Wild Trout Trust Advisory Visit

Manchester Anglers

Carried out by Alistair Maltby MSc CEnv MIFM on behalf of Windrush AEC Ltd, The Cottage, Fordwells, Witney, Oxon OX29 9PP

Introduction

Manchester Anglers is a very old fishing club dating back to 1878. The club owns extensive water at the top of the River Ribble and a five acre hill tarn. The club is exclusive to anglers living outside of the area and employs one part-time river keeper.

The club currently undertakes some stocking at the beginning of the season but over the last few years has kept the top of the catchment free of introduced fish with the aim of producing a really wild fishery. The visit was carried out in October, centred on the river rather than the tarn, looking principally at the potential for the club to improve habitats in order to maximise production in the wild fishery.

In addition to the keeper and club representative, the local EA fisheries technical officer attended, and a project officer from the newly established Ribble Catchment Conservation Trust who have some DEFRA funding for habitat improvement works.

With the advantage of a keeper on-site and with the support of the EA fisheries technical officer, there is an opportunity for some joint monitoring that will help develop and manage this water as an important nursery area for wild brown trout.

The wild water!

Figure 1. The upland beat is typical of many moorland streams but lack of habitat is likely to limit fisheries production.

The topmost beat is typical of many moorland spate rivers. The river appears wider and shallower than downstream areas and does not offer a great deal of habitat. Gradient is not high through this section and small amounts of instream vegetation were visible.

Although this landscape maybe thought of as natural, it has been altered very significantly since settlement. The area was probably forested at one time, and is also likely to have suffered significantly through first the creation of enclosures and secondly during the occupation of the valley for the construction of the railway. The present river habitat is devoid of trees, with an associated lack of cover from root systems and no input of Large Woody Debris (LWD) into the channel. As a consequence, scouring and sorting of substrate has been restricted.

Bankside habitats do not appear significantly overgrazed, although an increase in the height and abundance of vegetation may increase juvenile and adult fish habitat to a degree. The substrate is quite small which is fine for spawning trout but does not create much variation in flow or deeper habitats for brood stock trout refuge that would be present in a rockier environment.
There are reported to be a number of small feeder streams where brown trout spawning is likely to take place but deeper areas and cover appear to be lacking in the main channel to provide habitat for brood stock fish.
The EA have put some electrofishing monitoring sites in on this stretch. Due to the time of year that these are surveyed, they are more likely to give a picture of the juvenile stocks rather than the adults, but length-frequency information will be essential for future management.

It is possible, and very worthwhile, to explore some of the smaller tributaries with backpack electrofishing equipment, to find where fish are spawning. 5 minute electrofishing techniques are very useful for giving an indication of the *relative* abundance of fish in a large number of areas. It is quite feasible to do 8 sites a day, and more if they are close together.
It is important to establish the health of the breeding population of trout in order to decide if this section of river will restore without population enhancement. There is no point in spending an awful lot of money on creating habitats if there are no fish to use them.

Another important tool is the catch returns. Returns should be recorded separately for this section along with the amount of time fished, the length of the fish, and any other observations.

Finally, small temporary traps have been used to record information on the make-up of spawning fish. These can be constructed of wood and must be checked daily when in operation. The real advantage of this technique is that when fish are spawning, information can be recorded on sex as well as size, and numbers. This data can be essential for managing the fishery and can give the following information:

- What size male and female fish start to spawn (essential for setting the 'takeable size').
- What numbers fish are running to spawn (obviously this may lead to a period of catch and release until numbers increase).
- What ratio of males to females (if one or other is low, size limits may need to be changed to conserve important fish).

The techniques described are all professional fisheries management tools but they do need expertise to carry out and more importantly to interpret. They are only included in this report because the club is working with the EA on this project and new monitoring is being considered and implemented. **EA consent will be needed to use spawning traps and electrofishing equipment.** It is very difficult to make many recommendations until data is available and it is recommended that the club seeks some professional guidance as and when data does become available. Hopefully, this will be possible through the EA but otherwise the WTT or RCCT may be able to provide some expertise.

Whatever the outcome of research, there is likely to be need for some kind of habitat improvement. If juveniles are present, they will need cover. If adults are not, it is likely that cover will be a tool to increase the holding capacity for larger fish at the top of the river.

Water crowfoot was observed in small patches. It is possible to successfully transplant the plant and can result in a dramatic increase in not only fish habitat, but invertebrate numbers and low water stream depth. The most popular technique is to take small sections of water crowfoot including the roots, from areas of abundance, and wrap in Hessian with aquatic compost. This is planted in Spring across the river and allowed to grow. At the end of the first season, successful transplantations are cut right back to prevent the still weak root system being pulled out by winter floods.
Interestingly, strips of Hessian can also be used as a substitute for natural water crowfoot cover (Aquamats), and may be considered if natural plants do not seem to recover.

Fencing is often suggested as the main tool for increasing river habitat in areas open to agricultural stock. In this section, the impact from agriculture is hard to ascertain and may not be as significant as in some other rivers. It is recommended to use fencing with other tools in one or two trial areas, preferably just downstream from a significant spawning tributary. Fencing may not result in a great increase in stream habitat so should be combined with the water crowfoot planting, tree planting and perhaps the introduction of some artificial instream structures. If this is carried out in some key areas below spawning tributaries, it will hopefully result in habitat for adult trout and for growing juveniles. One technique which has been successfully used is to use upstream facing 'tree kickers'. These are stumps, or logs, set into the river bank and extending into the stream. Facing upstream and down towards the river bed, water running over them is displaced back into the stream channel so not to cause excessive erosion. The creation of variation in flow provides deeper and more turbulent water and cover for

larger fish. Gravel catching behind the structures can also result in more spawning ground, and debris provides habitat and food for invertebrates.

In walking potential spawning areas, a lack of spawning habitat may be an obvious limiting factor for the recovery of this water. It is possible to create artificial spawning areas, which is particularly easy in smaller streams. Simple upstream facing log V-weirs provide deep pools and accumulate gravel, which can be all that is needed. More technical solutions provide up-welling water through gravel to make it particularly attractive. A diagram is included in Appendix 1 but can be scaled appropriate to the river. Stone structures may be replaced with logs in smaller streams, but the principle stands.

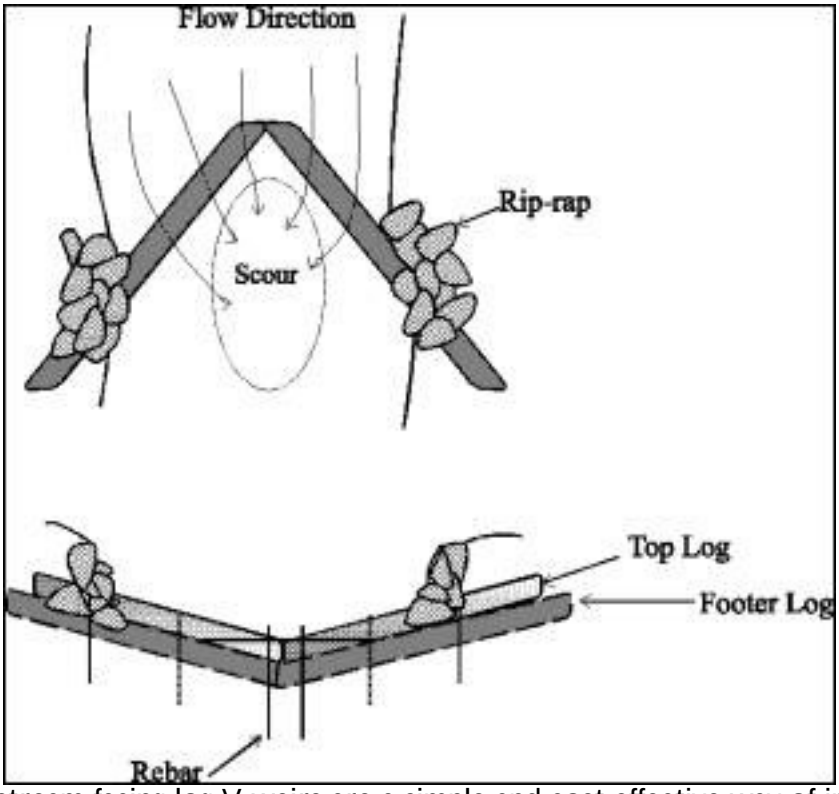


Figure 2. Upstream facing log V-weirs are a simple and cost effective way of increasing habitat, particularly for older trout.

Recommendations

- Carry out one or two trials of double bank fencing in this upland area to assess the increase in cover and juvenile fish habitats from stock exclusion. A length of 100-200 metres for each trial should be sufficient and combine with the following instream and bankside improvements.
- Replant water crowfoot beds to increase habitat areas for various life stages of trout (a licence from English Nature may be required).
- Plant trees and introduce some large woody debris structures and, or log V-weirs to create variation in flow which will hold larger trout.

- Some 5 minute timed electrofishing of some of the feeder streams using backpack equipment would be useful to find those streams that are important for spawning. These would focus on finding juveniles of the year.
- Ensure the current electrofishing sites can be used to give an indication of the standing crop in the upper beats and its relationship to the current and potential carrying capacity.
- Consider inclusion of spawning weirs or V-weirs to vary habitat and increase spawning opportunities on feeder streams.
- With agreement from the EA, construct and monitor some temporary spawning traps on the used feeder streams to find out the make-up of the brood stock fish (see appendix 2).

Lower beats

Figure 3. The lower beats are typified by good habitats.

The lower beats seem to be in very good order. Unlike the upper beats, habitat does not seem to be limited. Pools and runs provide good habitat and this is reflected by the retention of the stocked fish. These beats are likely to remain to be supported by supplementary stocking until such time that a natural brown trout fishery recovers to the level where it can support the fishery. Low level habitat improvements such as retaining woody debris in the edge of the channel will of course provide more lies for

trout and much of this work is part and parcel of previous and future work of the keeper.
Stocked fish should be marked for identification for the foreseeable future. These may or may not be picked up in the spawning traps and electrofishing. This will help to answer questions on why the fishery does not seem to be recovering. It will also be very important data to include on the catch return. Marking the stocked fish will help the fishery manager to determine what proportion of the fishery is made up of wild fish and what is stocked. With the other measures in place, the value of continuing stocking may be easier to determine, and a decision on how to continue easier to make.

Some research indicates that stocking activities may impact negatively on wild trout populations. Stocked fish generally hold well during the summer fishing period. However, their overwintering survival is poor, with many fish probably lost downstream. The large falls at the bottom of the beats will prevent many of these large fish returning to spawn.

Brown trout migrate upstream to their spawning grounds in a similar way to salmon Whether this is the case on the Ribble may be determined through the use of the spawning traps. Even where stocked fish are able to spawn successfully, there are doubts as to whether they will have their genetic make-up optimises their chances of survival in the river. Farmed fish are characterised by fast growth rates and hence high food requirements, which may not be possible to achieve in the upper Ribble.

Genetic studies are obviously out of the question but evidence from both the spawning traps and electrofishing may help to answer this question. The impacts of the present stocking policy on wild fish stocks should be considered with the EA in the light of all data from the river and available literature from studies elsewhere. The long term aim of the RCCT to employ a fisheries scientist may help Manchester Anglers' in the future and should be supported by the catchment clubs.

Figure 4. This feeder stream should be providing habitat and food for juvenile fish but did not appear as healthy as imagined.

Only one potential spawning stream was seen in the lower beats. This seemed to be quite barren as far as invertebrates go and potentially subject to either chronic water quality problems or a recent acute incident. Manchester Anglers' should remain highly vigilant to water quality problems in these streams, as they are likely to be the most important for spawning wild brown trout. This stream runs through the middle of a field which appears to be well managed. If future land management changes, it would benefit from fencing. Assuming water quality problems are addressed, this stream could be used for a spawning trap, with spawning habitat improvements undertaken as described in the previous section.

Figure 5. The abandoned fish farm is being considered for use.

The visit also included an abandoned fish farm. Manchester Anglers' and the EA are considering this for use in rearing native crayfish and brown trout.

In the case of brown trout, this is worthy of a separate report alone! There are a lot of issues surrounding this proposal that cannot really be gone into in enough detail in the scope of this report. This proposal should receive higher attention when some of the stock assessment work has been carried out in the upper river to determine the health of the wild population and potential for recovery. This project could be worthy of further WTT support.

Recommendations

- Ensure stocked fish are marked and data on capture is recorded by anglers and at other monitoring sites.
- Keep an eye on tributary stream and consider using in fisheries management scheme.
- Evaluate fish farm project following initial conclusions from current stock assessment work.

Conclusion

There is definitely immediate potential to increase habitat and thus the carrying capacity and quality of the fishery in the upper river. Techniques used to increase habitat must be balanced with any landscape issues related to the appearance of the river, but also with awareness of the history of the man-made landscape.

The largest assumption is that there will be spawning fish present to fill new habitats. This should be determined and not assumed as a completely different course of action may be required. Future work in partnership with the EA provides an opportunity to make this happen.

The presence of the old hatchery could provide a future opportunity to address a lack of broodstock but this should not be rushed into and evaluated alongside other techniques of population enhancement.

Stocking will continue to be an issue until stock assessment comes to its conclusions. Any action to change stocking policies will need the consent and assistance of all the clubs and as such may need the help of the EA and RCCT.

Appendix 1 Courtesy of Windrush AEC

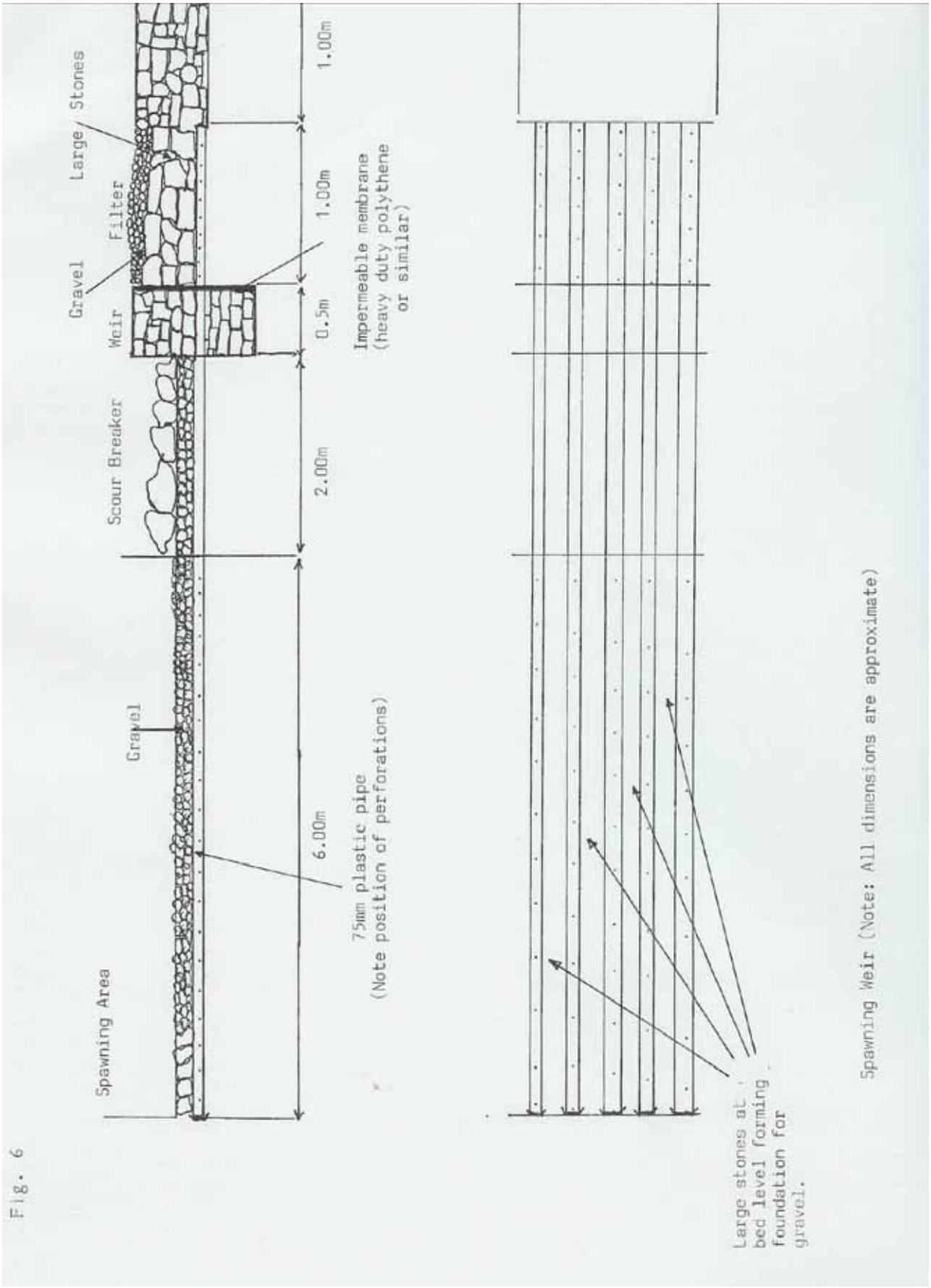
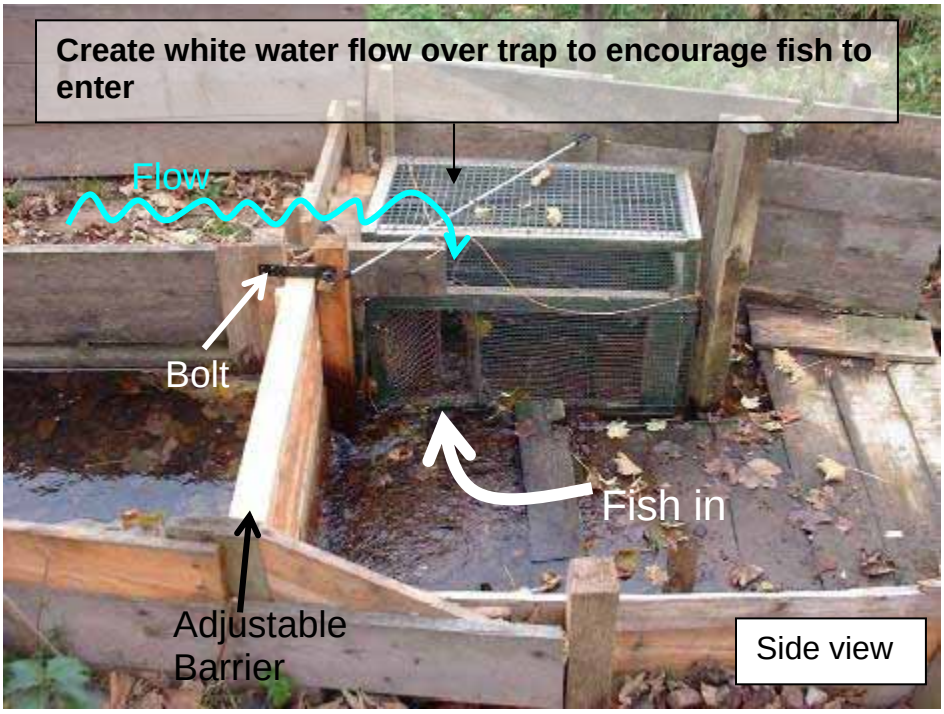


Fig. 6

Appendix 2
(Courtesy of Tweed Foundation & Eden Rivers Trust)



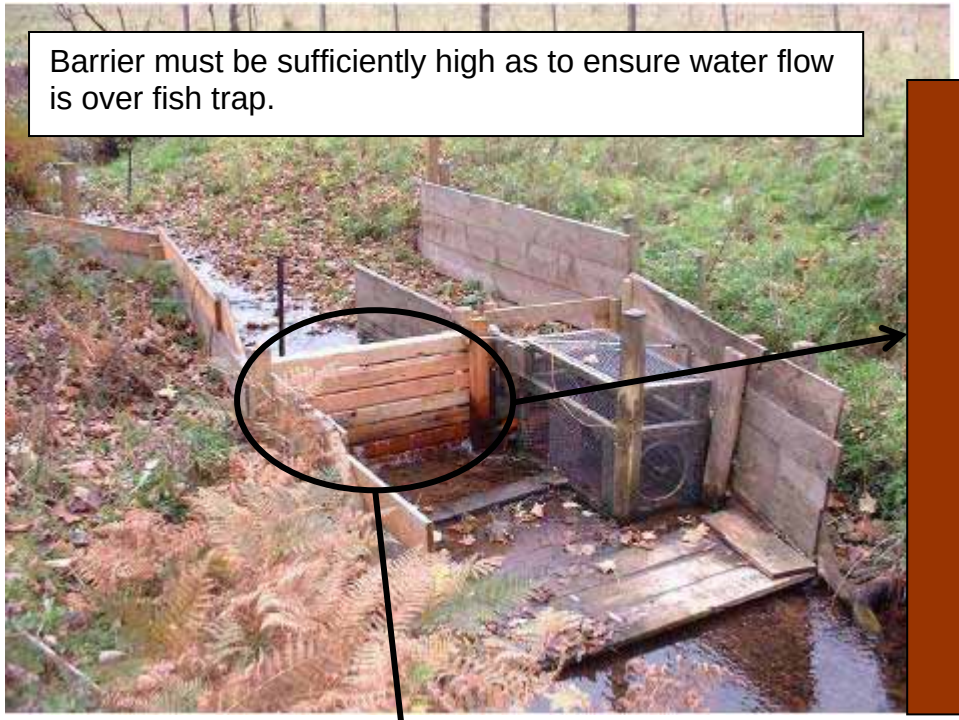
Construction of trout trap

The pictures show a trout trap designed to trap trout as they migrate upstream. The trap is suitable for small streams no more than a couple of meters wide.

The width of the trap should be approximately 3 times the width of the river. Naturally widened areas can be used for the site of the trap, or the area can be widened mechanically. This widened area helps dissipate spates. The floor of the trap should be flat (both in front and behind); this protects the riverbed from scour, but also creates a smooth flow, which prevents fish from jumping the barrier.

The barrier prevents fish from moving upstream and holds back the water. The result of this is that white water flows over the trap. It is this that attracts the fish into the trap. The barrier can be adjusted to form a dam during low flows, or to allow some flow through. The barrier is removable. During maintenance the barrier can be removed to clear built up leaves from behind barrier.

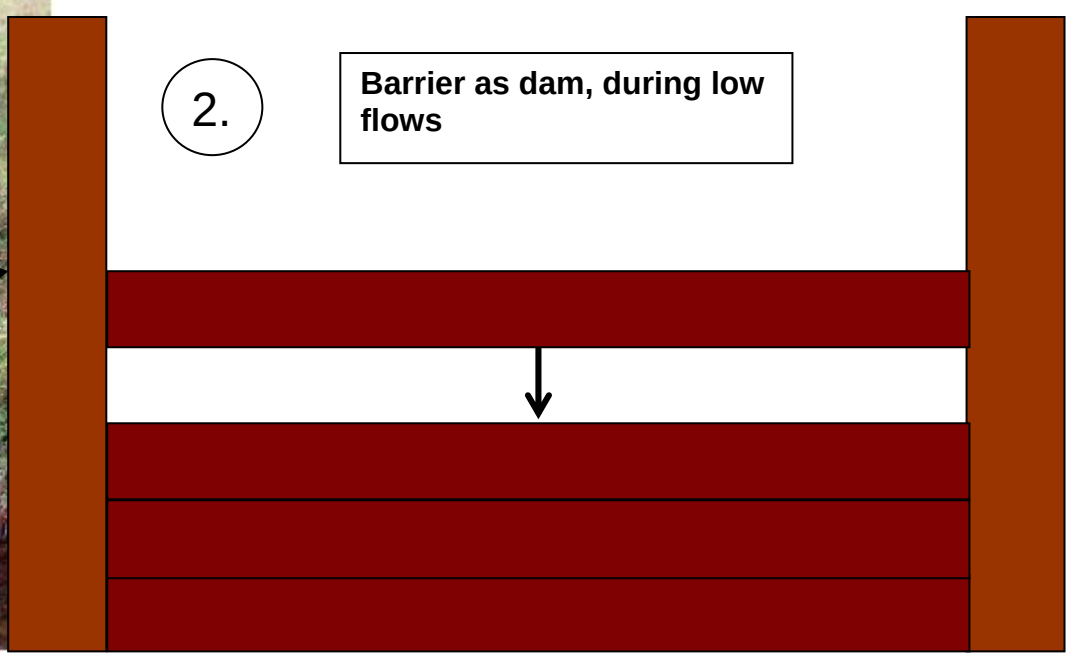
It is important to allow downstream passage for kelts.



Barrier must be sufficiently high as to ensure water flow is over fish trap.

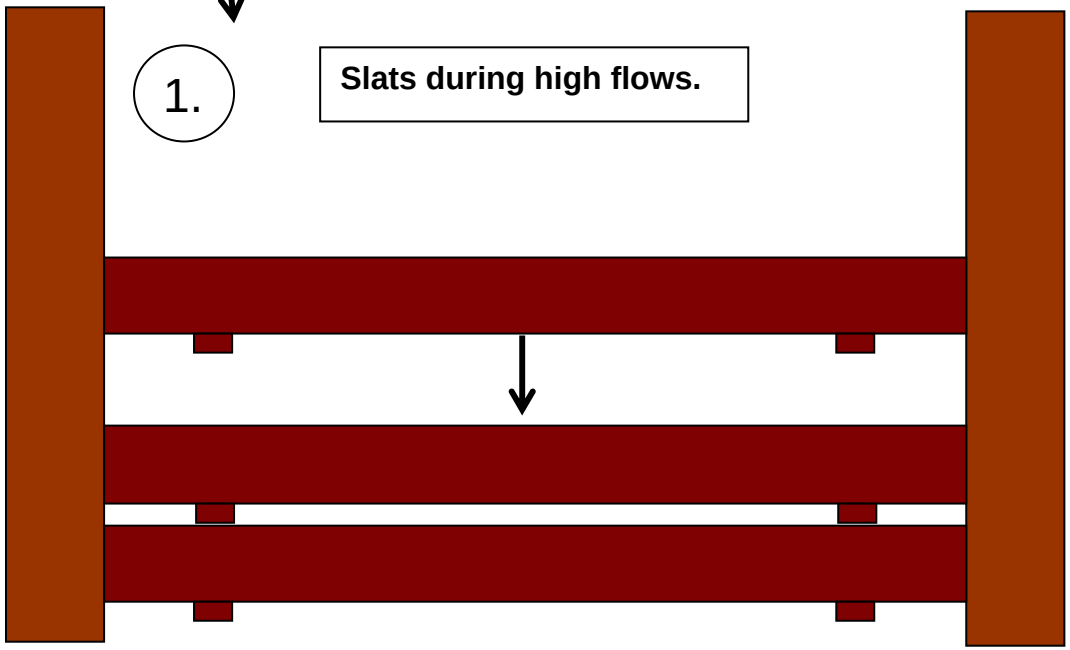
2.

Barrier as dam, during low flows



1.

Slats during high flows.



Construction of barrier.
Ensure allowance is made for swelling of wood.