



## River Menalhyl – St Mawgan



An advisory visit carried out by the Wild Trout Trust – April 2009

## 1. Introduction

This report is the output of a Wild Trout Trust advisory visit undertaken on the River Menalhyl on waters controlled by the St Mawgan Angling Club. The advisory visit was undertaken at the request of Mr. Mike Parkin who serves on the committee. Comments in this report are based on observations on the day of the site visit and discussions primarily with Pete Parkinson, Tony Palmer, Tom Horne and Mike Parkin.

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.

## 2. Catchment overview

Information about the Menalhyl and its wider catchment can be found on Cornish Rivers Project (CRP) web site [www.cornishriversproject.org.uk](http://www.cornishriversproject.org.uk).

The Menalhyl River rises on Borlasevath and Retallack Moor Sites of Special Scientific Interest (SSSI) and flows for 12 miles before entering the sea at Mawgan Porth; it principally consists of a main channel which rises to the east of St Columb Major and a tributary which drains the north of the catchment. The two river sections then meet at Mawgan Porth shortly before discharging into the sea. The Moors are designated as SSSIs owing to the important wet heath plant communities situated around the headwaters of the Menalhyl, and the lower reaches of the catchment are designated as the Watergate and Laherne Area of Great Landscape Value (AGLV).

Moor grasses and Black Bog Rush (*Schoenus nigricans*) are found throughout the range of heaths, grasslands, scrubland and open water of the site. Other rarer rushes can be found, alongside Sphagnum mosses, sundews and Grey Willow (*Salix cinera*). These communities support various amphibians and dragonflies as well as the hen harrier (*Circus cyaneus*) and a range of warblers.

The catchment is underlain primarily by Devonian calcareous slates, grits and limestone. Owing to low permeability, rainfall results in rapid run-off and therefore stream levels rise quickly after rain. Throughout the freshwater sections of the catchment, brown and sea trout (*Salmo trutta*), lamprey (*Lampetra sp*), eel (*Anguilla anguilla*), minnow (*Phoxinus phoxinus*) and three spined stickleback (*Gasterosteus aculeatus*) have been recorded. The Gwills river gauging station is noted as an obstruction to fish movement at lower flow levels.

Impacts on the Menalhyl are known to arise from storm sewer overflows in St Columb and general agricultural diffuse pollution. Biological monitoring of the river indicates poor water quality in this area. The majority of the stream is vulnerable to becoming eutrophic (rich in dissolved nutrients). Water quality standards failures have occurred in the Mawgan Porth bathing water.

Land management within the catchment is still predominantly agricultural although tourism is becoming increasingly significant. Twenty seven farms have been visited as part of CRP, covering an area of 1,813 hectares, and 26 km of stream has been surveyed. The main agricultural activities are beef and sheep farming and the cultivation of vegetables and arable crops such as wheat, barley and maize. Many farms are also diversifying through enterprises such as holiday lets, B&Bs, riding stables and campsites. Several farms within the catchment are in Environmental Stewardship agreements owing to the area's proximity to the coastal Stewardship target area and some are also in the Woodland Grant Scheme.

Much of the advice given through CRP has focused on reducing the effects of agricultural diffuse pollution in the catchment through improved nutrient and soil management. Additional advice has also included the identification of diversification opportunities into tourism due to the popularity of the area with visitors, particularly around Mawgan Porth.

### **3. Fishery overview**

The section of the Menalhyl River under the control of the St Mawgan AC runs from the ford in St Mawgan down to the Sea at Porth Mawgan, a distance of approximately 2 miles. Within that stretch, the river appears to have three distinct reaches. The top beat is the most popular and provides the most diverse habitat and currently the best angling opportunities. The middle reach was comparatively straight and moderately shaded that runs through the property of club member Tony Palmer Thirdly, a wide, shallow and heavily modified open section runs down to Porth Mawgan. Habitat and fishery potential of each reach is described in detail in section 4. "Habitat assessment".

The fishing club has a modest membership of approximately thirty members and also provides access for visiting anglers via day tickets. The fishery is primarily used as an "any-method" wild trout fishery with the majority of the activity targeted at the populations of small resident brown trout. Occasional sea trout are reported and are known to run further up the river to spawn. A distinct lack of good quality holding habitat for both resident and migratory trout, especially on the bottom half of the fishery severely restricts its angling potential. This issue is discussed in more detail in subsequent sections of the report.

Fishery survey work undertaken by the Environment Agency in 2006 identified some excellent trout populations in the Menalhyl at Redbarn and Tolcarne as well as on the Gluvian Stream. In the site reports it indicates that fry and parr densities were particularly good on the upstream site at Redbarn and on the Gluvian with the downstream site on the main river giving much poorer results. It is assumed that this dip in trout densities on the lower site is associated with poor quality habitat. From the data it is not possible to draw any conclusions as to the migratory trout contribution to the overall juvenile population. A significant number of those juvenile trout may be destined to become smolts and run to sea.

## 4. Habitat assessment.

### 4.1 Bottom section above Porth Mawgan

At the very bottom end of the river there is an old tidal sluice structure beneath the coastal road bridge. The structure is made up of four rectangular apertures, each being approximately 1.25 m wide. At some time (presumably recently) it appears that the structure had four undershot tidal gates which have now been removed. From inspection and discussions it is not obvious if the gates were used to lock out tidal ingress or retain upstream freshwater levels, either way, the fishery will benefit enormously from having these apertures kept open at all times.



Structure at the mouth of the Menhalhyl

Walking upstream from the structure it soon becomes apparent that the river has been heavily modified. The channel throughout this bottom reach is uniformly wide and shallow with very little in-channel diversity or marginal scrub or tree cover. The banks on both sides are flood bund constructions, probably containing previously dredged river bed material. Both banks are raised well above the local flood plain, giving the river the appearance of purely a drainage channel rather than a functioning river. Due to the wide and uniform shape of the channel no significant geomorphological features exist with the river made up of one long shallow glide flowing over a substrate of mixed gravels and sediments. Despite the very poor habitat, decent numbers of small trout could be observed within the channel. Many of these small fish were darting around looking for a suitable hiding spot (which were in short supply). The section was virtually devoid of any significant holding habitat for mature fish.



Downstream view of the same structure – Note the limited flood capacity caused by the restricted flow through the small apertures



Lower reaches of the river with clear evidence of large scale modification with flood bunds on both banks with evidence of previous dredging and widening of the channel. No marginal cover, no in-channel diversity – a river clearly not in good ecological condition.

The run of mainly poor habitat extended up and beyond the Gluvian stream confluence. This joining tributary has been identified as an excellent trout nursery stream. It is highly likely that a significant proportion of the brood fish are migratory trout which will pass through this lower reach before ascending either the main channel or the tributary. The provision of two or three decent holding pools on the section below the confluence could enable the fishing club members to legally and sustainably exploit some returning adult sea trout and make this section of river infinitely more interesting as a fishery. It is possible that the provision of better quality holding habitat on the lower river for migratory fish will also boost trout production. Currently there appears to be precious little opportunity for early running fish to come in and safely hold up before continuing with any spawning migration.



Gluvian Stream confluence. Precious little holding habitat below this point. Migratory fish either have to run or retreat for safety.

#### **4.2 Central section**

A short section of river lying just to the south of the Gluvian Farm area was inspected. This section belongs to club member Mr Tony Palmer and is slightly more diverse than the bottom reach; but also looks to have been heavily modified in the past. The channel is comparatively straight with a moderate gradient in places. This has enabled some riffle areas to form which, combined with the good quality gravel bed substrate, provides some potentially good trout spawning and nursery habitat. Unlike the bottom section, the RB was quite

heavily shaded with dense stands of riparian trees. Despite this there was very little low marginal cover and no real evidence of woody debris within the channel. It is the presence of fallen trees and large woody debris (LWD) that is often the catalyst to creating the pool and riffle habitat features so essential on good quality trout streams.



An upstream view on the central section. Straight, shallow and again devoid of significant holding habitats for mature fish. Dappled light and shade from the tree canopy on the RB but no fallen woody material to create in-channel interest.

### **4.3 Top section**

The top section of river running downstream from the village of St Mawgan appeared to be the most promising in terms of habitat quality, quantity and diversity.

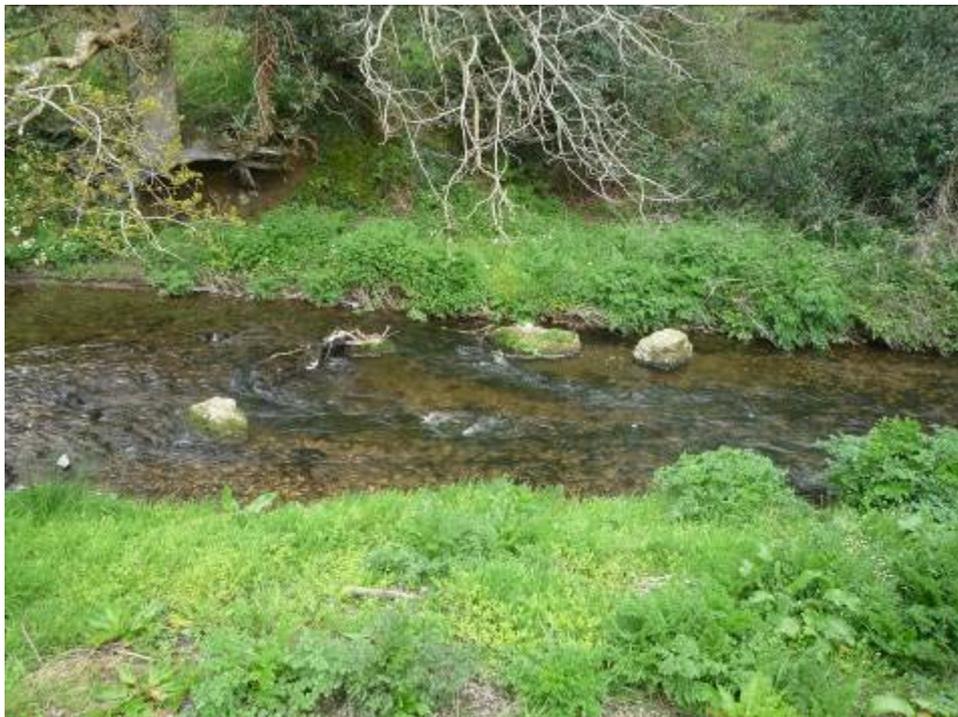
Unlike in the middle and lower sections there were several distinct holding pools, some of which appear to have been formed by previously fallen trees and others by some old works designed to promote in-channel bed scour.

In general there was a nice balance of light and shade with the LB providing most of the available cover. Good quality spawning and nursery habitat was evident with some decent gravel ramps formed on the tail of pool and glide habitats providing excellent spawning opportunities. There was undoubtedly further scope for increasing the quantity of available habitat through the use of LWD which is discussed in detail in section 5.

Further improvements to holding pools could be made by encouraging marginal fringes of low scrubby cover to develop. Much of the LB shading was comparatively high and a fringe of low cover provided by trees such as the goat willow or sallow (*Salix caprea*) will provide better quality holding habitat.



A great holding pool created by a previously fallen tree. The low fringe of cover at the tail of the pool will only improve its holding potential



Some diverse habitat promoted by the large stones dotted across the channel



A partial LWD debris dam acting as a flow deflector – great trout habitat



The remains of some old inchannel flow deflectors. These are much more effective when placed at right angles to the flow or pointing slightly upstream.

## 5. Conclusions

The St Mawgan FC stretch of the Menalhyl River has considerable potential for improvement. The middle and lower sections in particular have huge potential for enhancement. Efforts should focus on providing better quality holding habitat for both resident brown trout and also migratory sea trout. Currently there is precious little habitat available for any large fish entering the system from the sea and therefore little opportunity to fish for them.

It would be unacceptable and illegal to contemplate building structures or weirs that are specifically designed to slow down or block the progress of migratory salmonids. Promoting better quality lying up areas through the use of secured woody debris would seem to be perfectly sensible and reasonable (and beneficial to the fish themselves). Before embarking on any programme of improvements it will be very important to have a dialogue with the local Environment Agency Office. Flood risk, particularly to local homes and businesses would be a key concern in any proposed enhancement, particularly following several extreme events in the South West in recent years. It is not clear if the land drainage work carried out on the lower sections of river were designed to protect the coastal community of Mawgan Porth or purely to drain the riparian farm land that lies just upstream. If flood risk to the local community is considered a key concern then it would seem strange that the small box culverts on the downstream structure have not been removed or modified to increase flood water capacity.

This whole bottom section of river is ripe for large scale river restoration or enhancement. Work of this kind can be hugely expensive and likely to be beyond the scope of a WTT or fishing club project. The very best we can propose are small scale measures designed to mitigate against the adverse effects of the dredging and over widening. In the recommendations section of this report there will be some suggestions of how to increase the fishery potential of this, and the upstream reaches.

Before embarking on any schemes however it would be sensible to have a dialogue with the Environment Agency to see if they, or any other group, have identified this section of river as being ripe for improvement. Under the Water Framework Directive there will be River Basin Management Plans which will be designed to identify actions to bring rivers into good ecological status. These management plans are currently being discussed and there is a public consultation which lasts until the 22<sup>nd</sup> June. This lower section of the Menalhyl should be put forward as a candidate for rehabilitation.

In lieu of any large scale project it is perfectly possible for the fishing club to promote better quality trout habitat through the use of LWD. Before contemplating the introduction of LWD material it would be sensible to make sure that the club and local land owners have sensible maintenance objectives with regard to the treatment of LWD on your fishery.

The presence of LWD has been shown to be extremely important in several respects:

- An increase in the variety of flow patterns, depths and localised velocities.
- Development of high in-channel physical habitat diversity

- Significant benefits to the control of run-off at the catchment scale. Woody Debris helps regulate the energy of running water by decreasing the velocity. Thus the 'travel time' of water across the catchment is increased.

LWD is a general term referring to all wood naturally occurring in streams including branches, stumps and logs. Almost all LWD in streams is derived from trees located within the riparian corridor. Streams with adequate LWD tend to have greater habitat diversity, a natural meandering shape and greater resistance to high water events. Therefore LWD is an essential component of a healthy stream's ecology and is beneficial by maintaining the diversity of biological communities and physical habitat.

Traditionally many land managers and riparian owners have treated LWD in streams as a nuisance and have removed it, often with uncertain consequences. This is often unnecessary and harmful: stream clearance can reduce the amount of organic material necessary to support the aquatic food web, remove vital in-stream habitats that fish will utilise for shelter and spawning and reduce the level of erosion resistance provided against high flows. In addition LWD improves the stream structure by enhancing the substrate and diverting the stream current in such a way that pools and spawning riffles are likely to develop. A stream with a heterogeneous substrate and pools and riffles is ideal for benthic (bottom dwelling) organisms as well as for fish species like wild trout.

The West Country Rivers Trust provides a useful guide to the management of natural LWD:

1. Is the debris fixed, if yes then continue to 2, if not continue to 5.
2. Is the debris causing excess erosion by redirecting the current into a vulnerable bank? If yes then go to 5 if not then go to 3.
3. Would fish be able to migrate past it (take into account high river flows). If yes got to 4, if no go to 5.
4. **Retain the woody debris in the river.**
5. **Re-position or extract the debris.**

Note: If the debris dam needs to be removed but there is still a significant amount of the root system attached to the bank then it is recommended that the stump be retained for its wildlife habitat value and its stabilising effect on the bank.

Current Environment Agency policy nationally is to encourage LWD in streams with an associated low flood risk, in order to slow discharge rate through a reach and encourage out of banks flow during high water events. This provides a degree of attenuation helping to reduce flood risk in more populated downstream reaches. Consultation with the local Environment Agency Flood Risk Management Team would be of benefit in order to establish a management protocol for the fishery with respect to LWD.

**It is a legal requirement that some works to the river may require written Environment Agency consent prior to undertaking any works, either in-channel or within 8 metres of the bank. Any modifications to hard defences will require a land drainage consent on any river designated as "main river". Advice can be obtained from the Development Control Officer.**

## **6. Recommendations**

- Improve the trout habitat quality of the whole reach by retaining as much fallen LWD as possible.
- On two or three locations on the bottom reach discuss the options of promoting some pool habitat creation with the Environment Agency. The simplest option is to import some sections of tree trunk and secure to the river bed using steel re-enforcing bar. Flood risk constraints can be minimised if the flow deflectors are made up of individual sections of trunk of less than 1.2m in length. Should any piece be displaced following a heavy spate they will be able to pass through the box culverts at the bottom of the river. Large pieces of imported stone could be an alternative option.
- Newly installed flow deflectors should be no closer together than a distance of six multiplied by the average width of the channel.
- Plant some small willow whips, particularly adjacent to improved holding areas to promote low scrubby cover.
- On the heavily shaded central section, coppice the odd marginal tree to promote some enhanced dappled light and use timber to peg into the channel to promote some local bed scour.

## **6. Making it happen**

There is the possibility that the WTT could help to start an enhancement programme. Physical enhancement works could be kick-started with the assistance of a WTT 'Practical Visit' (PV). PV's typically comprise a 1-3 day visit where an approved WTT 'Wet-Work' experts will complete a demonstration plot on the site to be restored. This will enable project leaders and teams to obtain on the ground training regarding 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.

The WTT can fund the cost of labour (two/ three man team) and materials (max £1800). Recipients will be expected to cover travel and accommodation expenses of the contractor.

Alternatively the Trust may be able to help in the development of possible project plans as a worked up application for Land Drainage consent from the Environment Agency.

There is currently a big demand for practical assistance and the WTT has to prioritise exactly where it can deploy its limited resources. The Trust is always available to provide free advice and help to clubs, syndicates and landowners through guidance and linking them up with others that have had experience in improving trout fisheries.

### **Acknowledgement**

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

### **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.