

**River Loddon Woody Debris Site Visit**

Tuesday 26 August 2008

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**Present:**

David Rundle	The Gresham Angling Society
Dr Alan Gibberd	The Gresham Angling Society
Paul Wyatt	Farnborough and District Angling Society
Amanda Bassett	Hampshire Wildlife Trust
Martin Moore	Consultant - Moor and Moore Carp
Jo Harkness	Environment Agency Biodiversity
Ian Stretton	Environment Agency Operations Delivery
Dominic Martyn	Environment Agency Fisheries

**Visit aims and objectives**

Improve understanding of habitat diversity created by woody debris (WD) in the River Loddon chalk stream upstream of Longbridge Mill. Discuss processes and mechanisms involved, expectations and timescales associated with habitat created. Identify risks and reasons for removal and retention of large woody debris (LWD).

Provide cost effective best practice guidance for managing and improving wild trout and coarse fish populations in rivers in the Loddon catchment.

**The walk...**

We met at Longbridge Mill on the A33 walking upstream, stopping off to view and discuss examples of fallen and managed WD in a rural low flood risk area. This text gives some of the examples we saw on the day. A brief description is given of what, where the WD is in river and when it fell giving an impression of timescales to cause effect and the observed effect it has on habitat and wildlife.

1) The Loddon is impounded upstream of Longbridge Mill for a distance of over one kilometre. This means restricted river flow and energy to erode and deposit and therefore create new habitat. There are many similar impoundments in the Loddon catchment. WD will have limited effect on creating diverse habitat in impounded catchments. WD will, however, provide

valuable overhead and submerged cover for fish and wildlife as can be seen in photo 1 on the next page.

1)



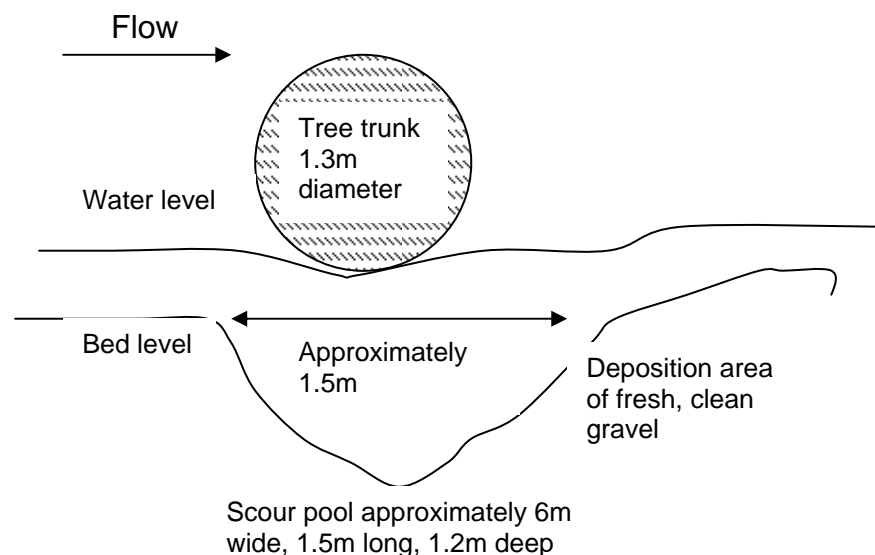
2)



2) Photo 2 shows where WD has been trimmed and staked to the bank. In this example, WD was likely to drift off and could have caused blockages downstream at the Mill. It was also inhibiting casting and this warranted management intervention. In this scenario in impounded water, the WD provides good winter refuge for fish, a range of invertebrate habitats within root systems and silt retention on the inside and downstream of the feature.

3) This huge tree trunk (diameter approximately 1.3m) in photo 3 below had fallen straight across the river at the same level as fairly normal summer flow. The trunk has been in position for approximately two years. In increasing winter flow and rising water levels, water is forced underneath the trunk scouring an area almost proportional to the trunk size. See diagram below.

3) and 3 schematic diagram)



4) Photo 4 over page demonstrates a good example of managing WD for creating a valuable trout lie. In this case, there will be limited geomorphological benefit as the Loddon at this point is still impounded by the

weir and the WD is not of sufficient size to cause increasing flows to the extent that the bed is scoured and coarse substrate moved downstream.

4) below



5) Photos 5a to 5d show a classic example of the use of local fallen willow branches to protect banks from erosion. 5a shows our group inspecting quick regrowth of sprouting willows and diverse emergent vegetation including purple loose-strife (*Lythum* sp.) (5b) growing amongst water mint (*Mentha* sp.), water forget me not (*Myosotis* sp.) and others. We noted that this micro colony of aquatic plants would not last long unless growing willows were regularly managed to avoid them shading out these emergents.

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Photo 5c shows the length of bank protected facing upstream and 5d faces downstream with the flow towards the protected bank.

5a)



5b)



5c)



5d)



6) A moderately sized fallen bough extends across the Loddon providing good cover for younger wild trout and diverse flow patterns. A weed raft has formed around branches in the centre of the channel providing the refuge in addition to the trailing branches extending from the trunk.



6)

7) 7a Below shows the group observing a WD flow deflector upstream of where the impounding effect of the weir stops. Willow branches and small bough extend almost halfway across the channel pinching and concentrating flows causing broken water, local scour and silt deposition. Managing WD in this way has saved the Society over £100 in materials and faggots (or similar) if a similar flow deflector were to be installed.

7b shows the site of silt deposition. In time (possibly two to five years), this area will continue to silt up narrowing the channel and improving the efficiency of the deflector to scour and deposit clean spawning gravels for native brown trout downstream.

7a)



7b)



8 right) We come across the first growth of water crowfoot (*Ranunculus* sp.) over one kilometre upstream of Longbridge weir. This is downstream of a former weir structure on a sharp left hand bend. Gravels eroded in the weirpool are deposited at the tail providing a clean well aerated substrate with broken water giving conditions suitable for growth. Water



crowfoot indicates good chalk stream health. In this section of the Loddon it is rare. This means more work is required in promoting the conditions for it to grow and WD is one of the management techniques that can be used.

9) Water crowfoot growing in similar conditions on the tail of a shallow pool. This time it is probably there because WD is concentrating flow, scouring and depositing clean gravels downstream on which this aquatic plant is growing (see arrow).



9) see arrow for location of water crowfoot growth.

10) LWD creating some of the best conditions for wild trout spawning (photo 10c,d) in the River Loddon upstream of Longbridge Mill. Photo 10a looking downstream shows the size of large WD in relation to channel width. The channel is approximately twelve meters wide. Large WD covers approximately 60% (six to seven meters) of the channel width. This forces water mostly around the left hand side of the object creating a dramatic vertical scour pool (10b), depositing fresh, clean gravel downstream (10c).

It has taken two years for this LWD to scour and move approximately six cubic meters or more of clean gravels. The processes involved are similar to those in the schematic diagram shown in on page 2. Water depth upstream of the LWD is about 0.3m to 0.4m. As water reaches the LWD, depth plunges almost vertically to 1.3m to 1.5m over a distance of 0.2m or so (10c). Coarse gravels are deposited 2m to 3m downstream of the object forming a riffle with broken water less than 0.1m deep.

10a)



10b)



Large WD can significantly improve wild trout hatching success (and other gravel spawning fish) in rivers where silted, accreted gravels are a problem.

This is because the difference with gravels downstream of this feature is that the gravel is loose and water is flowing up and through the gravels thereby creating excellent hatching conditions similar to upwelling systems in trout hatcheries. We will be monitoring spawning at this site amongst others.

10c)



10d)



Photo 10d looking back upstream to the LWD, shows the complex mosaic of flows, macrophytes and habitats downstream. LWD tidy for nature and saving the Society upwards of £500 for creating a new wild trout spawning ground.

It must be mentioned, that flood risk is low in this rural area. These trees will be monitored for erosion and mobility and will be removed before the event of problems to the weir structures at Longbridge Mill over 1.4km downstream. The effect on local flooding will be limited as banks are high at this point and once water rises over the top of the object no notable difference should occur. There was no observed difference in up and downstream water levels at the time of visit.

11) Debris dam. Of WD viewed this example was the only one where any difference was observed in up and downstream water levels (approximately 15cm difference). LWD and collected drifting boughs block much of the channel forcing water to back up, flowing over and under the collection of branches (11b). This back up effect extends possibly to the next bend 30m or so upstream.

This complex type of habitat in chalk rivers is extremely rare. Significant habitat and flow diversity occur over a small area. This LWD creates spawning and nursery habitat for fish, deposit areas for silt, coarse and fine particulate organic matter vital for many invertebrate species. It will be very interesting to monitor morphological changes around this LWD in time. 11a)



11b)

11c)



I thank Amanda, Jo, Ian, David, Martin, Alan and Paul for attending (in order in photograph from left to right). I hope everyone enjoyed the visit as much as I did and learnt something from it.



Please contact Dominic Martyn if you have any queries about the benefits of sensitive management of woody debris in the Loddon Catchment, or are concerned about its effect on flooding, or wish to develop relationships with landowners to allow this natural process to take place. If fallen trees are causing a problem it is the landowners responsibility to remove them unless these fallen trees are causing a flood risk to property or structures of importance (high risk areas).

Further information on woody debris can be found from the Wildlife Trusts booklet on managing woody debris, at email sites provided by the Loddon Consultative or from Vaughan Lewis' (Wild Trout Trust) presentation for the Loddon Consultative (Vaughan's presentation is available to members only).

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