Tadnoll Brook (Dorset Frome Catchment)
Warmwell Estate

An Advisory Visit by Nick Lawrence on behalf of the Wild Trout Trust
January 2016

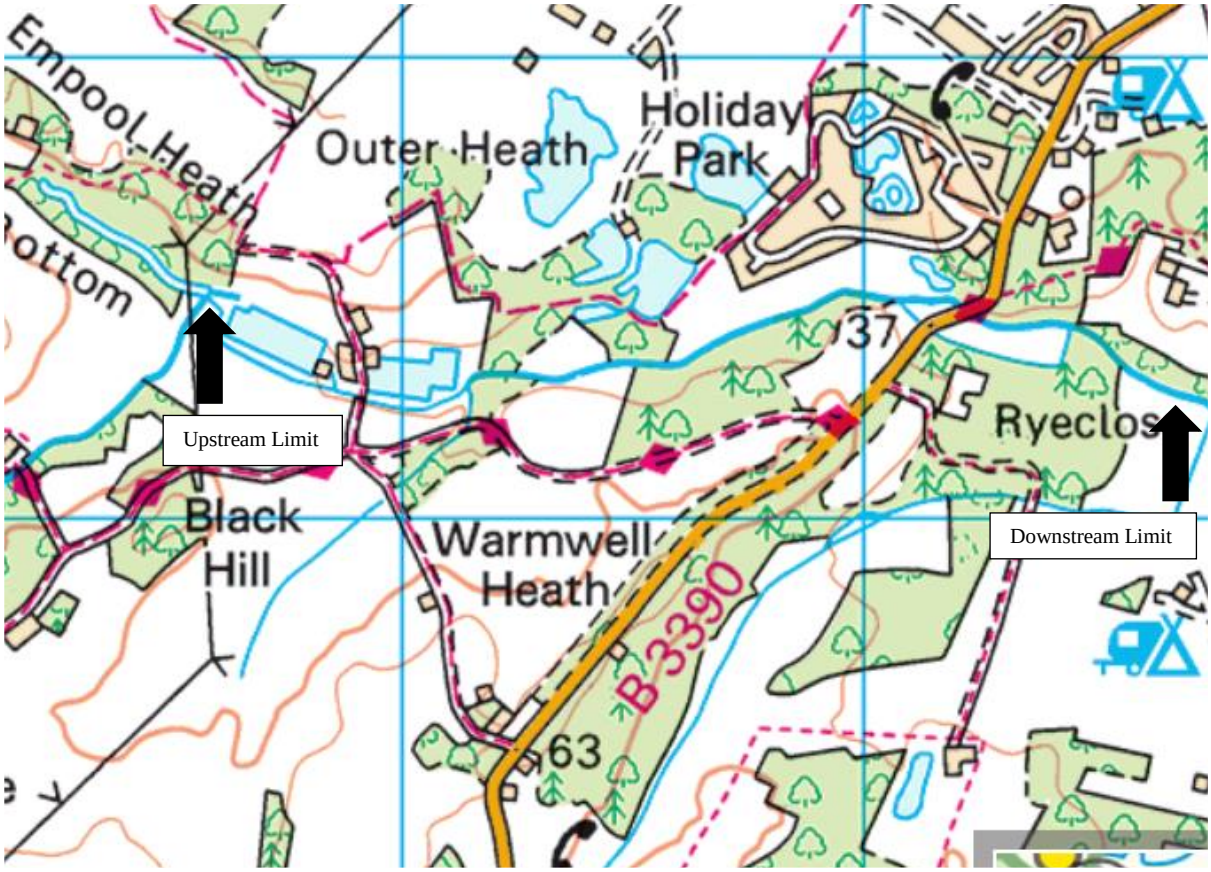
1. Introduction

This report is the output of a site meeting and walk-over survey of the Tadnoll Brook on the Warmwell Estate near Warmwell in Dorset in January 2016.

The request for the visit came from Paul Ross-Skinner who is the owner of the Warmwell Estate. Paul is keen to see how the brook's health is in terms of biodiversity and he is interested in preserving and improving the river for fishing.

Comments in this report are based on observations on the day of the site visit and discussions with Mr Ross-Skinner.

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.



Map 1 Warmwell Estate stretch on the Tadnoll Brook.

The Warmwell Estate reach lies just downstream of West Knighton. It is approximately a mile from the source. The upstream boundary of the fishery is just above Warmwell Mill watercress farm SY7458675 and runs around the watercress farm then down into an oasis of heathland and woodland, finishing just upstream of Moigne Combe at SY767872.

The fishery consists of one section of main brook. About a third of the way down, the brook braids into two channels for approximately 500 yards and then reconnects near the bottom.

The upper section of the brook, which runs from just above to below the watercress farm, has a heavily engineered channel due to the intensive agriculture requirements of the watercress farm. In stark contrast, the lower section, which starts at just below the watercress farm and makes up the majority of the fishery is about as wild as a brook in England can be!

Details regarding the water body classification of the Tadnoll Brook can be found on the Environment Agency website:
http://environment.data.gov.uk/catchment-planning/WaterBody/GB108044009660

2. Catchment and fishery overview

The Tadnoll Brook is a tributary of the Frome. It rises from chalk springs 3km upstream of Warmwell Mill, there are two main springs that feed the brook, one from Broadmayne and the other from Whitcombe. It really is an interesting river, because although it rises as a chalk spring, it is also fed by lateral flow from the heathland it runs through. In fact, it is so unique that the heathland and surrounding land is a Site of Special Scientific Interest (SSSI, Appendix 1).

Photo 1. Heathland water (left) meets run off from roads and agriculture on one of the feeder streams to the Tadnoll Brook. (right).

The stream is a tributary of the River Frome and the confluence is near East Burton and flows south east, through the centre of Wareham and on to join the sea in Poole Harbour.

The Warmwell estate reach of the Tadnoll Brook flows through Warmwell Heath SSSI, which is a component part of the larger Dorset heathlands. Despite running through the sand and clay dominated geology, the brook maintains the water quality of a typical chalk stream.

The majority of the brook is truly wild; however, there are sections where industry and agriculture have modified the channel, but for the most part, it's a little gem. The Tadnoll Brook is extremely important for spawning and juvenile habitat for Atlantic salmon (*Salmo salar*). There was a reintroduction of Atlantic salmon in the early 2000s, as part of the Environment Agency's Salmon Action Plan (SAP; Bill Beaumont, The Game and Wildlife Conservation Trust, pers comm, February 2016). The SAP noted that 31% of the brook's length provided good quality juvenile habitat, with a further 36% providing habitat of moderate quality. A significant area of concern for the Tadnoll Brook, therefore, is nutrient pollution, especially phosphorous, elevated from sources such as agriculture and watercress farming.

One point to mention is that there is a strong movement in Dorset with interests in wild rivers. Dorset Wildlife Trust (DWT) runs an initiative called the Wild Rivers Project, a major ongoing restoration project, with funding from Wessex Water and Dorset Area of Outstanding Natural Beauty. The project focuses on the Frome and Piddle Valleys and the chalk stream tributaries of the Stour, Allen, Tarrant and North Winterbournes. The Dorset Wild Rivers partnership will work with land owners, fishing groups and the Wild Trout Trust, restoring rivers for the benefit of fish and invertebrates, reducing agricultural run-off into the chalk streams and creating wetland habitats in the floodplains. More information can be found here:

http://www.dorsetwildlifetrust.org.uk/dorsetwildrivers.html

3. Habitat assessment

It was noted that on the day of the advisory visit, the heavy rainfall had coloured the water significantly which is unusual for chalk rivers near to their source. This may be due to intensive agriculture in fields next to the river that were once watermeadows or heathland. Habitat could only be judged on what was seen. The top section of the Warmwell Estate above the watercress farm is fed by an area of wet woodland. This area of wet woodland has a beautiful meander and could only be described as ideal habitat for trout (Photo 2). A river with a meanders is more likely to have a varied channel cross section and more diverse bankside vegetation.

Photo 2. Unmodified beautiful meander amongst woodland.

Only 100 yards below this fantastic example, is heavily modified channel, which has been canalised for the watercress farm at Warmwell Mill (Photo 3). This section could be improved fairly easily with an introduction of staggered woody debris, to kick the flow around and locally scour the riverbed.

Photo 3. Heavily canalized channel due to the industrial nature of the watercress farm.

There was evidence that the river used to flow under Warmwell Mill (Photo 4), but as the watercress farm has expanded, it is possible that the channel was moved as it interfered with the farming. The farm is 12 acres in size and would have had some negative effects on the little brook over the years with channel modification and effluent most notably from phosphates.

Photo 4. Warmwell Mill, is this the historic course of the river?

As well as the canalisation of the river, there is a large steel piling structure (Photo 5) near the bottom of the watercress farm. This is impounding the flow and also impeding fish movements; if removed, it would reinstate fish passage and definitely improve the habitat of the section above, though its current function (if any) would need investigation.

Photo 5. Steel piling weir, impeding fish movements and impounding flow.

Below the watercress farm is where the magic happens. Apparently, apart from a heathland restoration project by Natural England some 10 years ago, the brook has had little to no management, which has led to some fantastic natural habitat being retained or developing.

Directly downstream of the watercress farm there is a lovely wooded section that is habitat rich in terms of naturally occurring woody debris, there are a few sections that are heavily shaded (Photo 6 and Photo 7, but as a whole this isn't an issue as there is plenty unshaded areas to compliment the shaded areas. A coppicing action plan is needed in some selected areas to give the brook back some much needed light.

There are some good pointers of tree management on the WTT website:

http://www.wildtrout.org/sites/default/files/library/Tree_Management.pdf

With this type of work there must be some sort of plan to ensure some shade is kept. A general rule of thumb is to 'light the runs' and 'shade the pools'. A good compromise is around 60% open water and 40% shade.

Photo 6. The reach directly below the watercress farm. Great natural woody debris but heavy shading on the right bank.

Photo 7. This area requires some re-coppicing, again heavily shaded on the south side of the brook.

The lack of management of these wooded sections has led to some interesting habitat features of fallen wood and collapsed willows. These features (although the full effect couldn't be see on the day due to the weather) will definitely be having a positive effect on the river. Natural fallen wood, as seen in Photo 8, can produce valuable scouring and sorting of gravels. The scouring will create different habitats for a greater diversity of invertebrates as well as giving the river bed a variation in depth, creating pools for adult trout to lie in. This scour and sort will also give good oxygenating potential spawning habitat for fish.

Photo 8. This is a one of many fantastic examples of fallen woody debris. It will be producing a good scour and sorting of gravels downstream.

There were many instances of naturally occurring wood; no action is required in these areas and they should be treated as nature's gift to the river.

Photo 9 sums up the advisory visit in terms of naturally occurring woody debris. The photo details a tangled matrix of woody debris, diversifying the flow and sorting river gravels. These areas are perfect places for all ages of trout. The brook here has a naturally braided channel; the island can be seen in the picture too. This is how the majority of our rivers would look without human intervention.

Photo 9. A prime example of naturally occuring woody debris, a gift from nature!

Although there are many examples of fantastic habitat and biodiversity along the brook, there are areas which can be marked for improvement. The invasive species, rhododendron, has taken a stronghold. Natural England addressed the issue when they undertook the heathland restoration project, but this needs constant monitoring, and regular removal. DWT has a team of volunteers that could help do this.

One of the biggest issues of note is that the river is not fenced, which has led to some bank erosion from cattle poaching (Photos 10 / 11). There are areas which are unaffected (within the woodland), but for the majority, where it is open ground, there is heavy pressure from livestock access. This overgrazing and poaching leads to fine sediments washing into the brook and can be a reason for a decline in salmonid recruitment. Cattle grazing/ poaching in these unshaded areas has also led to poor marginal plant growth and will progressively widen the brook as the banks are trampled. Disturbance from heavy grazing livestock can produce an overall increase in biodiversity, but here there is excessive pressure on small areas, to the likely detriment of the brook and its wildlife.

There are still areas unaffected by cattle poaching, but they are towards the bottom of the fishery (ref to Photos 12 / 13). These areas show how a fenced buffer area could be a potential way forward for restoring more natural and diverse marginal and riparian vegetation along the Tadnoll Brook. Of course fencing will need a provision for drinking areas and/or crossing points. This will create work for the estate with the upkeep of the fence and the area inside it.

Photo 10 & 11. Strong evidence that the banks are heavily used by cattle (leading to little or complete cessation of marginal growth in the unshaded areas).

Photo 12. A beautiful natural meander with a pinch (possibly due to large woody debris that can't be seen) with lush marginal growth.

Photo 13. A rare reed bed margin, lack of habitat like this is posibly due to shading and cattle grazing.

4. Conclusions

The Warmwell Estate reach of the Tadnoll Brook has fantastic potential in terms of habitat. However, there is one significant impoundment by the watercress farm at the top end of the fishery (Photo 5). This could drastically change the reach above (Photo 3) if this structure was removed and also improve fish passage, with the addition of woody debris in the canalised section adjacent to the cress farm to accommodate the new flow conditions. This could be a small and very worthwhile project.

There are undoubtedly some issues with fine sediments being washed into the river, due to farming practices, as the colour of the river could testify to on the day of the visit. These could potentially smother the spawning areas for trout. This is a point for a revisit to check how impacted the bed substrates are.

The brook is a little gem in terms of unique 'chalkstream meets heathland' habitat. With management practices at zero, this has produced some fantastic natural woody debris which should not be tampered with.

There has been little to no management of the trees which in most respects has created ideal habitat for trout but there are some areas that could use re-coppicing. This can be addressed fairly easily, but of course for this type of work the cost can be quite large; depending on budget and funding, maybe a little and often approach could be used.

The other issue is the land use. There are ponies and cattle that graze the heathland, but as with most animal behaviour, this is concentrated around water, especially in the lighter areas where the best grass grows. To fix this problem the river could ideally be fenced with cattle drink points or the use of pasture pumps.

Photo 14. An example of a pasture pump on the river Lyvennet in Cumbria

Photo 15. An example of a fenced cattle drinker on the river Coln in Gloucestershire.

5. Recommendations

- **The steel piling weir towards the top of the reach should be removed to allow free fish movement and improve the habitat upstream. This is as long as there is no reason for it still being there.**

- **To complement the weir removal, large woody debris could be installed into the canalised section above to accommodate the new flow regime. If the watercress farm has an issue with this, some short stub deflectors to create pinch points and some raised logs to provide undershot/ overshot scour would be beneficial. On the right bank encourage some more low scrubby covers to make up for the lack of cover on the watercress farm bank.**

- **Consider a coppice management plan to ensure that much needed light is brought to the shaded sections, especially on the southern bank. This could be on a 10 year rotation, coppicing 10% each year to retain a good ratio of direct sunlight to dappled shade.**

- **Make contact with Jacob Dew (jdew@dorsetwildlifetrust.org.uk) 01305 264620 and share this report, the new Dorset Wild Rivers Officer. Maybe a revisit so the riverbed can be observed with Jacob to bounce some ideas around. There is plenty of scope for improvement and DWT is are a good point of contact.**

- **Explore the possibility of stock fencing with a large buffer area 20 metres wide, if 20 meters is to large the minimum would be 5 metres. It was mentioned that the grazing was needed both sides of the brook, so cattle crossing points might need to be incorporated; these can double up as drinking areas. If not, then the possible use of pasture pumps to ensure adequate watering for stock (photos 14 and 15).**

- **Continue to employ light touch management, e.g. leave fallen trees in the river if they are not impounding the river or causing excessive bank erosion. If a fallen tree does fall in a place where it might cause a problem, simply adjust its placement into a more favourable position and secure it with posts and wire to retain the ecological (and fishery) benefit. Information for work like this can be found on the WTT page.**
  http://www.wildtrout.org/sites/default/files/library/Large_Woody_Debris.pdf

- **Consider in the future a habitat enhancement project in partnership with the DWT and WTT. WTT may be able to assist here, through the provision of a River Habitat Workshop to demonstrate techniques. The watercress farm area could be transformed rapidly.**

Note: All work within 8m of the top of the bank will require a consultation with the EA and may require a formal written Flood Defence Consent prior to any work being carried out.

Acknowledgement

The WTT would like to thank the Environment Agency for supporting the advisory and practical visit programs.

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- Warmwell Heath SSSI

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 Warmwell Heath can be viewed at
http://www.sssi.naturalengland.org.uk/citation/citation_photo/1002352.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.