

WILD TROUT TRUST

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River Stour, Littleton Farm at Charlton Marshall



An advisory visit by Nick Lawrence of the Wild Trout Trust, May 2022

nlawrence@wildtrout.org

Introduction

This advisory report is the output of a visit undertaken by Nick Lawrence of the Wild Trout Trust (WTT), over approximately 2km of the River Stour (single bank) at Littleton Farm, Charlton Marshall in Dorset. A walkover of the site was carried out on behalf of the owner to advise on opportunities for habitat improvement, biodiversity gains and fishery enhancement.

Due to illness on the day the owner was unable to attend. Comments in this report are based on observations on the day of the visit and discussions between an angling syndicate member, Matt Irvine matt@wessexrt.org.uk Wessex Rivers Trust (WRT) and Nick Lawrence. 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. The walkover assessment started at the downstream end of the reach and worked upstream.



Map 1 Map of the River Stour at Littleton Farm

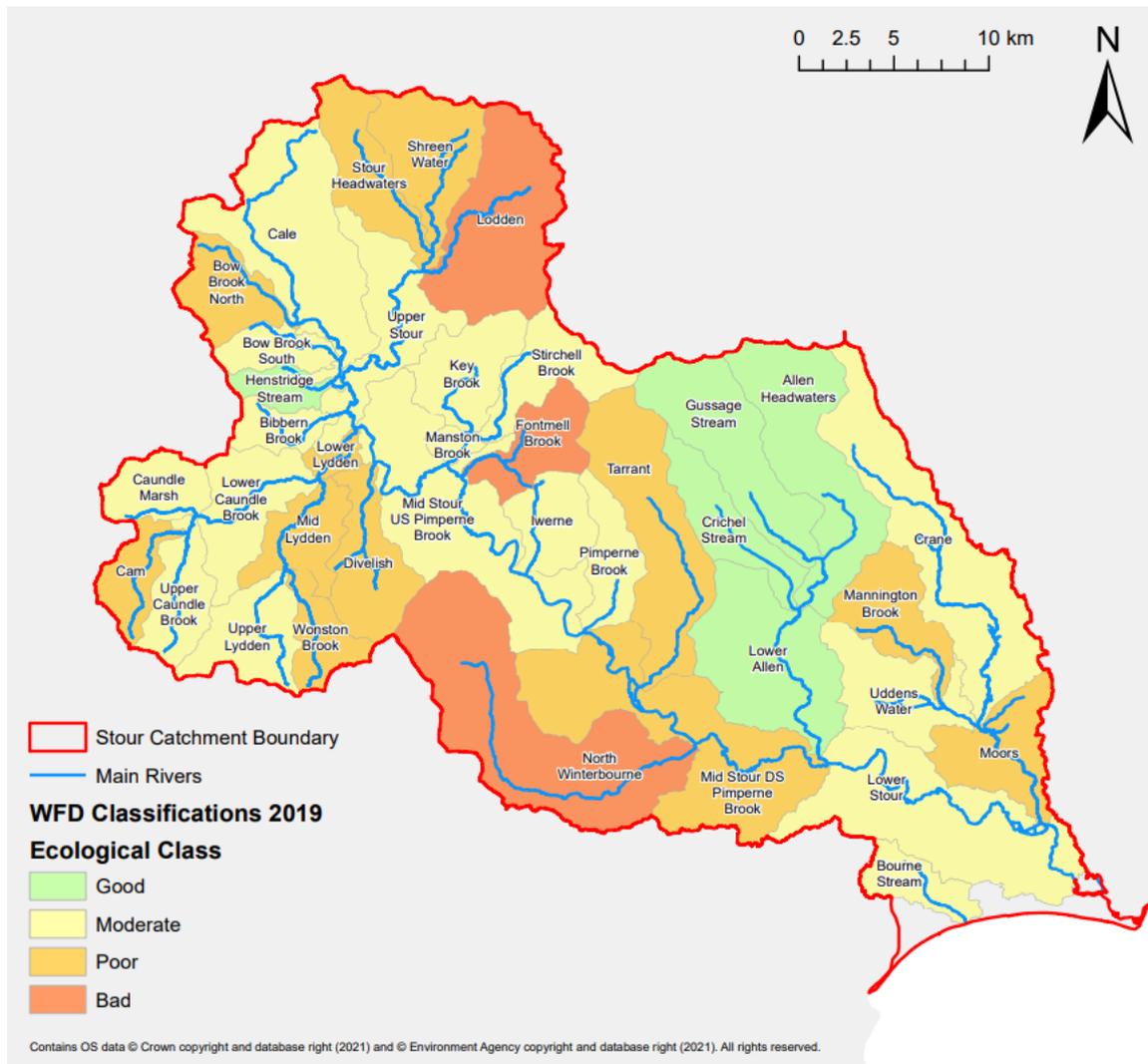
Catchment and Fishery Overview

The River Stour is a 60.5mile (97km) long river which flows through Wiltshire and Dorset. It rises from greensand springs at Stourhead where it is impounded into a series of artificial lakes, and then drains southeast through the Blackmore Vale to Gillingham and Blandford Forum. At Blandford, the river flows through the chalk ridge of the Dorset Downs, and from there flows southeast into the heathlands of southeast Dorset. At Wimborne Minster it is joined by the River Allen and finally by the River Avon before flowing into the English Channel at Christchurch Harbour.

Over its course, the Stour flows over three distinct geological formations. Initially rising from sandstone, the Stour flows through a predominantly clay catchment which transitions to the white chalk of the Dorset Downs near Blandford Forum. Near Wimborne Minster the catchment geology changes to a mixture of sand, silt and clay. The change in geology alters the physical and chemical characteristics of the river which in turn affect the river's ecology. The Stour supports a diverse range of fish species including barbel, chub, grayling, perch, pike, dace, roach, rudd, bream, trout and even salmon, the latter making a comeback after populations crashed in the 1970s.

The most recent (2019) Water Framework Directive (WFD) status for this section of the River Stour classifies the river as having 'poor' ecological status. The issues preventing the section of the Stour from reaching 'good' ecological status are primarily related to water quality, with physical modification also being a concern through channel deepening and straightening. Full details of the Water Framework Directive data are available on the Environment Agency's Catchment Data Explorer: [Stour \(Middle d/s Pimperne Brook\) | Catchment Data Explorer | Catchment Data Explorer](#)

The map below shows the Stour catchment, with the ecological status of the constituent waterbodies and their WFD status, as classified under 2019 cycle 2 data.



Map 2 WFD data on the Stour catchment

A river restoration plan has been drawn up by partners of the Stour Catchment Initiative (SCI). The Littleton Farm reach has been highlighted within the Middle and Lower Stour Restoration Plan (SRP), available here [Stour Catchment Partnership | Wessex Water](#), as requiring habitat restoration (code RS12 Reach 12 pages 39-40). Listed restoration options include a combination of channel narrowing, bed raising and bank re-profiling, as well as riparian tree planting to help increase the potential quantity of coarse woody debris and add to the diversity of the channel.

Habitat Assessment

At the downstream end of the fishery, upstream of the island at Charlton Marshall, a large pool (Photo 1) exhibited lots of high quality habitat, including overhanging cover in the form of goat willow and marginal encroachment of club rush (*Scirpus sp.*). The trees and marginal cover provide prime habitats for large adult trout to evade predation from birds or mammals as well as assisting invertebrate populations and helping regulate water temperature.



Photo 1 High quality trout habitats: water crowfoot (out of shot), overhanging willows on the RB and LB and lush emergent vegetation.

Moving upstream (photo 2) a nice glide had an array of submerged plants which couldn't be photographed due to difficulty of access. The channel here contained water carrot, water crowfoot and water parsnip; a good diversity of submerged plants, providing a mix of habitats for aquatic invertebrates and a good food source for fish.

The buffer fencing here, and within much of the reach visited, is set too close to the edge of the river, merely circa 1-2 metres in some areas. This is an insufficient buffer leading to impeded development of trees and scrub, which if allowed to develop with sufficient space and lack of over-fence grazing pressure would in time diversify river habitats and supply the river

with coarse woody material. As seen in Photo 2 the tree development is poor: although in-river vegetation is beneficial to fish and invertebrates the lack of overhead tree cover and resulting large woody material (LWM) result in sub optimal fish habitats.



Photo 2 Lush emergent sweet grass on the RB (left of shot) providing good habitats for juvenile fish and invertebrates, while the incised LB is impeding marginal development: buffer fencing on both banks is set too close to the bank top, which is suppressing tree regeneration.



Photo 3 Deep bend with sparse tree cover on the LB: buffer fencing too close to the river is again reducing tree cover on the RB.



Photo 4 Wide shallow riffle with thick water crowfoot growth: prime habitats for juvenile trout and salmon parr.

Upstream of the glide in photo 2 a deep meander (photo 3) provided good variation of habitat, and a number of chub were sighted. Some overhanging tree cover had developed on the LB, but both banks in general were suffering a lack of trees and diversity form, reducing the potential for improved fish habitats.

Upstream of the deep meander the river shallowed, and a wide riffle was covered in thick water crowfoot (photo 4) -the type of habitat where juvenile trout and salmon parr would thrive. The channel here has been modified in the past, with tell-tale signs of very steep incised banks, circa 2m from bank top to water level. The steep banks impede marginal plant development and are vulnerable to erosion in high flows. Without tree or marginal growth to stabilise them, such banks can become particularly unstable and a source of increased sediment loads.



Photo 5 The *Scirpus* encroachment leaves clues to what was once a much narrower and more sinuous channel, before historical modifications were made.



Photo 6 The island on the right of this shot, which has been unmanaged for some time, and has developed mature trees which have diversified the channel as they have fallen and slumped into the river. More areas such as this would be highly beneficial.



Photo 7 More marginal encroachment from the RB, narrowing the
overwide channel by half: however, note still the lack of trees due to
narrow buffers.

As mentioned above, it is clear that the river has been subjected to modification in many areas, mostly widening the channel but in other areas deepening it too. This overwide nature limits the scouring of gravels, which is the river's means of adding diversity to the riverbed. The overwide channel, combined with the ongoing erosion from over-steep banks, leads to a reduction in the quality of the riverbed gravels as they can become clogged with silt in the absence of structure to assist scour. Fallen LWM would accelerate this process, but the lack of trees is reducing such possibilities. This supports the claims within the EA SRP regarding the overwide channel and lack of riparian tree cover.

The river in some areas (photos 5 & 7) is attempting to re-narrow itself by sedimentation and marginal encroachment, this process has led to a healthier and narrower channel, with increased velocities helping to cleanse the gravels. As noted in photo 5, the encroachment gives clues as to the original size of river channel, which would have once been more diverse and sinuous before the modifications.



Photo 8 Deep meander with goat willows growing at the toe of the bank providing high quality cover: however other trees are struggling to succeed here due to the small buffer zone, leaving the bank in the foreground vulnerable to erosion.



Photo 9 The dredged uniform channel does have pockets of willow cover which will be highly valuable. Otherwise tree cover is sparse within this reach.



Photo 10 The lack of diversity within the middle reaches is stark: this area, and much of the reach, would benefit from a riparian tree planting scheme.

Moving upstream the river starts to become very heavily impacted from previous modification/ dredging works (Photo 8-10). The river from photo 8 to near the top boundary is similar, characterised by a homogenous glide. Some beneficial habitat features for fish were present with low, overhanging cover and accumulations of sub-emergent vegetation. The RB also has a thick common reed (*Phragmites sp.*) bed (photo 10), which was full of reed warblers, which should also be a haven for insects.

Flow diversities were limited, and generally only where willow had managed to succeed, was there a variety of cover. Photo 9 shows a nice example of a willow that has partially collapsed, with some branches growing at water level. More incidences such as this would be highly beneficial to the reach.

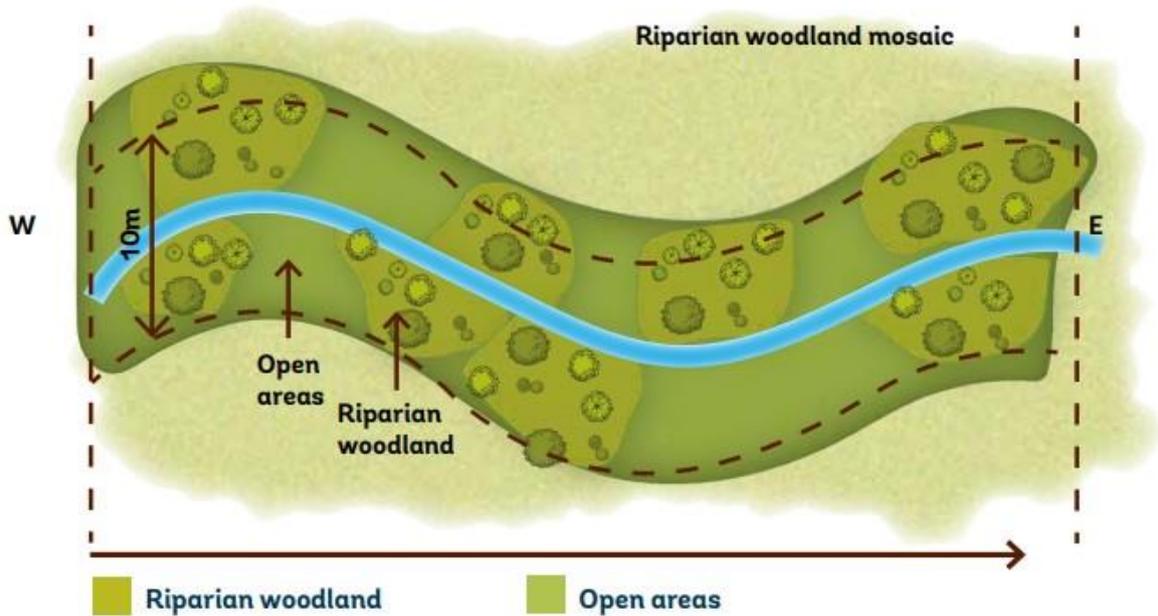
As noted in the EA's SRP, this reach would require significant works for it to function as a natural system. Techniques such as green/soft engineering to narrow the overwide channel and reinstatement of coarse bed material to restore a varied bed profile would be beneficial. The high banks of the incised channel require re-profiling to increase flood plain connectivity. Works such as these carry a large capital cost but should be an aspiration.

Until suitable funding becomes available for such works, improving the buffer zones and biodiversity along the edge of the river is the next best thing to improve habitat for fish and invertebrates.

As noted along much of the reach, tree cover is particularly sparse on both banks, apart from the odd single tree. Littleton Farm only owns the RB but engagement with the LB owners would be important to ensure joined up thinking, such as tree planting or woodland creation that could be incorporated into a stewardship scheme. Ideally, tree planting should aim for a mosaic of tree cover with a balance of around 40% dappled shade to 60% open areas, as illustrated in Photo 11. Photo 12 shows how a large riparian zone may look which will bring benefits to the ecosystem in many ways such as:

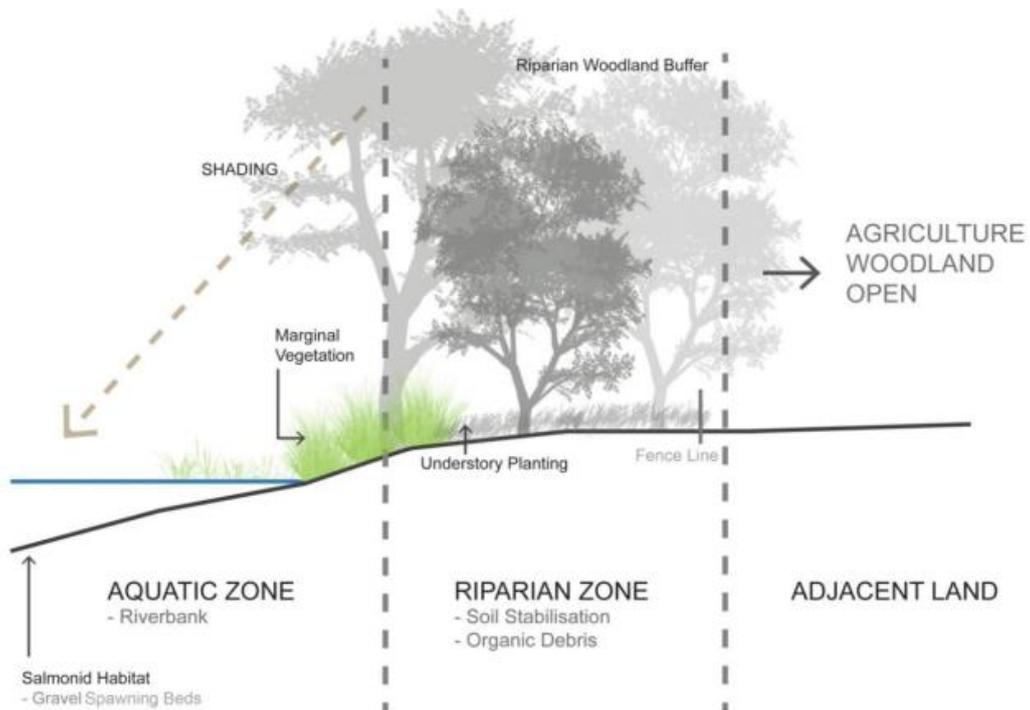
- Improved habitats - for a multitude of species (feeding, breeding and refuge)
- Corridors - that link fragmented habitats (improved biodiversity)
- Habitat - trailing or fallen branches, root masses, emergent plants and food
- Shade – mitigating for climate change by keeping river water cool.
- Resilience – a diverse root matrix binding bank soils together thereby reducing the risk of erosion
- Slowing the flow during peak floods
- Intercepting and absorbing pollutants (soil loss, excess nutrients), reducing diffuse pollution

One particular aspect that will be important is planting of willows within the marginal fringes, in an attempt to get trees growing in a similar fashion to photos 6 & 8, providing low cover and possibilities for a future supply of woody material.



Source: *Keeping Rivers Cool*, Environment Agency (2016)

Photo 11 Suggested riparian planting to create a mosaic of tree cover producing dappled shade across the channel.



Source: *Keeping Rivers Cool*, Environment Agency (2016)

Photo 12 Diagram showing possible ideal scenario for the riparian zone behind a fence line.

Alongside the potential for tree planting, it would be worth investigating enlarging the buffer zones to reduce cattle leaning over the fence to graze off potential future tree growth, this would also assist in stabilising the banks thus slowing erosion. Countryside Stewardship could fund permanent livestock fencing for the protection of a watercourse. The following options are available as standalone capital items:

- FG1: Fencing @ **£4.00 per metre**
- LV5: Pasture pumps and associated pipework @ **£220 per pump**

Further advice on options and details of how to apply will be available through the local Catchment Sensitive Farming Officer: csf.wessex@naturalengland.org.uk



Photo 13 A failed planting scheme on another island near the top of the fishery, a relic tree guard white circle. Re-planting here would be beneficial.



Photo 14 A nice example of how fallen woody material can enhance habitats, note the marginal plant succession behind the fallen willow, creating a small backwater, enhancing habitats for coarse fish and trout.



Photo 15 One of the rare riffles within the Littleton reach: this area will be hugely important to spawning trout, but the steep RB is still impeding marginal development.



Photo 16 Upstream of the riffle on a bend, multiple fencing attempts keep failing. Tree planting, set back from the bank top, is required to aid bank stability.

Within the upper most section (photos 14-16) there is good potential for trout habitats. The riffle shown in photo 15 will be a hugely important area for trout spawning and juvenile fish, especially because areas such as this were very rare throughout the 2km visited. The riffle in photo 15 sits directly upstream of the backwater in photo 14, which provides cover for any juvenile fish spawned from the riffle.

Photo 17 shows what can happen when a buffer fence is set too close to the river on a steep incised bend. There have been multiple attempts to re-fence this, but each time the fence is relocated, it has not been moved far enough back to stop browsing of herbage and tree saplings over the fence, thus reducing the succession of trees taking hold and helping to protect, stabilise and slow erosion. Encouraging willows to grow along the toe of the outer meander will be particularly important here in providing improved habitat and diffusing flow, which in turn will reduce erosion.

The recommendation here is to move the fence back a minimum of 10 metres, and establish a riparian tree planting scheme that will stabilise banks, improve habitats and protect the field from further erosion.

Recommendations:

- Continue to employ hands-off management, leaving fallen trees within the river. Retaining fallen trees provides important ecological and fishery benefits. Due to the previous hands-off management, some areas of favourable habitats have developed.
- Continue to exclude cattle from the watercourses by maintaining fenced and preferably wooded buffer zones.
- Where there is a lack of low, scrubby trees, particularly on steep incised banks, consider planting the odd goat willow to provide essential low-level cover, against the toe of the bank near water level: this will help reduce erosive flows in some areas
- Engage with the LB owners to see if larger buffer zones and additional tree planting schemes could be incorporated on their bank. This would be more beneficial than a simple planting scheme on one bank. This may be of interest within a farm cluster to be incorporated into the new Environmental Land Management Scheme (ELMS) or the Landscape Recovery Scheme [Landscape Recovery: more information on how the scheme will work - GOV.UK \(www.gov.uk\)](#)
- Consider Countryside Stewardship options and potential for assessing future alternatives: this may be best investigated through catchment sensitive farming csf.wessex@naturalengland.org.uk
- Consider a planting scheme that in time will provide the river with shade and a future supply of woody material. One route for possible funding is through DEFRA and their woodland creation scheme: [5 How it works - Countryside Stewardship: Woodland Creation and Maintenance grant manual \(from 9 February 2021\) - Guidance - GOV.UK \(www.gov.uk\)](#)
- Contact riverstourphos@wessexwater.co.uk to understand more about the [River Stour Phosphorus Reduction Scheme Flier Spring 2022.pdf](#) . Funding is available for schemes that reduce phosphorus inputs to farmland, prevent soil erosion and buffer watercourses from run-off. For example, fencing to exclude livestock from watercourses, establishing new or wider buffer zones and planting trees to establish small-scale woodlands. WTT could help with enquires here.
- Don't rule out aspirations of a larger scale restoration as specified in the EA's SRP, consisting of bed raising, LWM additions and bank reprofiling.

Making It Happen

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

- A practical visit, which involves a visit from a WTT Conservation Officer to demonstrate the habitat improvement techniques outlined in this report. This enables recipients to obtain on the ground training in 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. Recipients will be expected to cover travel expenses of the WTT attendees.
- Help obtaining the necessary consents for carrying out in-stream works, from either the EA or Lead Local Flood Authority (depending upon whether the river is designated Main River or not).
- Help identifying/ enquiring about practical funding streams.

The WTT website library has a wide range of free materials in video and PDF format on habitat management and improvement: <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 <https://www.wildtrout.org/shop/products/rivers-working-for-wild-trout-dvd> or by calling the WTT office on 02392 570985.

Acknowledgement

The Wild Trout Trust would like to thank the Environment Agency for their continued support of the advisory visit service.

Disclaimer

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Legal permissions must be sought before commencing work on site. These are not limited to landowner permissions but will also involve regulatory

authorities and any other relevant bodies or stakeholders. Alongside permissions, risk assessment and adhering to health and safety legislation and guidance is also an essential component of any interventions or activities in and around your fishery.