



River Meon – Misingford



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 Meon at Mislingford. The advisory visit was carried out at the request of the Portsmouth Services Fly Fishing Club which leases the fishing rights.

Comments in this report are based on observations on the day of the site visit and discussions with Mr Robin Bray, fishery manager for the PSFFC and Mr Brian Clarke who regularly fishes the beat.

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 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 top of the Mislingford beat 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.

This shift in geology has a visible impact on the nature of the river, and this change is quite apparent about half way down the beat reviewed. This change in habitat is discussed in more detail in section 4 below.

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 aquatilis*), starwort (*Callitriche stagnalis*) 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.

3. Fishery overview

The Mislingford beat is one of several Meon beats controlled and managed by the PSFFC. The beat consists of approximately 800m of fishing, with the top half accessed from the LB and the bottom section fished from the RB. The fishery supports a large head of wild fish and is augmented with an introduction of hatchery derived trout. Trout stocking is discussed in the conclusions and recommendations section of this report. Significant numbers of sea trout, small wild browns, grayling and numbers of mixed coarse fish are also to be found in this reach.



The club has already carried out a significant amount of improvement work. This has primarily consisted of excluding cattle from the top half of the beat through the installation of stock fencing and some bank protection work using faggot revetment.

4. Habitat Assessment

4.1 Footbridge to the top boundary

The section of the river upstream of the footbridge (which crosses the river near the centre of the beat) to the top boundary is characteristic of a classic chalkstream beat. The club has undertaken significant improvements to habitat quality on this section through the installation of stock fencing, carried out several years ago. Prior to this work, the LB was heavily poached by cattle and the channel significantly wider than the current width. Throughout this section the topography of the river bed has reasonable variation with a variety of deeper pools, glides and shallow riffle sections, complemented by a largely unmanaged RB margin. In addition to the fencing, one or two low flow deflectors have been installed, as well as some short sections of boardwalk to provide better access over some of the soft marginal areas.



Stock fencing set well back from the LB margin and a low boardwalk access for anglers has enabled a dense, soft margin of emergent plants to develop and naturally pinch the channel.

Throughout the reach, there is evidence of fallen trees having dropped into the channel promoting river bed scour, and this has created several good pools and associated downstream ramps of gravels. Most of the shallow gravel runs were well vegetated with beds of water crowfoot. An excellent example of an ivy clad fallen tree was seen - it is currently responsible for blowing out an excellent holding pool for adult trout as well as helping to clean and sort river bed gravels into an ideal spawning ramp below.

Fallen trees and pieces of large woody debris (LWD) within the channel can be a rare sight on many Hampshire chalkstreams. LWD is a general term referring to

all sizeable 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 in maintaining the diversity of biological communities and physical habitat.

Traditionally, many river keepers 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 varied substrate and pools and riffles is ideal for benthic (bottom dwelling) organisms as well as for fish species like wild trout.



[A fallen tree creating some superb trout habitat on the Mislingford beat.](#)

If a fallen tree or large branch is causing an issue with regard to river bank erosion then it can usually be trimmed and moved into a position where the flow is kicked away from the margin and towards the centre of the channel. This may require the outer edge of the trunk to be secured to the bed with a driven post, stake or piece of steel bar. Erosion usually takes place at right angles to any hard surface or structure placed within a flowing water body. If the tree trunk is configured so that the outer end is upstream of the inner (or bank-side) end, then the flow tends to be focused towards the centre of the stream rather than

directed towards the margin. Undershot scour, where the flow hits the underside of an overhanging tree-trunk and is forced downwards into the river bed is particularly valuable and often responsible for throwing up long bars of clean, well-sorted gravels ideal for spawning.

Despite the good example highlighted, some sections of the Mislingford beat were comparatively flat and on sections like this the gravels tend to become compacted and laden with sediments. This is often compounded by the natural concretion of gravels caused by calcium carbonate precipitate in chalk streams. This is not thought to be a major problem on the Meon, where recruitment of wild salmonids seems to be comparatively good, especially when compared to other Hampshire chalk rivers. Poor spawning success associated with compacted, silt laden gravels is thought to be a key habitat bottleneck for salmonids in many chalk rivers.

Weed growth on this upper section of the beat appeared to be very good and it is understood that the crowfoot has been much more luxuriant on this section following the addition of the stock fencing. This is probably due to the increased water velocities promoted by the slightly narrower channel that has since developed, pinched in by the luxuriant marginal vegetation.



Luxuriant crowfoot growth over shallow glide habitat. Excellent parr habitat.

Water crowfoot is an extremely valuable plant on chalk streams but its annual growth can be variable and this is particularly so on the Meon. This may be the

result of the wide range of flow conditions that can be experienced on this stream. Crowfoot is a plant that thrives in strong but stable flows. A drought year can lead to extremely poor growth, as can a spring following heavy autumn spates, where long tresses can be torn out at the root leaving shallow sections normally covered in weed devoid of valuable winter and early spring cover.

In such circumstances, it is imperative to provide as much low scrubby marginal cover as possible. The PSFFC leave the opposite margin as an unfished and largely unmanaged bank and this promotes some extremely valuable cover for both juvenile and adult trout. This is particularly important adjacent to shallow spawning and nursery sites, where both spawning adult trout and juveniles are extremely vulnerable to bird predation pressures. Leaving a tangled matrix of dying summer annual plants and coarse woody debris such as brushings and brushwood in the margins can make a significant difference to wild trout survival, the fish benefitting from the shelter this matrix provides.



The tangled brushwood margin adjacent to the LB below the footbridge is a great example of what is likely to be excellent overwintering juvenile trout habitat.

At the very top of the beat the club has left a thirty-metre section completely unmanaged and unfenced, primarily as a cattle drinking area but also to provide a screen from the road. At this point the river is very wide and shallow, flowing down a good gradient over a hard gravel bed. A tangle of overhanging trees provides some excellent cover at this location and it is highly likely that significant numbers of fish are attracted to this location for spawning. Having areas of good quality spawning and nursery habitat right at the upstream end of any trout fishery is considered to be a real bonus. It is unlikely that cattle are still present here at spawning time but the gravels trampled by the cattle may

well be compacted and heavily loaded with organically rich sediments. Undertaking some autumn gravel cleaning at this location is advisable and is discussed in more detail in the conclusions and recommendations section of this report.



Unfenced cattle drinking area provides good opportunities for spawning with close access to ideal fry and parr habitat.



Early autumn gravel cleaning, in this case using a leaf blower, is recommended for the section just below the top boundary.

4.2 Footbridge to the bottom boundary

A change in the character of the river was evident on the downstream section. Here the channel is slightly narrower and much more heavily shaded, with mature trees lining the LB margin as well as some sections of the RB. The gradient of the channel appears to be considerably steeper and on the first section below the footbridge the river morphology is extremely varied, with a meandering planform and a wonderful pool, glide, riffle sequence. Shading was not considered to be excessive and this section is likely to provide an ideal mosaic of dappled light and shade, which suggests it is ideal for salmonids.

Recent research undertaken by the Forestry Commission has highlighted the value of riparian tree shading in providing a cool refuge for fish during periods of warm weather, especially during low flows.



The section downstream of the footbridge could be “trout heaven” with the addition of a few pieces of LWD and the odd clump of low scrubby cover.

Throughout this section there was comparatively little in the way of low, scrubby marginal cover. The addition of a handful of small goat willows (*Salix caprea*) or a bank edge hawthorn (*Crataegus sp*) or two would further improve what is an excellent stretch of trout stream.

Weed growth is not as prolific compared with the upstream section, but is apparently recovering following a serious water quality issue derived from a small side stream entering the river just below the footbridge.

Undertaking some simple monitoring of aquatic invertebrate communities downstream of this sidestream would seem sensible. The large saw mill and timber plant located in Soberton Heath just upstream could also potentially pose a threat to water quality and some baseline assessment of invertebrates is recommended. Many angling clubs now take part in the Anglers' Monitoring Initiative in order to maintain a close eye on water quality. The Riverfly 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.

Habitat on this reach is good, however additional shading has resulted in comparatively open margins with only modest cover for both juvenile and adult trout.



Sidestream entering from the RB may have been responsible for chronic pollution in the past

Towards the middle and lower end of the beat the gradient appears to flatten out and the river becomes slightly wider with fewer in-channel features. At one or two locations some attempts have been made to create improved lies for trout by placing paired flow deflectors into the channel. These have created some valuable surface "boil" which often encourages fish to settle. However, the downstream facing configuration is putting additional pressures on the margins and will not encourage any natural narrowing of the channel. It is recommended that if any attempts are made to introduce further flow deflectors that they are introduced as single "upstream facing" log deflectors, which will be more

effective at promoting mid channel scour and consolidating the build-up of marginal sediment.



Downstream facing flow deflector could make the channel wider. Note how the water is pushing towards the banks from these deflectors.

An additional consideration when contemplating the introduction of flow deflectors is to ensure that they are not placed too close to each other. There are some simple geomorphological principles associated with gradient and channel width which provide a good model when planning in-channel features. In a natural environment it is very rare to find large stable pools or holding features located close to one another, the principle being that coarse material scoured from one pool is likely to be deposited a short distance downstream. To avoid this happening on any habitat enhancement scheme it is worth planning the location of any feature so that they are not too close together. A good rule-of-thumb is to avoid spacing any "features" in a river closer together than six times the average channel width. For example if the average channel width is 5m, then any current deflector installed should be approximately 30 m from the next.

Note that 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 watercourse designated as "main river". Advice can be obtained from the EA's Development Control Officer.

5. Trout stocking and coarse fish management

During the visit, there was some discussion about trout stocking. The size of the wild trout population and issues associated with coarse fish, and in particular, chub, were also discussed.

Currently, the club stocks the Meon with hatchery derived trout to provide a level of sport considered acceptable to the membership. These fish are generally of a larger average size than the river currently naturally supports, although it is well documented that the Meon frequently produces wild fish in excess of 1lb in weight and on occasions, double that weight. Stocking the Meon with juvenile farmed fish could put wild stocks under additional pressure and probably not contribute towards the mature adult population. In addition, the river supports a surprisingly large number of sea trout, some which are of a specimen size. These are not frequently seen or targeted by anglers but will be present at the back end of the season, where they will use this section either for holding or for spawning.

The comparatively large numbers of very small wild trout recorded on the beat may therefore be sea trout progeny and destined to run to sea as smolts. There was some discussion regarding the high density of small trout present as potentially restricting growth rates. This should not be seen as an issue but simply a function of good spawning and juvenile habitat. The density of trout will naturally fluctuate according to seasonal conditions. Changes will also occur annually when juveniles migrate downstream to find niches as larger resident browns, or as sea trout smolts. This natural process is likely to be disrupted by introductions of farmed fish which will compete for available food and space, as well as introducing domesticated genes into the wild fish population potentially resulting in reduced fitness and fecundity.

Several sections of the Meon both above and below the Mislingford beat sustain viable trout fisheries without stocking. It is highly likely that with some modest improvements made to habitat quality, the Mislingford beat would also be a viable wild trout fishery. This may not meet the expectations of all the members, but it might be worth the PSFFC considering the possibility of catering for those members who might seek a more a more challenging quarry by leaving one or two Meon beats as unstocked wild trout waters.

The fact that there are good numbers of wild fish present does not prove that stocking does no harm. The wild fish are there in spite of the stocking, which like poor water, or habitat quality, is just another pressure. There is an increasing body of scientific evidence pointing to the potential harm to wild brown trout from the introduction of fertile, farmed fish. The use of sterile stock fish of an appropriate size may be a suitable method to marry the needs of both the Club and the wild trout population. The Wild Trout Trust has published a position statement based on the scientific evidence, available at:

<http://www.wildtrout.org/images/frontpage/conservation/wttstockingposition.pdf>

It is understood that chub numbers appear to have increased in recent years. The Meon has always supported coarse fish stocks, although the number of dace present in the river appears to have declined. As with salmonids, coarse fish populations ebb and flow according to spawning success, habitat quality and predation pressures. A strong year class of chub will, however, persist for many years with some individual specimens living up to twenty years or more. Chub are known to predate on coarse fish fry, which shoal up in large numbers in warm shallow slack areas. Juvenile trout will be a much more difficult quarry for chub, preferring faster flowing covered riffles and although some may be taken it is highly unlikely that the numbers of trout taken by chub is significant. The apparently large numbers of juvenile trout seems to support the contention that chub predation is not impacting on wild trout survival in this part of the Meon.

Chub are a challenging quarry for fly fishing in their own right, although, again, it may be that members' expectations may be for large trout rather than large chub.

6. Conclusions

The Mislingford beat of the Meon is a delightful stretch of chalk stream supporting good quality habitat for both resident brown and migratory sea trout. Some excellent work has already been carried out by the Club and the weed and marginal cover afforded by the non-fishing bank has been carefully and skilfully maintained to promote some good lies for adult trout.

The fencing of the channel to keep out stock, coupled with the large buffer zone has promoted some excellent marginal habitats ideal for the adult phase of many of the river flies so important on a trout fishery. In addition, the squeezing of the channel to promote elevated water velocities within the channel has enabled crowfoot beds to flourish and exposed clean gravels runs.

At the top of the beat, the "cattle drinking" area potentially provides an excellent spawning and nursery zone and will benefit from some work to loosen gravels and reduce sediment loads.

The retention and possible introduction of further pieces of LWD, particularly over shallow glide habitat will promote improved lies and enhanced spawning opportunities. Planting the occasional small goat willow whip, especially adjacent to pool habitat on the fishing bank will make lies even more comfortable and attractive for trout to hold.

Keep a close eye on the spread of any non native plants such as Himalayan balsam and take action to control if necessary; advice here can be acquired from the Wild Trout Trust.

It is suggested that the Club reviews its stocking policy. Introducing fewer, smaller individuals or stocking at lower densities may not materially impact on sport but will enable more of the wild stock to come through. An early move to using sterile stock will reduce risks of spawning interactions between stocked

and resident browns and migratory sea trout and result in a fitter population of wild stock.

6. Recommendations

- Leave as much woody material in the channel as possible.
- Consider introducing more structure into the channel, particularly on shallow gravel sections by using LWD flow deflectors, suitably positioned.
- When undertaking maintenance to both margins, avoid cutting out the dead annual plants that trail in the margins in the autumn. Winter cover will be at a premium and is of paramount importance to juvenile wild trout in particular.
- Control invasive Himalayan balsam through pulling or spraying before seed production (June).
- Consider reconfiguring existing flow deflectors to take the pressure off the margins.
- Plant some additional willows (sallow) or hawthorns to give low, marginal overhead cover on the main fishing banks.
- Instigate an early autumn programme of gravel cleaning to boost trout egg survival rates near the top boundary.
- If not already underway, consider signing up for some members for 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.
- Consider the stocking policy on this water to produce an outcome marrying the needs of the Club's members with those of the wild brown trout.

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

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