



# WILD TROUT TRUST

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**Avon Water – Bridge Farm, Sway, Hampshire**



**Advisory Visit May 2023**

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## **Key Findings**

- Habitat quality for trout on this reach of the Avon Water is excellent.
- The river supports a diverse range of habitat suitable for all trout life stages.
- The current maintenance regime looks to be sympathetic in maintaining valuable fallen woody material.
- The outlet of the Sway waste-water treatment plant appears to discharge near the boundary with your downstream neighbour. Monitoring the performance of this treatment plant, via simple river invertebrate sampling is highly recommended.
- The riparian zone would benefit from a thick sward of more complex vegetation. Any moves to provide grazing opportunities will require the protection of bank tops via stock fencing.
- Non-native Himalayan balsam needs to be kept under strict control.
- Consider tree planting in the middle of existing headlands for future erosion control.

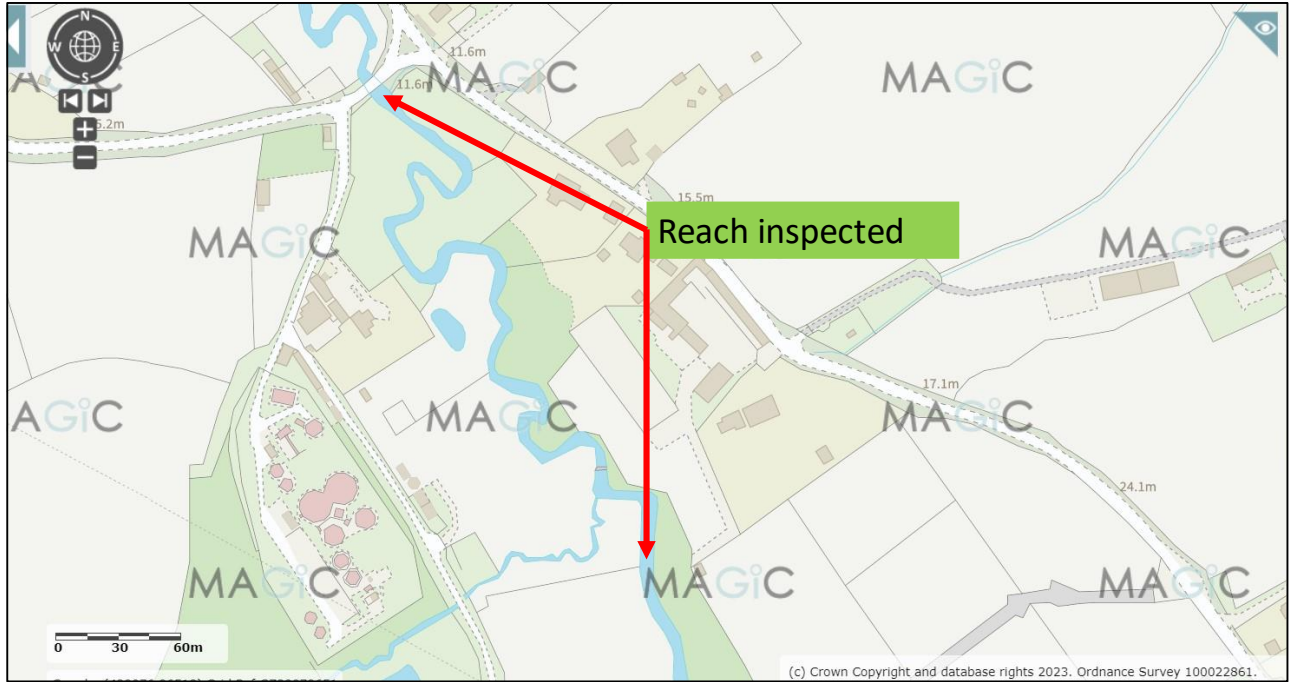
### **1.0 Introduction**

This report is the output of a site visit undertaken in April 2023 by Andy Thomas of the Wild Trout Trust (WTT), to a section of the Avon Water in the New Forest National Park.

The request for the visit came from the owner of a 0.5-km stretch of right bank on a reach located just downstream of Sway. The site inspection included a short section below, owned by a neighbour. The new owners are keen to manage the river sensitively and have observed and filmed sea trout spawning in their water last winter.

Comments in this report are based on observations made during the site visit and discussions with the owners.

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 specific locations.



Map 1. Avon Water, Sway.

Table 1. Overview of the waterbody information sourced from:

<https://environment.data.gov.uk/catchment-planning/WaterBody/GB107042011300>

<b>River</b>	Avon Water
<b>Waterbody Name</b>	Lymington and Beaulieu Operational Catchments
<b>Waterbody ID</b>	GB107042011300
<b>Management Catchment</b>	New Forest
<b>River Basin District</b>	South East
<b>Current Ecological Quality</b>	Moderate Ecological Status
<b>U/S Grid Ref inspected</b>	SZ28809673
<b>D/S Grid Ref inspected</b>	SZ28949650
<b>Length of river inspected</b>	0.5km

## 2.0 Catchment Overview

The Avon water is a comparatively short river of approximately 14km in length, draining the central southern portion of the New Forest and discharging directly into the Solent via tidal gates at Keyhaven. The coastal area between the Lymington River and Avon Water supports the internationally important Keyhaven Marshes, an intertidal wetland habitat designated as a Specially Protected Area (SPA). The Avon Water and Lymington River are tide-locked by water-level control structures, designed to reduce local flood risk but also provide important local freshwater habitats alongside saltmarsh and intertidal habitat.

The Avon Water starts life as a network of open gutters and headwater streams draining extensive wet and dry heaths with rich valley mires and associated wet and dry grasslands, ancient pasture and mixed woodland. The underlying geology is Eocene sands and clays, overlain by gravel terraces and with extensive peat deposits in low-lying boggy valley floors. The headwaters of the Avon Water have historically fared slightly better than the adjacent Lymington River, with the wet mires providing more reliable flow following periods of dry weather.

The natural characteristics of the local geology shape the chemistry and physical characteristics of both rivers, which are mildly acidic and flashy in nature, with low base flows that can rapidly rise in response to heavy local rainfall. In addition to the underlying geology, the river drains a unique worked landscape moulded by extensive livestock grazing and forestry activities.

The New Forest Heritage Area extends to approximately 58,000 hectares, 29,000 of which comprise the New Forest Special Area of Conservation (SAC). The New Forest SAC is one of the most important sites for wildlife in the United Kingdom and is widely recognised as being of exceptional importance for nature conservation throughout Europe. The New Forest SAC comprises a network of rivers and streams and numerous permanent and temporary ponds. Outstanding examples of thirteen habitats of European interest are represented, together with two priority habitat types - bog woodland and riverine woodland.

The Avon Water (Waterbody ID GB107042011300) has been assessed by the Environment Agency as being in 'moderate status' under the Water Framework Directive.

## 3.0 Fisheries Overview.

The Avon Water, like the Lymington River is relatively nutrient poor and slightly acidic when compared to the neighbouring chalkstream rivers lying to the west (Hampshire Avon) and east (Test) of the catchment. Consequently, the productivity of the aquatic food web is naturally lower and hence growth rates of resident brown trout *Salmo trutta* tends to be on the slow side. This low natural productivity will have directly contributed towards the highly migratory nature of New Forest trout populations. The Avon Water is known to support a significant sea trout population.

The author does not have any information, or data on other fish species present but it is likely the river also supports modest populations of coarse fish.. Other conservation species including eel *Anguilla anguilla*, brook lamprey *Lampetra*

*planeri* and bullhead *Cottus gobio* are also likely to be present throughout the system.

Although the river supports a significant sea trout run, it is understood that currently only modest numbers are captured during the fishing season. In a dry season it is not unusual for the bulk of the spawning stock to enter the river late, sometimes arriving after the rod fishing season has finished on the 31<sup>st</sup> October. The most productive sections for angling are usually those located on the lower reaches of the freshwater river.

#### **4.0 Habitat assessment**

This section of the Avon Water appears to be largely natural and unmodified. As a result, habitat quality for trout is very good. The river has a naturally meandering planform and supports a varied sequence of pools, glides and broken riffles. This diverse habitat provides good holding pools for large adult trout, as well as spawning opportunities on gravel-rich pool tails (photo 1). Suitable habitat for supporting fry in shallow, well-covered margins (photo 2) and parr on rough, broken riffles (photo 3) was also well represented.

The riverbed is relatively incised, with some steep and eroding bank faces, but this is thought to be largely natural and associated with the river's active morphology, driven by local geology and the energetic nature of the flow velocities following heavy rainfall.

The Forest streams are not noted for luxurious beds of aquatic plants, however, beds of starwort *Callitriche stagnalis* were evident in locations where direct sunlight was penetrating to the riverbed (photo 3). This plant is more usually associated with gently flowing chalkstreams and spring-fed ponds, rather than slightly acidic, spate streams. Its presence might suggest the availability of a slightly more neutral water chemistry and nutrients. That said, the gravel bed was bright and clean, with no evidence of the excessive filamentous algal growth that is so common on most of our nutrient enriched lowland rivers. Marginal emergent plants were largely absent, other than the odd clump of sedge *Carex spp* and reed sweet grass *Glyceria maxima*.

Where there were beds of starwort (photo 4), these provide opportunities for specialist invertebrates, as well collecting fine sediment and funnelling elevated flow velocities to maintain clean gravel runs. Submerged weed beds in these areas also provide valuable niche habitats for fish of various life stages, dependant on local depth and flow velocities.

The density of the riparian tree cover, height of the banks and the local water depth will all influence conditions for weed growth. The tree canopy and associated shade is critically important to help moderate water temperatures. A 50:50 dappled light, versus shade regime is ideal and this reach of the Avon looks to provide enough opportunities for light to penetrate the tree canopy for weed beds to flourish. Shading is particularly important over deeper pool habitat, usually located on the outside of bends and any low shade that brushes the water is particularly valuable.



Photo 1. Numerous, meander bends supporting deeper pools and valuable shallow pool-tails and gravel-bottomed riffles provide the full range of habitat required for all trout life-stages.

Tree shading was mainly cast by mature bank-top alder trees *Alnus glutinosa*, but some low-level cover was also provided by elder *Sambucas nigra* and goat willow *Salix caprea*.

Some of the Alders were mature singles, but there were also clumps of previously coppiced stools. All river margin trees provide good bank protection, tying in vulnerable bank soils but also provide excellent submerged cover for fish (photo 5).





Photo 3. Shallow broken riffle habitat provides excellent opportunities for parr to hold safely in water too shallow for large predatory adult trout. The presence of the naturally fallen large wood material provides an excellent “cover log” and adds value to this important habitat.



Photo 4. A significant bed of submerged starwort, where a gap in the tree canopy enables sufficient light to hit the riverbed at a suitably shallow section.



Photo 5. Complex root system from a bank-top alder provides a potentially safe holding area for an adult trout.

In a few areas there was evidence of slight bank erosion (photo 6), sometimes caused by back eddying adjacent to steep banks, with little or no root systems available to help bind in the soils at the toe of the bank. The river has a very active morphology, and some bank erosion is inevitable and completely natural. Indeed, some bed and bank erosion is essential to maintain fresh gravel supplies, vital for maintaining the ecology of the river.

Erosion pressures were not considered to be significant, however, there were some very tight meander bends, where there is the possibility of over topping and if these areas correspond to sections with limited tree/root growth then they might be vulnerable to cutting through in a big flood event. An additional risk occurs where the bank tops are heavily infested with non-native Himalayan balsam *Impatiens glandulifera*. The vigorous summer growth of this plant tends to outcompete native plants that might otherwise help bind top-soils together. Tackling the areas where this plant exists by hand-pulling, or strimming below the first leaf node, prior to the plant seeding, is highly recommended. In addition, planting up any headland promontories with additional trees is recommended to help build resilience and reduce risks associated with possible bank failure in the future.



Photo 6. Bank slumping caused by a large back eddy, nibbling the toe of an undefended margin. Note the fine, friable soils here, with no complex root systems tying in the soil. When banks slump like this, often a new toe to the bank forms from the sods that slide into the margins. Provided there is enough light, these then provide a platform for pioneering emergent plants to root. A good option here is to heel in sods of sedge won from other locations to help accelerate a naturally recovery.

Some consideration of future riparian land use is required. Currently the banks are occasionally trimmed or mown but it is understood that grazing options are also being considered for the future. It is highly recommended that the bank tops are left to develop a much wider, thicker and more robustly vegetated buffer zone, which will require stock fencing if grazing is being considered. If left unfenced,

grazing has the real potential of significantly degrading the riparian habitat, suppressing natural tree regeneration and exacerbating any bank erosion issues.

There were numerous examples of naturally fallen woody material (photo 7) within the river channel. This ranged from large woody tree-trunk sections and branches to coarse woody brush. This woody material is extremely valuable and performs several key functions that underpin the stream's ecology.

Larger woody trunk and branch sections often promote local bed scour and help to drive the processes that sort and settle river sediments, ranging from coarse gravel to fine silt. In addition, it provides habitat as cover logs for fish and supports a myriad of grazing invertebrates that process the wood, along with the finer material and leaf litter it helps retain. In relatively nutrient poor systems, this woody material provides the building blocks for the entire river's food web.

Very occasionally, woody material can accumulate and form into a debris dam, spanning the full width of the channel. Usually, water continues to flow under the debris, promoting bed scour and valuable habitat. However, occasionally they can become occluded by fine brush and leaf litter and if water fails to flow beneath, then upstream levels can rise and flow velocities reduce, resulting in sediments accumulating in the reach immediately above the dam. If dams are left in place, they can eventually cause a differential step to form in the riverbed, resulting in difficulties for fish on both upstream spawning migrations but also for downstream sea trout smolt dispersal. In such cases it is recommended to intervene and ease out some material to ensure there is always flow below any natural woody blockage. If any intervention is required, it is always recommended to do the minimum, so that fallen woody material is retained within the channel; a good rule of thumb is simply to move any offending wood into a position where it isn't significantly backing up the river.

This reach of the Avon Water is obviously an important area for seatrout spawning. The owner has witnessed and filmed large sea trout spawning and there was evidence of old trout redds, still clearly visible in May (Photo 8).



Photo 7. Large and coarse woody material accumulating within the channel. Both forms of woody material are extremely valuable and whenever possible should be left in situ. If a large debris dam forms, then it might be necessary to ease out a gap to ensure that fish migration is still feasible.



Photo 8. A classic pool and tail with the remains of a large seatrout redd

## 5.0 Conclusions

In summary, The Avon Water at Bridge Farm is a fine example of an unmodified trout stream that supports the full range of habitat necessary to sustain healthy wild trout populations. The river here will undoubtedly support small, resident brown trout but will also be a critically important area for sustaining the larger migratory component of the wild trout population.

The current management regime looks to have struck the right balance in allowing flow conveyance without stripping out the valuable woody material that helps to drive the rivers physical form and ecology.

The riparian land butting up to the top of the riverbanks would benefit from light-touch management to enable native plants and trees to develop and become more complex. Control of the non-native balsam should be a priority action. If the meadows are to be grazed, then stock fencing leaving a suitably wide buffer zone will be vital to maintain riparian habitat quality.

Habitat availability and quality, coupled with reliable water resources are a prerequisite for healthy trout populations; the reach can only perform for trout if suitable water quality is maintained. Cool, well oxygenated water is essential, and it is recommended to keep a watching brief on the effluent channel emanating from Sway Waste Water Treatment Works. Wild Fish [www.wildfish.org](http://www.wildfish.org) are currently coordinating a citizen science "SmartRivers" project, where they offer advice and training to help landowners and community groups carry out their own water quality monitoring. Alternatively The Angling Trust have also rolled out a Citizen Science programme. More information is available here: <https://anglingtrust.net/get-involved/anglers-against-pollution/wqmn/>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](http://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/shop/products/rivers-working-for-wild-trout-dvd](http://www.wildtrout.org/shop/products/rivers-working-for-wild-trout-dvd) or by calling the WTT office on 023 9257 0985.

## 6.0 Acknowledgement

The Wild Trout Trust would like to thank the Environment Agency for their continued support of the advisory visit service, in part funded through monies from rod licence sales. The advice and recommendations in this report are based solely on the expert and impartial view of WTT's conservation team.

## **7.0 Disclaimer**

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