



## River Ewenny – Pencoed and District Angling Club



An advisory visit carried out by the Wild Trout Trust – May 2011

## 1. Introduction

This report is the output of a Wild Trout Trust advisory visit undertaken on waters controlled by the Pencoed and District Angling Club on the River Ewenny in South Wales. The advisory visit was undertaken at the request of Mr. Adrian Nash who is a serving committee member of the club.

The fishing club received an advisory visit from the WTT in 2007 and has since implemented many of the recommendations put forward in the report. At the time, the fishing club were augmenting the wild stocks of brown trout (*Salmo trutta*) with an annual stocking of hatchery derived stocks, but have recently taken the decision to abandon their stocking programme and rely fully on natural wild production.

Comments in this report are based on observations on the day of the site visit and discussions on the day with P&DAC committee members.

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

The River Ewenny is a 16km long tributary of the River Ogmore, joining just above the tide on the south east fringes of Bridgend. The Ewenny is very different in character to the Ogmore, which is a classic south Wales spate river. The Ewenny itself is derived from a network of springs and small streams that rise on the high ground to the north of Pencoed. The two main arms, the Ewenny Fawr and Ewenny Fach join just to the north east of Bridgend at NGR SS 954 799. From here the river flows through a pastoral valley before skirting the eastern industrial fringes of Bridgend, joining the Ogmore just above the tidal limit.

The hydrogeology driving the Ewenny and influencing its ecology is very complex. The river appears to enjoy many of the characteristics associated with a limestone stream, such as a strong base flow and relatively alkaline chemistry. There is some evidence to suggest that initial spring sources are not from a carboniferous limestone aquifer. It would seem that the main area of limestone geology underlies the area stretching between Pencoed and Bridgend and there appears to be some evidence that the river actually loses water to the aquifer in the area near to the Ewenny Fawr and the Ewenny Fach confluence. This water is then lost to the main river but then again augments flows into the lower Ewenny just above the gauging weir near to the A48 road crossing. This information was referenced from published research carried out by: S.L. Hobbs. The hydrology of the Schwyll Spring Catchment Area 1993. A pdf of the paper can be found at:

[http://www.ubss.org.uk/resources/proceedings/vol19/UBSS\\_Proc\\_19\\_3\\_313-335.pdf](http://www.ubss.org.uk/resources/proceedings/vol19/UBSS_Proc_19_3_313-335.pdf)

It is likely that much more up to date information is available and certainly all the evidence would suggest that there is a strong alkaline groundwater influence which heavily influences the Ewenny. There is also evidence that the river rapidly responds to heavy rainfall but it appears to be much less spatey than the main Ogmore. The river also appears to carry a strong base flow which may help the fishery through times of prolonged drought.

According to the Environment Agency Catchment Abstraction Management Plans there is still scope for unconstrained (any time of year) abstraction up to a limit of 0.7 MI/d upstream of Schwyll. Information about the CAMS is available at:

[http://www.environment-agency.co.uk/static/documents/Research/Neath\\_Afan\\_Ogmore\\_Annual\\_update\\_2009\\_English.pdf](http://www.environment-agency.co.uk/static/documents/Research/Neath_Afan_Ogmore_Annual_update_2009_English.pdf)

The productive water chemistry enables the Ewenny to support brown trout (*Salmo trutta*) and grayling (*Thymallus thymallus*) of a good average size and also sustains a late run of sea trout (migratory *Salmo trutta*) and salmon (*Salmo salar*)

### **3. Fishery overview**

The P&DAC manage approximately 4 miles of fishing on the Ewenny, including the lower sections of the Ewenny Fawr and the Ewenny Fach, the latter of which is preserved and managed by the club as a no fishing nursery site. The club has capped its membership to 50 and has embarked on a progressive policy of fly fishing only with mandatory catch and release. One short section remains to provide the opportunity for disabled and junior anglers to bait fish.

As well as supporting an excellent quality trout fishery, the Pencoed & DAC water also provides good quality winter grayling as well as back end sea trout and occasional salmon fishing.

### **4. Habitat assessment.**

#### **4.1 Ewenny Fach**

The 1km stretch of the Ewenny Fach, or little Ewenny, under the control of the P&DAC is retained and managed as a 'no fishing' nursery stream. The size of the channel represents perfectly fishable water but the club have decided to take this very enlightened approach in recognition of the fact that the stream is a critically important area for wild trout production that benefits the fishery as a whole.

Some work to thin the extensive tree canopy to help boost invertebrate productivity has been carried out, as has extensive stock fencing which extends down both banks for long tracts of the fishery. First impressions of the stream

were that it was benefitting from a sympathetically managed riparian zone, where the meadows are either managed for hay production or very light grazing.



The Ewenny Fach – A sensitively managed nursery stream



A potentially excellent spawning glide in close proximity to extensive alder roots – good fry cover.

A closer inspection of the spawning substrate identified significant quantities of fine sediments infiltrating the gravel interstices. The advice previously given was to explore the options for gravel cleaning at selected known spawning locations using either a high pressure pump or portable leaf blower. This advice is still relevant, however an alternative method is to strategically locate sections of large woody debris onto glides to locally scour and sort river bed gravels. This technique is discussed in more detail in the conclusions and recommendations section of this report.

The ideal ratio of available sunlight to shade is often quoted as 60% shade to 40% direct sunlight. Currently the stream provides an excellent dappled light and shade regime. The comparatively recent fencing work will necessitate some regular tree works within the fenced zone. It is very important to retain plenty of the tall landscape trees such as oak, ash and large alders. When selecting alder for coppicing try not to open up uniform lengths but cut out the odd random clump, especially where there is most potential for letting in more light, for example on the LB. The material won from coppicing work can be usefully deployed in the channel to provide flow deflectors for scouring and sorting bed gravels, as brushings to be used to protect any severely eroding bank faces and for laying into the margins of shallow riffles to create better cover for fry and parr.

It was apparent that the non native plant Himalayan balsam is very well established as well as clumps of Japanese knotweed. Efforts to control these plants can seem daunting but work carried out by other angling clubs and associations proves that the battle can be won. The reasons why these plants are such an issue are well set out in the previous WTT report. Perhaps there might be opportunities for P&DAC to join forces with other local environmental groups to raise awareness and funds as well as gaining support for having an all out offensive against these damaging plants.



Significant stands of Japanese knotweed adjacent to the lower beat.

## 4.2 Ewenny Fawr

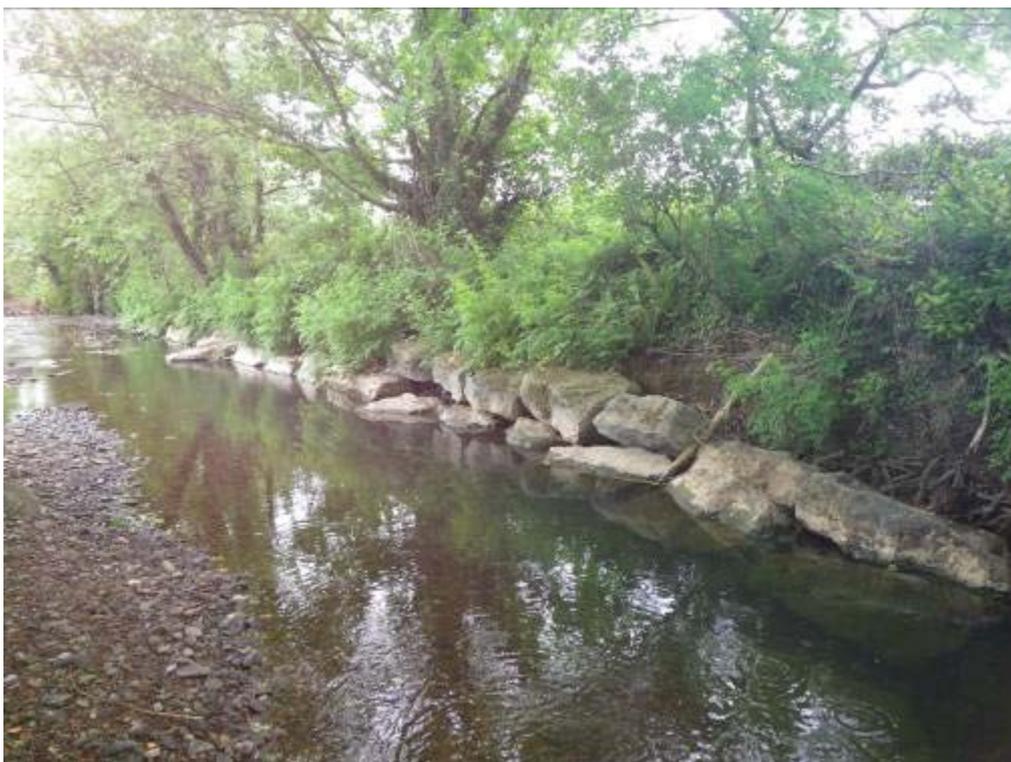
Only a very short section of the Ewenny Fawr was inspected. Like much of the river the channel form of pool, riffle and glide was ideal for trout of all life stages. The river substrate on this section was particularly interesting. At several locations there were outcrops of what looked to be compressed sandstones and alluvial gravels. It is possible that some of the concretion that seems to occur is due to the local Limestone geology promoting a precipitation of calcium carbonate. For a definitive answer I suggest a visit from a geologist however the propensity for the gravels to stick, or glue together may be having a significant impact on spawning success.



Gravels "cemented" together on the Ewenny Fawr

Concerns have obviously been expressed in the past about bank erosion because at several locations some massive rock revetment has been installed. In many ways this material looks strangely out of place on this little river but at least the stones are providing bankside nooks and crannies where trout can seek refuge

Often a huge problem with this type of work is that it only leads to erosion elsewhere, usually where the hard revetment ends. Soft engineering techniques using brushwood mattresses and planting with live willow often works even better and helps to collect sediments, absorb erosive forces and provide cover for fish.



Stone revetment looks incongruous but will still be providing some cover for fish.

#### **4.3 Ewenny confluence to concrete weir.**

From the confluence of the two headwater streams down to the concrete weir, just below the disabled fishing area, the river is predominantly one long glide. It is likely that the original bed morphology has been drowned out by the construction of the large weir. The impounding effects of the structure have subsequently been made slightly worse by the block stone weir a short distance upstream.

Despite this section not providing classic trout habitat, the reach does provide some decent holding habitat for fish, thanks mainly to the scrubby bank-side cover which provide a variety of refuge areas away from predators.

Some concern was expressed about an eroding cliff adjacent to the garden of a property on the LB. It was noted that sand martins were using the downstream end of the cliff, which should be left untouched. Pressure can be taken off this margin by installing a large flow deflector approximately 10m upstream. A large tree trunk keyed into the left bank margin and pointing slightly upstream and extending out to at least a third of the width of the channel will kick the flows away from the eroding bank. Further measures to slow the erosion can be taken by pegging in a parallel trunk onto the toe of the cliff, which will provide an anchor for securing a brashwood mattress against the front face of the bank.

Providing even more cover in the margins on this stretch will improve its holding capacity and potentially improve the fishing too. Although the provision of extra cover by way of whole tree sweepers etc. may present a slight challenge to anglers' casting, without this cover the fish tend to scatter in all directions when

disturbed by a wading angler (making fishing extremely difficult). The techniques for installing extra cover are discussed in further detail in the conclusion and recommendations section of this report.

Since the last WTT visit a new timber fish pass has been constructed on the sloping weir face. The provision of access for migrating fish is major enhancement and will benefit trout and grayling stocks, as well as salmon and sea trout. If not already carried out, the fish pass should be regularly inspected and debris removed. This work may already take place via an EA maintenance schedule. It would still be very sensible for the club to have a rota of members willing to keep an eye on the structure and regularly remove blockages. The design employed (Larinier) can pass grayling so it is important to keep the pass clear in the early spring, a time when many fish passes are neglected.

#### **4.4 Concrete weir to bottom boundary**

On the section of channel downstream of the weir, some concerns have been expressed about the formation of a gravel island mid channel. The changes in channel shape downstream may have been promoted by the installation of the fish pass. It is possible that the changes in channel morphology may now have settled down. Any plans to redistribute the bed material to where it was pre-fish pass construction will not necessarily guarantee bed stability.



The Large gravel shoal may have been promoted by the installation of the fish pass

The section of river from this point right down to the area where the access changes to the RB provides a series of ideal pool, riffle and glide habitat. Some minor bank erosion was evident adjacent to some pools but the measures taken by the club to stabilize the banks using dropped tree trunks and brash have already helped to reduce bank erosion, as well as providing additional cover for fish.



Effective erosion control work undertaken by the club

The current tree shading regime looks to be very good with the channel enjoying some shading over at least 50% of the channel. The ideal balance to aim for is 60% shade to 40% light. Most of the banks have been protected from grazing animals by stock fencing on both banks and it will be important to undertake regular selective thinning and skylighting to the canopy to ensure that the balance is maintained. A useful rule of thumb is to aim for a high level of shading over deep holding pools and to open up shallow riffle zones to more light to help promote invertebrate productivity.

When undertaking any tree works it is worth selecting those species that might be slightly less valuable in a riverside environment such as sycamore, which was prevalent on many reaches. This tree is not without value. However, willow, ash and alder develop root systems that are more effective at tying in the river bank and often provide superior bank-side cover.

One major concern is the presence of non native plants on many sections. The impact that plants such as Himalayan balsam and Japanese knotweed have on

native fauna is well documented and the club have already made considerable efforts to check the progress of these plants. This battle needs to be resumed and the club might wish to seek out partners from the statutory authorities or even other local community groups to help. Other angling clubs and associations have proved that getting on top of these plants is possible but it takes a huge amount of commitment and determination to succeed. The rewards as far as the health of the fishery is concerned are well worth while.

Near to the bottom boundary the river passes adjacent to an area of public open space. On this section there is a series of low stone block weirs. It is unclear as to why these have been installed but it is possible they were part of a scheme to try and create holding pools, possibly for migratory salmonids. The pool habitat has certainly been established but the series of low steps has resulted in fairly shallow, benign glide habitat over much of reach. Weirs of this kind can sometimes result in a significant build up of sediments within impounded sections but this does not appear to be an issue on this reach.

In order to improve the holding capacity for fish throughout the whole reach it is worth considering installing some individual large stones or small boulders onto the shallow smooth glides to create micro pockets. Currently the only good quality holding water for adult trout is within the comparatively short sections below each weir.



One of several low stone weirs on the bottom beat

Our general advice on sites like this is to reduce the impounding effects of the weir by either notching out the central section or complete removal. On this site however the weirs do not appear to be causing significant problems on upstream sections and they do provide some excellent holding water for large adult fish. Creating lies for smaller fish in the sections between should be a priority action.

## **5. Conclusions**

The Pencoed & District Angling Clubs waters on the River Ewenny provide members with a superb trout fishing resource which is very different from most of the river fisheries found in the region. The club have already instigated some radical and progressive policies. These include restricting angling access to the Ewenny Fawr in favour of nurturing the reach as a source of wild trout production and abandoning the augmentation of stocks with hatchery derived fish, as well as mandatory catch and release. All of these measures will make significant contributions to the sustainability and quality of the fishery.

The advice given in the recommendations section of the 2007 report is still valid. Efforts to control the spread of non native plants should be redoubled.

The shallow glide habitats found upstream of the numerous stone weirs can be improved through the installation of large stone boulders, or even big cobbles on very shallow water to increase the amount of small holding pockets for trout of all sizes. The introduction of whole trees (tree sweepers) secured into shallow margins, or nailing in pieces of large woody debris into central channel locations will also produce excellent results with the added benefit that the material provides a primary source of food for grazing invertebrates.

Improving the productivity of individual redds is possible by mitigating the impacts of silt infiltration and compaction. Sites similar the glide highlighted in the photograph on page 4 will benefit from some localised gravel improvements. This can be achieved either through an early autumn programme of gravel cleaning using high pressure pumps, or back pack leaf blowers.

Guidance on gravel cleaning is attached in appendix 1. An alternative method which works especially well on flat shallow glides is to peg in pieces of LWD to promote some local bed scour which also tends to throw up useful ramps of loose, silt free gravels ideal for spawning. Both of these methods can help to boost egg to fry survival.

In addition to improving spawning success it is necessary to ensure that there is an extensive range of habitat available for fry and parr. Maintaining a low scrubby fringe of herbaceous plants and coarse woody debris will enable juvenile fish to find much needed cover in very shallow margins. This will be important on the fishing reaches as well as the nursery sites. Fortunately the club appear to have already adopted a low key maintenance regime which not only provides cover for fish, but also good quality habitat for the adult life stages of river flies.



A live hinged alder providing valuable cover on a shallow glide on the river Monnow



A low fringe of annual herbs providing great cover over classic juvenile habitat on the Ewenny.



A small upstream "V" deflector pegged onto a shallow chalkstream glide and designed to promote movement of bed material.



Alternative method for securing LWD using a large washer welded to 16-20mm rebar.



Gravel cleaning using a back pack leaf blower. Eye protection should be worn at all times.

It is understood that the Ewenny has at times suffered from occasional pollution incidents. The proximity of the river to conurbations and major road crossings will always mean that it is vulnerable to episodic pollution. The meadows adjacent to the majority of the fishery look to be managed sensitively but agriculture also poses threats to water quality. Undertaking some monitoring of water quality through assessment of invertebrate communities would help to provide an early warning of any issues. Signing up for the Anglers' Monitoring Initiative is recommended and more details of how to obtain the training and get involved can be obtained from the Riverfly Partnership [www.riverflies.org](http://www.riverflies.org)

At several locations the presence of non native plants adjacent to river was noted. Japanese knotweed, Himalayan balsam, laurels and rhododendron will all restrict the development of local native riverside plants. The consequences for the overall stability of the banks, as well as the important contribution towards habitat quality are all good reasons for the Association to instigate an effective programme of monitoring and control. This can seem a daunting prospect but many small fishing clubs and river associations have made remarkable progress in tackling non native plant issues and there may well be support and funding available from other groups.

## 6. Recommendations

- Leave as much fallen woody material in the channel as possible. If it falls in an undesirable location then move it and secure it.

- Maintain the current regime of allowing a low scrubby fringe to develop. Annual plants that die back and flop into the margins during the winter also provide useful cover.
- Consider introducing more woody debris, especially brushings into the margins of glides and riffles and LWD onto sites where there is potential to improve gravel quality for spawning. Erosion occurs at the ends of flow deflectors and at right angles to any trunk or log.
- Monitor natural debris dams but leave in situ unless severe blockages develop.
- Implement a programme for identifying the location of non native plants and, working from the top of the catchment, start an eradication project. Look for partners and funding and raise awareness with land owners and other local groups over your plans.
- If not already involved, consider signing up for some training in undertaking simple surveys as part of the Anglers' Monitoring Initiative with the Riverfly Partnership. This is an excellent initiative and will give a much better understanding about the productivity of your fishery and an indication of long term water quality performance, particularly at potential vulnerable sites.
- Take a relaxed approach to natural river processes although if serious erosion is threatening valuable land holdings then protect the bank with a brush mattress and consider the use of LWD flow deflectors to kick the erosive forces towards the centre of the channel. Improving light penetration to eroding banks can help improve the chances of establishing better root systems capable of tying the soils together. Arresting bank erosion is not always possible below sweeping bends, or where the water is comparatively deep and therefore a managed retreat is often the best solution.
- Undertake an autumn/winter walk over survey of all your tributaries and get a better feel for which sites your fish populations are using for spawning and consider undertaking some gravel cleaning at key locations. (see appendix 1)

**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 EA's Development Control Officer.**

## **7. 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 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.

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.

## Gravel Cleaning

### 1. Why clean gravels?

- **Research has indicated that survival rates of salmonid egg to fry can be as poor as 4% on chalkrivers**
- **Egg survival is the biggest single block to improved recruitment in wild stocks on many chalkstreams**
- **Chalkstreams are low energy systems so when sediments get washed into the system they remain locked up in the upper layers of gravels and do not get readily flushed out.**
- **The high calcium levels in chalk and limestone rivers often result in a natural concreting of the surface making it difficult for fish to cut redds.**
- **This method is only a sticking plaster approach to the problem of diffuse and point source pollution but research has proved that it boosts juvenile production.**

### 2. Where should I clean?

- **Shallow riffles and broken glides represent potential spawning habitat.**
- **Don't bother to clean gravel if you only have a few square m of juvenile habitat because 4% egg survival is good enough to saturate your section.**
- **Get out in the weeks either side of Christmas and observe those sites selected by trout for spawning with a view to targeting those areas for cleaning next year.**
- **Gravel washing will have a temporary impact on invertebrates so do not clean areas that are not suitable for spawning. Note: These areas soon recover and clean loose gravel opens up habitat opportunities for stone loving insects.**
- **Do not clean areas too close to the margin or toe of the bank.**

### 3. What equipment do I need?

- **A simply modified 2" high pressure pump with flexi hoses and a 1.5m steel or aluminum lance is ideal. The end of the tube should be flattened to form a chisel shaped plume.**

- For small streams and where the bed is concreted, breaking the surface up with a fencing spike and hand raking will also improve spawning success.
- Back pack Leaf blowers can be used to blast sediments from gravel in sections where it is difficult to situate a bankside pump.
- Always wear safety glasses or goggles and ear defenders when undertaking this work

#### 4. Do I need permission/consent?

- All works to the bed or bank of a main river watercourse will require Land Drainage Consent from the Environment Agency. In some areas only a phone call and notification is required. In all cases it is advisable to ring the relevant Environment Management Team to inform them that gravel cleaning is taking place, giving dates, locations etc.
- Timing of work is critically important. Too early and some of your efforts may be negated by autumn rains. Too late and you run the risk of interfering with spawning fish (illegal). On most chalkstreams in the south the optimum time is the last two weeks of October. Advice should be sought from your local EA office.
- Always carry out a risk assessment before carrying out any works.

#### 5. How is it done?

- Once the area has been identified, work should commence from the top of the riffle working downstream. Ideally the gravel should be silt free to a depth of 30 cm but for purely trout this depth can be reduced. When cleaning, a large build up of sediments can collect a short distance behind so a periodic blast downstream at an angle should keep the suspended material moving off of your chosen spawning site. Try to retain a gravel lip at the bottom of the cleaning section to catch the finer gravels that may be temporarily suspended. Blowing the gravels into uneven humps, bumps, pots and valleys will promote good quality habitat that will be preferentially chosen by brood fish for spawning.
- Care must be taken to ensure that the seam of gravel is deep enough to withstand a cleaning programme. There have been occasions when radical attempts to break up and clean gravel has led to a soft substrata being exposed and spawning sites wrecked.

- **Recent research has indicated that wet autumns and winters while being essential to maintain summer flows will also adversely affect spawning success. Be prepared to clean sites following a very wet autumn.**
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