



Advisory Visit

Hoo Brook, Worcestershire

April 2018



1.0 Introduction

This report is the output of a site visit undertaken by Tim Jacklin of the Wild Trout Trust to the Hoo Brook, near Kidderminster, on 27th April, 2018. Comments in this report are based on observations on the day of the site visit and discussions with the landowner.

Normal convention is applied throughout the report with respect to bank identification, i.e. the banks are designated left hand bank (LHB) or right hand bank (RHB) whilst looking downstream.

2.0 Catchment / Fishery Overview

The Hoo Brook rises near Bell End, between Halesowen and Bromsgrove, and flows in a westerly direction to join the River Stour at Kidderminster (Figure 1).

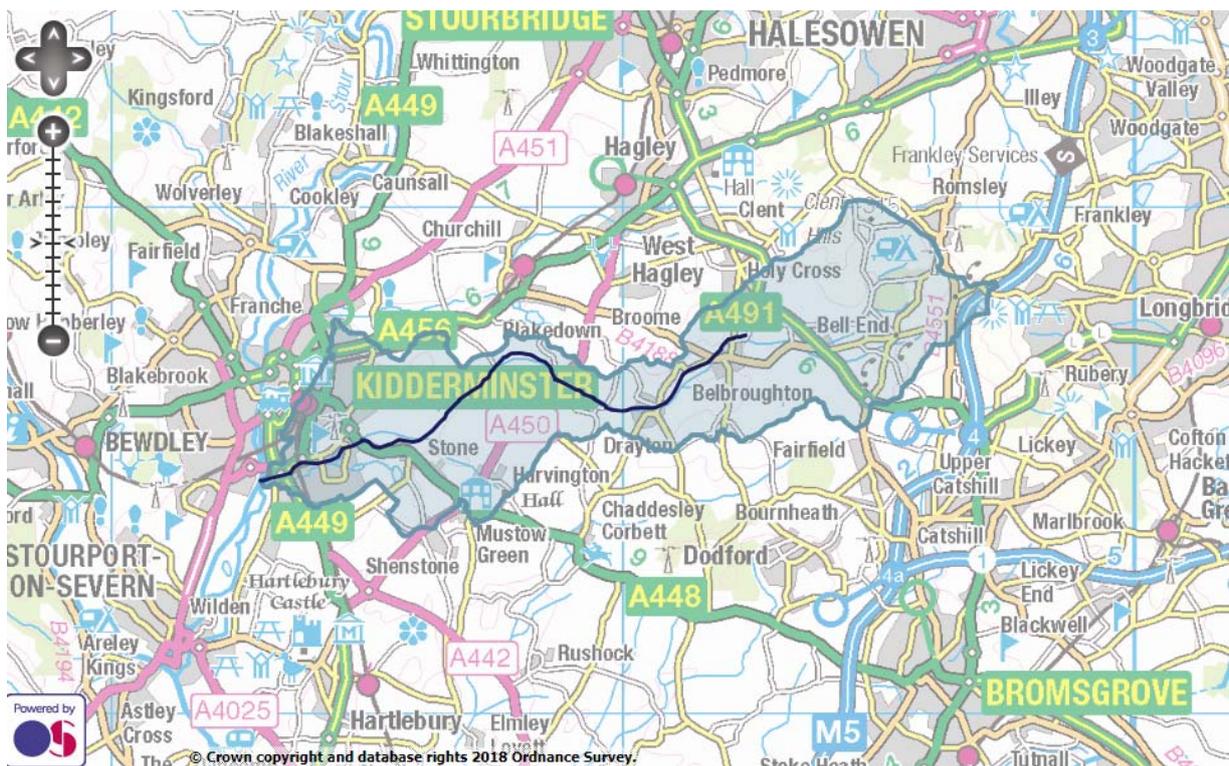


Figure 1 Hoo Brook catchment area. The brook flows in a westerly direction to join the Stour at Kidderminster. (From <http://environment.data.gov.uk/catchment-planning/WaterBody/GB109054044530>)

The Environment Agency assess the health of watercourses (using a wide range of criteria) under the Water Framework Directive (European Union legislation). The overall status of a waterbody can be *high*, *good*, *moderate*, *poor* or *bad*; anything worse than *good* is deemed to be in need of improvement by 2027. Table 1 summarises the information for the Hoo Brook.

The *moderate* overall status of the Hoo Brook is down to excessive levels of phosphate and a *moderate* rating for aquatic plants and algae. These issues are undoubtedly linked, phosphate being a nutrient that influences the species composition and abundance of plants and algae. This is a very common issue, with sources of phosphate stemming from treated sewage effluent, septic tank overflows and diffuse pollution from agricultural fertilisers.

River	Hoo Brook
Waterbody Name	Hoo Bk - source to conf R Stour
Waterbody ID	GB109054044530
Management Catchment	Severn Middle Worcestershire - Stour River and Trib
River Basin District	Severn
Current Ecological Quality	Overall status of Moderate ecological status sustained through two assessment cycles from 2009 - 2016
U/S Grid Ref inspected	S08957376127
D/S Grid Ref inspected	S08907276389
Length of river inspected	c. 650m

Table 1 Summary of information collected for the Water Framework Directive (from <http://environment.data.gov.uk/catchment-planning/WaterBody/GB109054044530>).

Invertebrates (aquatic fly life) was rated *high* and *good* in 2009 and 2016 respectively, which indicates water quality is generally good (notwithstanding the phosphate issue). It appears no assessment of the fish population has been carried out.

3.0 Habitat Assessment

The habitat features observed during the visit are described in a downstream direction from the weir at the head of the reach.

It is evident from looking at Ordnance Survey maps of the Hoo Brook that it has been extensively modified in the past for water power, with dams, mill leats and pools evident throughout its valley. At Sion House, the upstream extent of the reach is bounded by a weir which formerly diverted water into a high level channel on the right (north) bank (presumably supplying Barnett Mill)(Figure 2). The high level channel is now disused and dry, although a small flow of water runs via a buried 4-inch pipe to supply the three ponds on the right bank of the brook.



Figure 2 Hoo Brook at Sion House. River flow right to left (west to east) - www.streetmap.co.uk .

Trout need different types of habitat at different stages of their lives (Figure 3) and if any particular habitat is not present, or inaccessible, then it can cause a “bottleneck” in the numbers of fish present.

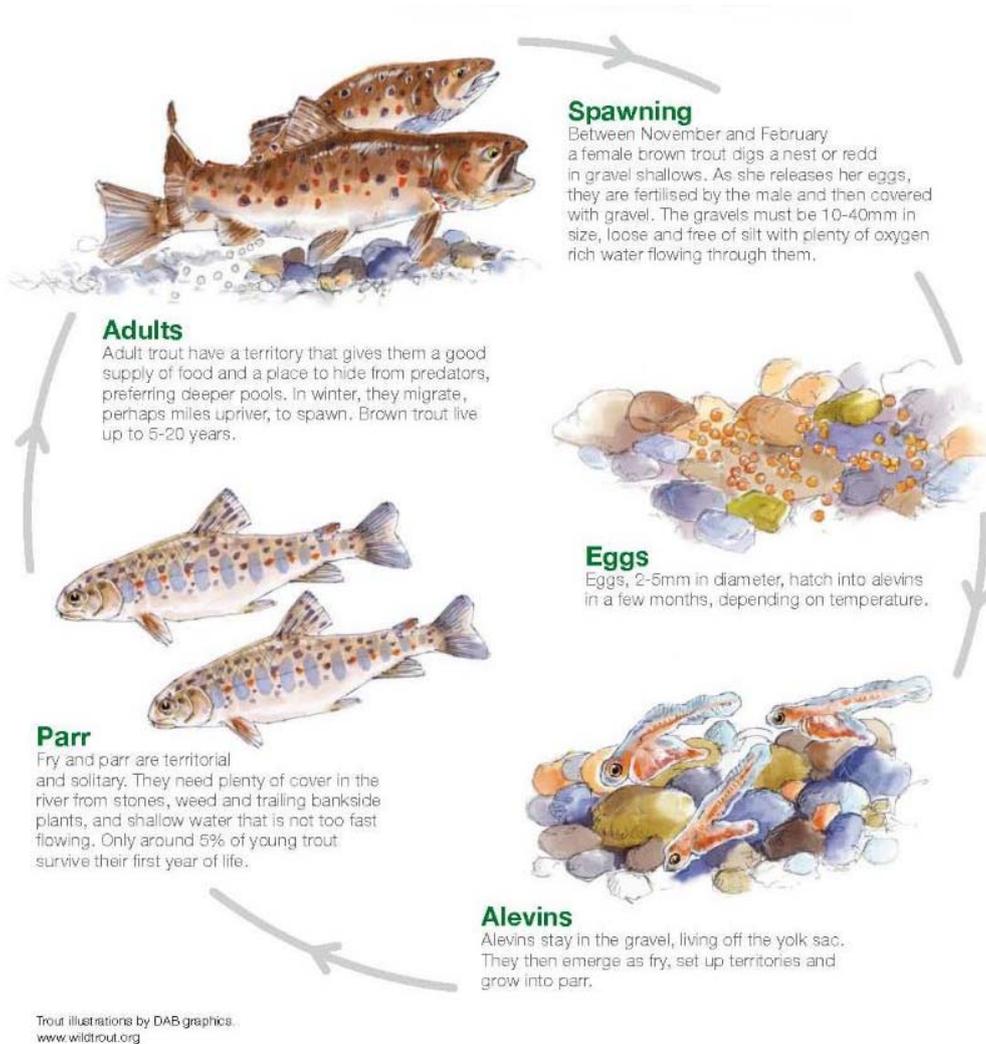


Figure 3 Brown trout life cycle

Overall, the Hoo Brook has good habitat for wild trout. The brook has a moderate gradient and (apart from the weir at the head of the reach, Photo 1) is free-flowing, with no dams/weirs to interrupt the natural flow or sediment transport. This is important because it allows the natural river processes to create and maintain a pool-and-riffle sequence, which is the basis of good habitat.



Photo 1 The weir at the upstream end of the reach. Note the slow, impounded water and poor quality habitat upstream in contrast to the free-flowing nature of the brook in the pictures below. Weirs like this drown out natural habitat features and cause fine sediment to settle out which smothers the gravel bed. Weirs are also obstacles to the free movement of fish, restricting their access to the different habitats required to complete their lifecycle.



Photo 2 The walled bank of the garden does not provide good habitat because there is little cover for fish to shelter and feel safe. Overhanging cover like the bush (pictured) could make the difference between a fish occupying this area or not, so should be retained. Encouraging plants which overhang the water could improve the fish-holding capacity of this section.



Photo 3 For the majority of the reach, mature trees and their root masses provide good bank stability and pinch the channel (arrow); this helps create deeper pool areas immediately downstream, where the increased flow scours the river bed. This is particularly valuable habitat for larger trout – a deeper pool with cover (submerged tree roots).



Photo 4 Some bank erosion is evident (right bank) at the downstream end of the garden section. This is not causing a problem and will eventually create a deeper pool on a meander, so should be allowed to continue.



Photo 5 A good example of fallen timber pinching the flow and creating a scour pool, good for holding fish. Fallen trunks extending into the channel like this one should be retained. If this area was being improved for angling access, it would be important to retain the cover on the far bank (yellow arrow) which helps to hold fish; trimming higher level branches to facilitate a cast (e.g. red arrow) is less critical.



Photo 6 A shallow, faster flowing riffle area with a gravel bed. This is where trout would typically spawn, depositing their eggs in gravel during the autumn. The eggs incubate until the following spring, so are vulnerable to smothering with fine sediment. Unfortunately, the Hoo Brook appears to have a significant problem with fine sediment ingress which could be causing a bottleneck in trout production by reducing spawning success (the weir also inhibits the use of other spawning areas upstream). Tackling the source of the fine sediment is the best, but most difficult, solution (see Recommendations); in the meantime, measures to sort and scour the gravels can be implemented/ encouraged (Photos 7-9). Note also the presence of the invasive plant, Himalayan balsam on the banks – this should be controlled.



Photo 7 Woody structure in the brook course is very valuable habitat. In this case, it is causing scour on a gravel riffle which helps to sort the gravel and shift fine sediment, improving the chances of trout spawning success. Naturally occurring features like this should be retained.



Photo 8 Another example of woody structure, formed by a fallen tree which has gathered debris. Although this may appear superficially “untidy” it is providing excellent habitat. The flow is being pinched and flumed through a narrow gap against the left bank, creating a series of beneficial features highlighted in Photo 9 below.



Photo 9 The same feature as Photo 8, viewed looking upstream, showing the pile of clean, well-sorted gravel which has been scoured by the pinched flow and deposited at the tail of the pool – ideal for trout spawning. In addition, the deep area with overhanging cover closer to the log provides a good lie for larger trout.



Photo 10 A good example of the high quality, in-stream habitat present on this reach: a deep pool, bordered by an alder tree provides excellent cover for adult trout; the run out from the pool provides the right flow and substrate for spawning; the bankside vegetation is a good balance of light and shade, trees and understorey vegetation, which will provide an input of insects, etc. to supplement the trout's aquatic food.



Photo 11 At the downstream end of the reach is a more open area where bankside vegetation is more managed. Although there is some water crowfoot present here (because of increased light reaching the channel), the in-stream habitat is generally simpler (and therefore poorer quality) than upstream (in contrast with the previous picture). Allowing a wider un-managed buffer along the watercourse (>2m wide) would be beneficial.

4.0 Recommendations

The habitat on this reach of the Hoo Brook is generally very good for wild brown trout and requires only a light touch in terms of management. The following recommendations are relatively easily implemented:

- Adopt a principle of retaining woody structure within the brook channel. Trimming the odd higher level branch to facilitate angling access is not a problem, but retaining low cover over and within the water is very important – remove this and you remove the reason the fish are there. The brook is ideal for a “stalking” approach to fishing: wading in the channel, progressing upstream and using a short rod to flick a fly into likely areas. It is important that anglers appreciate the importance of matching their fishing tackle to the naturally high quality habitat, rather than making futile attempts to alter the habitat.
- Introduce more woody material to the channel, to mimic the natural features shown in the photographs above (e.g. Photos 5, 7 & 8). Larger trees could be positioned extending into the channel (with the majority of their weight on the bank, to prevent them washing away). Smaller trees in suitable areas can be hinged and laid into (or over) the channel, in a similar way to hedge laying (Photo 12). Targeting areas which are currently quite “bare” would be beneficial (e.g. Photo 6).



Photo 12 Hinging and laying trees to create trout holding cover.

- There is a currently a good balance of bankside vegetation, with trees providing valuable shade to keep water temperatures down (trout cannot tolerate water temperatures much above 20 degrees Celsius). Some limited coppicing of trees in the vicinity of shallow riffles could be carried out to encourage growth of water crowfoot, but this should be limited to one or two areas. The roots of mature trees provide valuable bank stability and promote pool formation (as noted in Photo 3), while the trees themselves provide valuable habitat for a range of other wildlife, so should be retained.
- The non-native, invasive plant, Himalayan balsam should be controlled, otherwise it smothers out native bankside vegetation. This leaves banks bare in winter and vulnerable to excessive erosion. A monoculture of balsam also leads to a lower diversity of insects, etc. which reduces the availability of bankside food sources that drop into the water. Balsam can be controlled by hand-pulling or cutting/strimming to ground level (below the first node on the stem of the plant, to prevent re-growth), well before the plant flowers and sets seed (normally late June). It is an annual plant, with a seed life of approximately three years, so a drop in plant numbers should take place with regular control. Seeds are washed

downstream, so unless a catchment-wide eradication programme is carried out, there will always be new plants appearing – watch out for them on banks of material that have been deposited by floods.

- Riffle areas where the gravel has high levels of fine sediment could be raked in anticipation of the trout spawning season (however, the development of more natural in-channel structure will do the job more sustainably in the long term). If raking is undertaken, early October would be the best time to attempt this. Further guidance can be found in this video on the WTT website:

www.wildtrout.org/content/how-videos#gravel

and in this information sheet:

www.wildtrout.org/sites/default/files/library/Gravel_Cleaning_Apr2012_WEB.pdf

Other factors which are affecting the Hoo Brook are less easily tackled as they are occurring elsewhere in the catchment. These include:

- Very high levels of fine sediment are present in the Hoo Brook and this is clearly having a negative impact upon the quality of the gravel spawning habitat in the watercourse. The catchment is located in an area of sandstone geology and sandy soils, so some natural input is to be expected, but during the visit (on a rainy day) sources of fine sediment from agricultural land were clear to see. Muddy run-off onto roads (and ultimately surface water drains and the brook) from cropped maize fields that have laid bare all winter was seen along Egg Lane, close to the site visit.

Land management practices greatly influence the amount of fine sediment that reaches rivers. There are numerous agri-environmental options available to land managers to reduce sources of fine sediment and these options are often promoted via advisory campaigns by various organisations. It would be worth contacting Severn Rivers Trust to see if they have any such work taking place:

http://severnriverstrust.com/projects_categories/worcestershire-middle-severn/ .

- There appear to be a number of weirs and other flow control structures along the course of the brook. These impede the free movement of fish, so will restrict their ability to complete their life cycle, for example being unable to run upstream to find good spawning areas. Whilst there may well be trout populations between the obstacles, these will not be reaching their full potential compared with a situation where there are better connections between reaches. The weir at Sion House could be improved to facilitate fish movement, for example by removal, or at least cutting a notch. However, this should be considered in the context of the wider catchment, where other obstacles are located and what initiatives to improve fish passage are already underway. Again, contacting Severn Rivers Trust to discuss this is recommended.

Please note, there may be a legal requirement for written consent from the lead flood authority (usually either Environment Agency or County Council) prior to undertaking any works in or adjacent to the river

5.0 Making it Happen

Further assistance from the Wild Trout Trust is available in the form of:

- Helping obtain the necessary consents for carrying out in-stream works, from either the local authority or Environment Agency (depending upon whether the river is a designated Main River or not).
- A practical visit, which involves a visit from a WTT Conservation Officer to demonstrate the techniques described. This enables recipients to obtain on-the-ground training regarding the appropriate use of conservation techniques and materials, including Health & Safety, equipment. This will then give projects the strongest possible start leading to successful completion of aims and objectives. Recipients will be expected to cover travel expenses of the WTT attendees.
- The WTT website library has a wide range of free materials in video and PDF format on habitat management and improvement:

www.wildtrout.org/content/library

The Wild Trout Trust has also 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.

6.0 Acknowledgement

The WTT would like to thank the Environment Agency for supporting the advisory and practical visit programme in England, through a partnership funded using rod licence income.

7.0 Disclaimer

This report is produced for guidance; 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. 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.