 570985.

The WTT website library has a wide range of materials in video and PDF format on habitat management and improvement: www.wildtrout.org/content/index

7. Acknowledgement

The Wild Trout Trust would like to thank the Environment Agency for their continued support of the advisory visit service.

8. Disclaimer

This report is produced for guidance only; 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.