



## Segar Stream River Itchen



An advisory visit carried out by the Wild Trout Trust – January 2011

## **1. Introduction**

This report is the output of a Wild Trout Trust advisory visit undertaken on the Segar Stream which is a carrier of the River Itchen in Hampshire. The advisory visit was undertaken at the request of the Portsmouth Services Fly Fishing Club which has been invited to lease the fishing rights.

Comments in this report are based on observations on the day of the site visit and discussions with Robin Bray, Anthony Kennett and Mark Kerr from the fishing club. 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 Itchen is considered to be one of the finest examples of a chalk river in Europe and one of the most famous brown trout (*Salmo trutta*) fisheries in the world. The river is designated as Special Area of Conservation (SAC) and a Site of Special Scientific Interest (SSSI) (Appendix 1).

The Itchen rises from the chalk aquifer to the east of Winchester where groundwater fed springs feed into three headwater streams; the Alre, the Candover and the Tichbourne, or Cheriton Stream. The streams converge near Alresford and flow south west, through the centre of Winchester and on to join the sea in Southampton.

The river is characterised by a plethora of man-made channels, some dug to provide milling power, some to support the old Itchen Navigation canal and others to feed the network of water meadow carriers.

The Segar Stream looks to be a classic high level drowning channel which would have been used to flood meadows to promote early spring grass growth for grazing.

## **3. Fishery overview**

The Segar Stream has been run as an exclusive, stocked trout fishery in the past, available for a limited number of paying day rods. As well as stocked trout the fishery also supports some excellent grayling (*Thymallus thymallus*) and the odd wild trout which drift down from the upstream beat which supports some reasonably good spawning and nursery habitat.

## **4. Habitat assessment.**

A serious constraint to the development of any high quality trout habitat in the Segar Stream is the lack of any significant gradient. The perched and flat nature of the channel means that the river morphology is largely restricted to long smooth glides over a mainly soft silt substrate. Chalkstream habitat of this

nature does provide opportunities for holding good numbers of adult trout, provided that the in-channel submerged and marginal emergent weed is managed sensitively. Steady glide habitat is good for holding stocked trout and is often a preferred habitat for chalk stream grayling which thrive in channels of this nature. This beat on the Segar Stream does not, however, support high quality spawning or nursery habitat for trout or grayling. The lack of gradient will hamper efforts to improve spawning and nursery habitat therefore attempts to improve habitat should be largely concentrated on improving lies for adult fish to help boost holding capacity and reduce predation pressures.



The central section of the beat looking upstream. Note how the land falls away from the raised LB margin

In-channel plant growth appears to be dominated by beds of starwort (*Callitriche stagnalis*) and mare's tail (*Hippuris vulgaris*) which both favour comparatively slow flow and a silty substrate. Water parsnip (*Berula erecta*) and fool's cress (*Apium nodiflorum*) were also observed growing in central channel locations. Some small beds of flow loving water crowfoot (*Ranunculus aquatilis*) were observed near the top of the beat. Here the channel was naturally pinched and flows over a shallow gravel run. Crowfoot was also seen on one or two similar sections near the bottom boundary where the channel is squeezed promoting elevated water velocities.

A variety of marginal emergent plants are present including sedge (*Carex* sp) branched burr reed (*Sparganium erectum*) and sweet grass (*Glyceria maxima*).

There were also several beds of Norfolk reed (*Phragmites sp*). All of these plants serve a useful purpose in providing habitat for a range of bird and invertebrate species as well as providing some important cover for fish, especially on sections where marginal tree shading is scarce. The fringe of emergent plants will also play an important role in protecting the banks from erosion, particularly on the RB where the channel is vulnerable to breaching during high flow conditions.



A nice thick fringe of sedge with burr reed growing at the outer edge. Care must be taken to restrict burr reed growth to the marginal fringes.

In a few locations small beds of branched burr reed are starting to grow out into central channel locations. If left to develop these reed beds may begin to block the channel, raise upstream water levels and reduce water velocity. Grubbing out emergent plants that grow in central channel locations but leaving a nice thick fringe of plants to help pinch the channel will help promote a much more sustainable channel form.

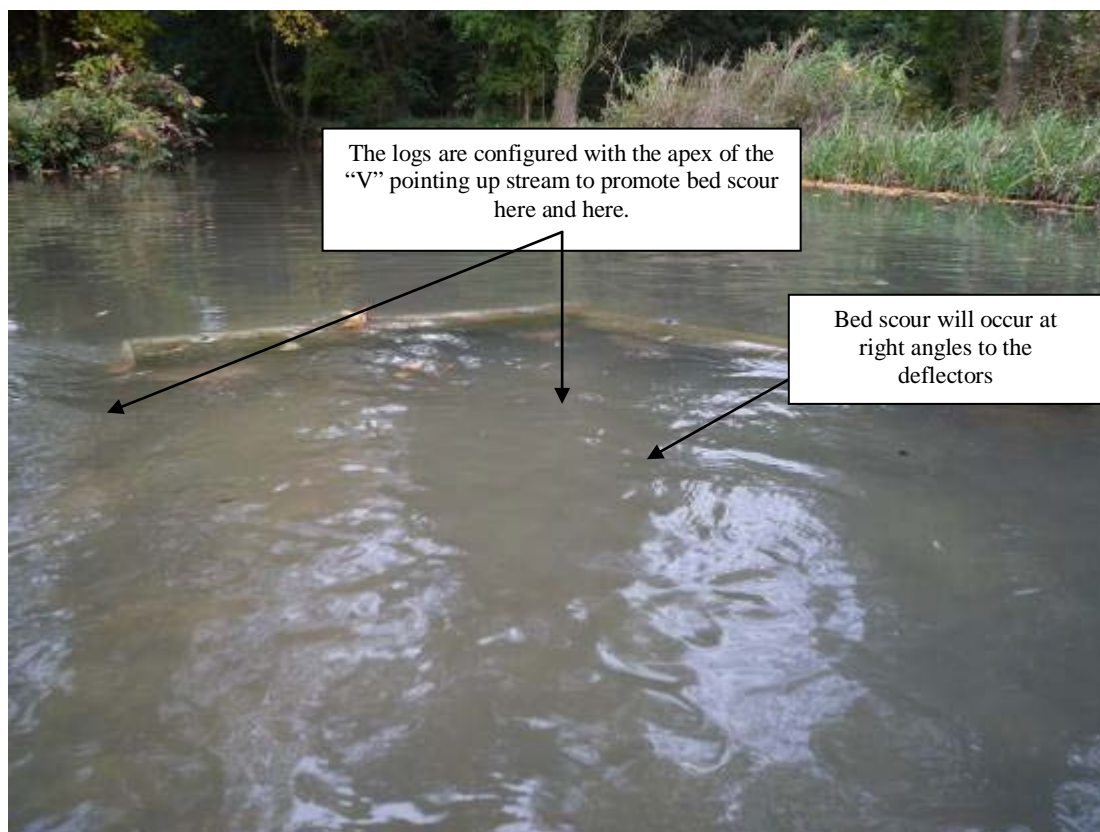
Channel shading by mature trees was comparatively scarce. Shade has been identified as an important component of trout habitat and although some cover is available for fish under the extensive weed growth and marginal vegetation, shading from low overhanging trees was largely absent. Shading helps to moderate water temperatures, particularly during long hot periods at the back end of the summer, especially when ground water flows start to drop off. Localised shading, particularly when combined with slightly deeper pool habitat helps to limit weed growth and often promotes lies favoured by adult trout.

On a few sections there were some leaning trees that could potentially be “hinged” into the channel. Hinged trees that are dropped, trimmed and secured into the channel make fantastic flow deflectors and provide fish with superb winter refuge areas from fish eating birds.



A good fringe of cover but could be improved with one or two trees dropped parallel with the margins

On one section near the top of the beat some curb stones have been introduced in an attempt to promote some bed scour. To some extent these have worked but better results could be achieved by using pieces of pegged down large woody debris. The temptation to build low weirs should be avoided as any further backing up of the channel will exacerbate damage to the habitat upstream of any deflector. Using single or multiple pieces of wood to promote pockets of scour will help to blow soft sediments away and produce a more varied bed profile much favoured by trout and grayling. Flow deflectors that just crease the surface also promote surface disturbance that breaks up the smooth glide and encourages trout to sit more comfortably in positions where they would otherwise feel vulnerable. As the wood rots it also provides a primary source of food for shredding invertebrates such as shrimp (*Gammarus pulex*).



An upstream facing "V" structure where the logs are set up off the bottom to promote undershot bed scour on a smooth glide. Fish will sit in the centre and at each end of the structure.

Old water meadow structures have been refurbished at various locations adjacent to the RB. Presumably there will be an operating agreement in place with the owner as part of the Water Level Management plan which has been drawn up by the Environment Agency and Natural England. It will be important for the fishery owner and angling club to be aware of any requirements for diverting flow away from the channel and into the adjacent carriers. If the objective is to take some water once the springs have broken and the carrier is flowing strongly to irrigate the adjacent meadows then this will have little impact on in-channel habitat quality. The club should however monitor when and where water is taken to avoid any excessive abstraction, especially in a low flow year, that might otherwise be utilised to improve in-channel habitats for fish.

When undertaking any tree management it will be important to select suitable trees for work. Some tall leggy willows will benefit from pollarding, particularly if it promotes further low level shading. Several trees were extensively covered in Ivy and these should be left as they will almost certainly support high quality bat habitat. Look for opportunities to partially cut and hinge trees into marginal areas to promote more in-channel cover.



Water meadow structures under repair



Water being lost to the meadow via a bank breach which was possibly the site of an old structure



Great flood plain habitat supported by the bank breach but at what cost to the channel?

At the very bottom boundary of the fishery the river passes through two small bridge arches below which the channel has become extremely overgrown and partially blocked. It was not immediately clear if the bridge invert and abutments, or the blockage downstream are having the most impact. Opening a dialogue with the downstream neighbours would be advisable to see if there are opportunities to do some light clearance work. Hopefully this should encourage the water to flow down more vigorously through the bottom section as a whole.

## 5. Conclusions

The Segar Stream is located in a delightful position perched up on the eastern edge of the Itchen flood plain. The major constraint to the fishery is the lack of gradient, which severely restricts the development of any natural river morphology generally associated with high quality trout habitat. The carrier is however well suited to supporting excellent grayling populations and can, with suitable management provide numerous lies for stocked trout and the occasional wild fish that will drift down from upstream.

The management of in-channel weed growth is of fundamental importance. Retaining a thick marginal vegetated fringe and kicking the flow around, either through the positioning of LWD flow deflectors and/or by sensitive weed cutting, will be the key to promoting improved lies for trout. If flow deflectors or tree hinging are to be considered it should be remembered that both may well cause



problems during weed cut periods when considerable efforts will be needed to keep the weed moving.

The presence of LWD has been shown to be extremely important in several respects:

- An increase in the variety of flow patterns, depths and localised velocities.
- Development of high in-channel physical habitat diversity
- Significant benefits to the control of run-off at the catchment scale. Woody Debris helps regulate the energy of running water by decreasing the velocity. Thus the 'travel time' of water across the catchment is increased.

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. This is often unnecessary and harmful: 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 bed substrate and pools and riffles is ideal for benthic (bottom dwelling) organisms as well as for fish species like wild trout.

In the absence of any naturally fallen woody material it is possible to peg in LWD to strategically selected areas. Securing a simple log at right angles to the flow or installing a small upstream "V" deflector on a shallow riffle or glide will not only promote bed scour and promote good holding spots for trout and grayling. Large trunks or logs can be won locally during work parties and either drilled with a wood auger and nailed to the river bed with steel bar or staked and wired to ensure stability. Try to set these so they are just crease the surface to avoid excessive cut weed hanging up.

A close eye needs to be kept on the emergent plants such as burr reed. This and other emergent plants are extremely valuable when they provide a thick fringe to the toe of the bank. If emergent plants are observed taking a hold in central channel locations it is recommended that they are removed.

## **1. Mechanical removal**

Some mechanical removal of clumps of plants in key locations to encourage a narrow self-cleansing channel would be more sustainable. The advantages are that certain sections would be still be fishable and that valuable cover and

habitat for fish would be retained. To target small clumps of plants a winch mounted grapnel might be the ideal tool. The health and safety issues associated with this type of operation need to be carefully considered and control measures built into any risk assessment process.

## 2. Herbicide

Emergent reed can be controlled with suitable aquatic herbicides. A qualified operative must be contracted and appropriate consents issued by the Environment Agency before any use of herbicide in the river is contemplated. Advice should be sought from a potential contractor on methods of opening up a self-cleansing channel.



The "Ripper". A simple winch operated grapnel designed to grub out the roots of unwanted emergent plants.

Some tree planting as a long term solution to controlling weed growth and for providing improved lies for fish should be considered. Planting some whips of goat willow (*Salix caprea*) at just above normal water level and pointing out at 45 degrees above the channel will soon provide some excellent habitat.

The operation of various sluice gates and hatches will have a profound impact on habitat quality in this reach. Structures located way upstream and downstream on the carrier and the parallel main river and Itchen navigation channels will all impact on what share of the resource is available for the Segar Stream.

Understanding which structures do what and who is responsible for their operation is of paramount importance. There may be legal covenants which dictate flow split agreements and understanding what the entitlements are will help to ensure that optimum conditions are maintained.

Considerable investment has already been made in repairing several water meadow drowning structures. Is the fishery owner responsible for their management and operation? If not is there any operating agreement in place that protects flow in the Segar Stream?

There is no indication that there are any water quality issues to be concerned about. However, many clubs have now signed up to the Anglers Monitoring Initiative (AMI) which allows clubs and individuals to carry out some basic water quality monitoring through the periodic survey of invertebrate communities. The scheme has the added benefit of allowing members to get a better understanding of the density and type of river flies the fishery is supporting.

More information about the AMI can be found at [www.riverflies.org](http://www.riverflies.org)

## **6. Recommendations**

- Provide the fishery owner with an alternative vision for the fishery which is based on shifting the balance towards maintaining a more sustainable fishery through sensitive habitat management.
- The fishery has in the past been the subject of traditional keeping methods, which can sometimes be geared towards access for angling rather than habitat for fish. Shifting the balance in favour of retaining comfortable lies for fish will be essential if regular and expensive stocking is to be kept to a minimum.
- Research which structures impact on the amount of flow that is received via the Segar Stream and obtain a copy of any documents which set out responsibilities for flow split arrangements.
- Investigate agreements and arrangements for the use of water meadow irrigation structures.
- Concentrate efforts within the channel on improving lies for adult fish and provide enhanced cover for fish from predators.
- Leave as much fallen woody material in the channel as possible.
- Consider the option of dropping and securing whole trees into the margins of shallow, uniform sections to provide comfortable lies and enhanced cover.

- Be aware that by retaining woody debris within the channel that an increased work load might result from the requirement to clear off cut weed.
- Reduce the impounding effects at the bottom end of the fishery by exploring options for opening up the arched structure near the bottom boundary. Open up a dialogue with your downstream neighbours to see if there are options for reducing the blockage downstream to help pull water through the lower sections.
- Plant some additional willows (sallow) or thorns to promote low overhead cover on the more open sections to provide better holding areas.
- Do not be tempted by the option that includes the wholesale removal of emergent plants. Encourage thick fringes to develop but seek partial control where they start to grow in central channel locations.
- If not already involved, consider signing up some members for training in undertaking simple surveys as part of the Anglers Monitoring Initiative with the Riverfly Partnership.
- Raise awareness amongst any anglers fishing the stream over the importance of catch and release for wild trout conservation.

**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 person, company or organisation acting, or refraining from acting, upon comments made in this report.

## **Appendix 1 – River Itchen Conservation Designations**

The River Itchen is a Special Area of Conservation (SAC) and a Site of Special Scientific Interest (SSSI).

Special Areas of Conservation (SACs) are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended). The listed habitat types and species are those considered to be most in need of conservation at a European level (excluding birds). Of the Annex I habitat types, 78 are believed to occur in the UK. Of the Annex II species, 43 are native to, and normally resident in, the UK. Details of the process of SAC selection and designation are available on the Joint Nature Conservation Committee's web pages at [www.jncc.gov.uk](http://www.jncc.gov.uk)

The habitats and species present on the River Itchen leading to its designation as a SAC are:

1. Annex I habitats that are a primary reason for selection of this site
  - Water courses of plain to montane levels with the *Ranuncion fluitantis* and *Callitricho-Batrachion* vegetation

The Itchen is a classic example of a sub-type 1 chalk river. The river is dominated throughout by aquatic *Ranunculus* spp. The headwaters contain pond water-crowfoot *Ranunculus peltatus*, while two *Ranunculus* species occur further downstream: stream water-crowfoot *R. penicillatus* ssp. *pseudofluitans*, a

species especially characteristic of calcium-rich rivers, and river water-crowfoot *R. fluitans*.

2. Annex II species that are a primary reason for selection of this site

- Southern damselfly *Coenagrion mercuriale*

Strong populations of southern damselfly *Coenagrion mercuriale* occur here, estimated to be in the hundreds of individuals. The site in central southern England represents one of the major population centres in the UK. It also represents a population in a managed chalk-river flood plain, an unusual habitat for this species in the UK, rather than on heathland.

- Bullhead *Cottus gobio*

The Itchen is a classic chalk river that supports high densities of bullhead *Cottus gobio* throughout much of its length. The river provides good water quality, extensive beds of submerged plants that act as a refuge for the species, and coarse sediments that are vital for spawning and juvenile development.

3. Annex II species present as a qualifying feature, but not a primary reason for site selection

- White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*
- Brook lamprey *Lampetra planeri*
- Atlantic salmon *Salmo salar*
- Otter *Lutra lutra*

Further details on the River Itchen SAC can be found at [www.jncc.gov.uk/protectedsites/sacselection/sac.asp?eucode=uk0012599](http://www.jncc.gov.uk/protectedsites/sacselection/sac.asp?eucode=uk0012599)

Notification as a SSSI gives legal protection to the best sites for wildlife and geology in England. Natural England has responsibility for identifying and protecting the SSSIs in England under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000). Each SSSI has a citation which details the 'features of interest' for which it has been notified. Each citation shows details of the SSSI location, size and the date of notification. It also describes the general reasons for notification and the habitats, plants and animals that are found at the site. The citation for the River Itchen can be viewed at [www.english-nature.org.uk/citation/citation\\_photo/2000227.pdf](http://www.english-nature.org.uk/citation/citation_photo/2000227.pdf)

The SSSI is sub-divided into units and these have been the subject of a review by Natural England to assess their status in relation to the original designation. The Government's Public Service Agreement target is for 95% of SSSI land to be in 'favourable' or 'recovering' condition by 2010.