

Dr Nick Giles & Associates
50 Lake Road
Verwood
Dorset
BH31 6BX



Wild trout habitat specialists
Design & Build restoration projects

Consultants: Fisheries, Conservation, Freshwater & Wetland Ecology.

Tel 01202 824245 Fax 01202 828056

Email gilesassociates@btopenworld.com Web site www.nickgilesassociates.co.uk



Report on Advisory Visit to River Frome, Hyde Farm House, June 2004

Summary

1. Nick Giles walked the Hyde House water, River Frome on June 20th in the good company of Mr Thomas Goddard. The fishery runs through extensive former water meadow systems and the low-intensity nature of the agriculture close to the river means that the banks and water quality are generally in good order. The invertebrate community is markedly most abundant towards the bottom end of the fishery where the river is well-lit, abundant water crowfoot beds grow and flows are channeled by the weed beds, cleaning-up the surface gravels and providing a better range of invertebrate habitats.
2. The apportionment of flows between the main river channel and the side carriers is regulated by the sluice close to the Roman Villa. There is a need to agree amongst interested parties a sluice management regime which allows adequate year-round water supply to both the main river and to the carrier system around Southover. The Dorset Wildlife Trust is reported to have a plan to re-wet the former water meadow upstream of and adjacent to the sluice and a careful Water Level Management Plan and flow apportionment agreement will be needed to ensure that there is enough water to go around at all times of year. This will become particularly pertinent during dry years. If the water meadow is wetted during the early spring only, then water resources may be sufficient, but if the active wetting is carried on through much of the early summer at times when rainfall is low, then evaporative losses could be appreciable, reducing flows downstream.

3. The bed of the river and carriers around both Hyde Farm House and Hydlands Farm is extensively silted and compacted with sand and other sediments. Some of these sediments are produced within the fishery (bank erosion, tree leaves) and some comes in from upstream, often originating from ploughed farm land further up the valley. The combined effect of this siltation is to produce very poor quality trout spawning habitat, a serious production bottleneck for the wild trout stock. This can be directly ameliorated by gravel cleaning (with specialized high-pressure water-jetting kit), directed precisely at where the wild trout stock is likely to spawn. Cleaned areas of gravel will improve the waters for fly fishing and generate many more wild trout. Gravel-cleaning on a fishery of this type, if carried out well, is a very cost-effective exercise. The side streams and carriers are generally very silty and clogged with decaying leaf litter. Ideally, it would be beneficial to open them up and clean out much of the sediment, but, given the difficult access and long lengths of small stream involved, this would be a relatively costly exercise. A localized gravel-cleaning project, concentrating on good potential spawning areas is recommended.

4. Over much of the Hyde Farm House and Hydlands Farm fisheries, mature trees of various species have lacked routine maintenance for many years, leading to a tunneling of the carriers and main river channel. The lack of light reaching the river and stream beds has a number of important knock-on effects:
 - Bank side grasses are shaded-out, producing erosion of banks which are no longer bound by grass roots.
 - Silt washed in from the banks is added to by large amounts of dead leaves falling from the trees each autumn – this leads to silting of the channels.
 - Aquatic plants including marginal rushes and reeds, in-stream weed beds and algae coating stone surfaces are all suppressed.
 - This leads directly to little food for aquatic invertebrates and diminished insect and other invertebrate populations.
 - Few invertebrates mean that there is little food for wild brown trout and poor quality fly fishing (few flies and few trout!).

What is required to reverse this situation is a strategic tree-pruning plan, implemented as funds permit. First, the tree boughs keeping light out of key areas of river channel must be identified and marked clearly, then they should be cut, ideally after the sap has dropped in autumn. The timber liberated should be cut into useful lengths and stacked out of the flood plain for use in future habitat improvement works. All of the above works can be carried-out without any official permissions, provided that there are no Tree Preservation Orders (TPOs) currently in operation (the Local Council can advise) and, of course, that the relevant land owners agree.

5. The main river channel and the channel of much of the carrier systems is markedly uniform, shallow, deeply incised and covered with coarse gravels. All of this indicates extensive past river dredging and realignment activity, probably stretching back over several generations. Uniform river channels provide poor habitat quality for all wildlife, including wild brown trout. What is required is a varied set of gravel shallows, deeper glides, occasional pools, plenty of dead wood cover and the right balance of weed growth and open water. The weed growth issue is addressed via sky-

lighting of south bank trees. The physical channel habitat diversity is addressed by constructing carefully designed, strongly-built structures which will re-direct the flows and scour the river bed. These structures should be made with natural materials and must produce better habitat quality for a range of wildlife, including wild trout. The types of structure involved (some are illustrated below) include:

- small upstream V current deflectors,
- cross-channel logs,
- lateral current deflectors to meander the channel and
- hazel brushwood bundles (faggots) to encourage silt-trapping and the establishment of a new low-level bank line.

All of this must be achieved whilst imposing no appreciable increased flood risk. This aspect of the planning, for very good reasons) is subjected to particular scrutiny by The Environment Agency. It is recommended that a detailed river habitat improvement plan is drawn-up, with the agreement of all interested parties and that formal consent from the Environment Agency is sought. It is likely that the draft plan will have to be modified in the light of feed-back before consent is given.

6. The lack of small clean gravel on site may mean that it is worth importing a quantity of suitable aggregates and using them to create some new spawning riffles. These will benefit trout, bullheads, lampreys, a wealth of invertebrates and water crowfoot beds. This technique of riffle-building is a well established method of compensating for past Land Drainage dredging schemes by raising the river bed and quickening the current speed. The newly-tipped gravel will, initially, be relatively sand and silt-free and provides millions of nooks and crannies for invertebrates to colonise. This contrasts sharply with the rest of the river bed which is a relative sediment-laden desert with very few pore spaces and difficult for many invertebrates to live upon. New riffles of this type create the following benefits:

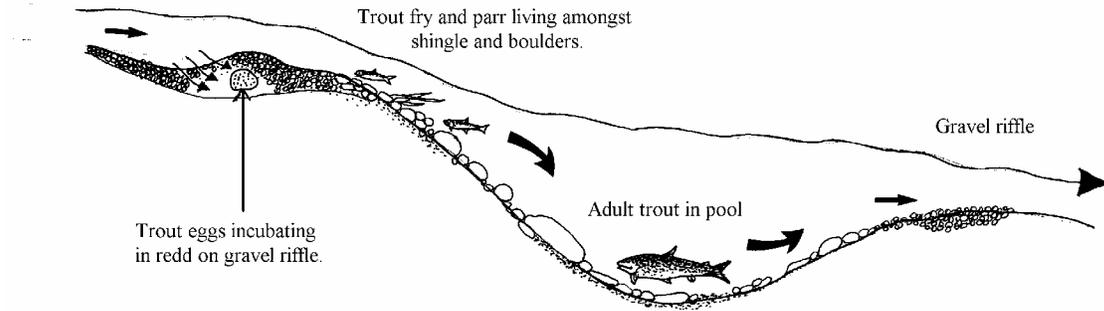
- Far better invertebrate populations, better fly hatches and better fly fishing.
- A more varied and attractive river channel providing new habitat for aquatic plants and for fish spawning.
- Faster, better-oxygenated summer flows.

7. Most of the main river channel is devoid of dead wood cover for trout – this is a vital component of habitat quality, especially for wild trout. It is recommended that large amounts of suitable dead wood are staked securely to areas of the river bed where they will provide shelter for trout and be out of the main force of flood flows.

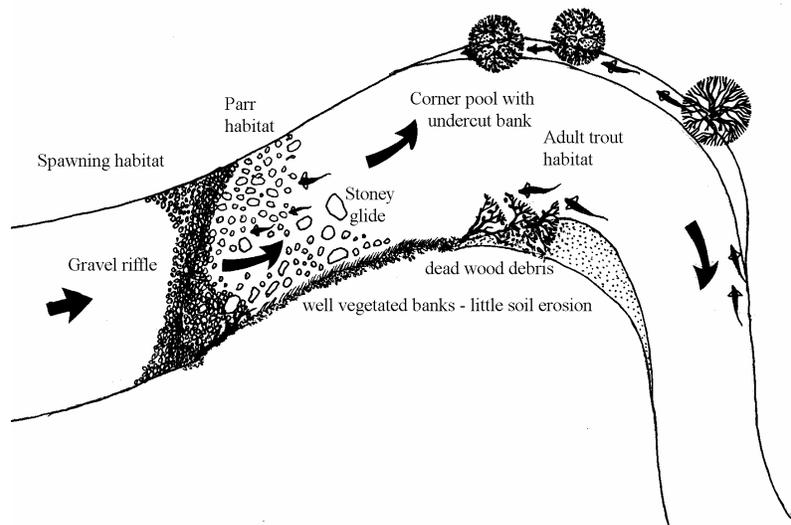
8. The fishery has both Gunnera and Himalayan Balsam present. It is strongly recommended that both of these alien species are cut-back repeatedly and treated with appropriate herbicides, before they start to spread too widely. Gunnera has an irritant sap which can cause very painful blistering of the skin and increased sensitivity to sunlight. Himalayan Balsam shades out native river bank vegetation, then dies back each autumn, over-wintering as seed. The bare river and stream banks left after this annual die-back are prone to increased erosion. Advice from the Environment Agency (Dr Allan Frake, Blandford Forum Office), is recommended. It may be that 'Roundup' (Glyphosate) is the best chemical to use but this needs checking.

Wild trout habitat

Brown trout need good, clean water flows, relatively silt-free gravel for spawning, abundant cover from predators and a nice varied sequence of shallow riffles, weedy glides and deeper pools. The diagrams below show how a short section of good habitat can provide everything a wild trout needs throughout its life cycle:

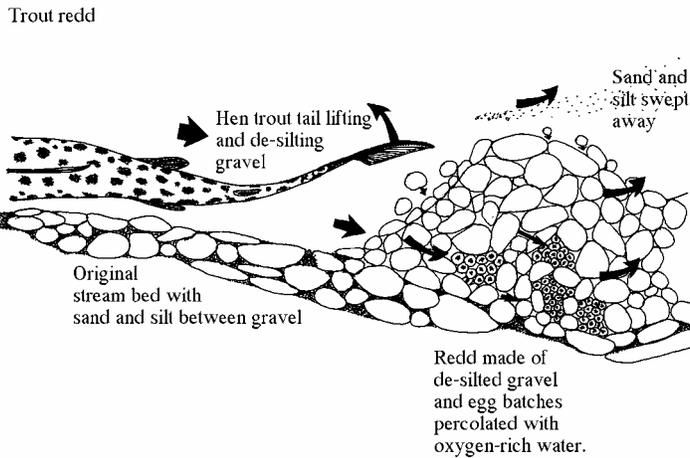


Trout stream riffle-glide-pool habitat sequence



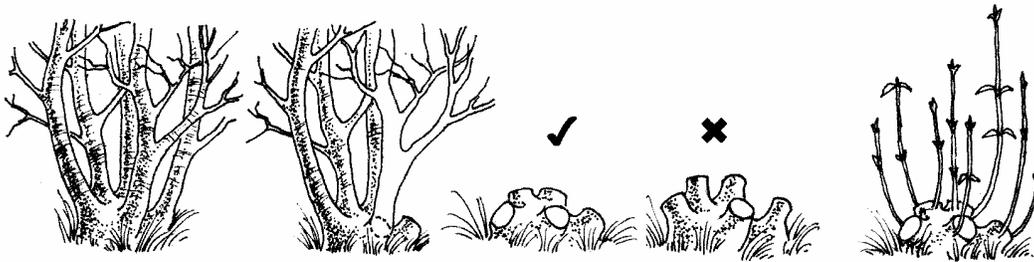
Siltation of spawning gravels

The wild trout stock is certainly being adversely affected by a river bed which is extremely silty and compacted, providing a poor environment for incubating fish eggs. This can be helped by a thorough water-jetting of suitable areas of gravel early each autumn, before the trout spawn in early winter. These cleaned areas will also be of value to bullheads and lampreys which spawn in the spring. Fly life will also be boosted by the opening-up of the formerly clogged river bed which will be re-colonised by a wide range of aquatic invertebrates. Larger flints uncovered during the water-jetting will be used by bullheads for breeding and cover and by trout fry and parr for cover. Sediments disturbed during the jetting process will re-deposit downstream in areas such as inner bends where they will produce habitats for various burrowing invertebrates (eg *Ephemera* mayfly nymphs) and for lamprey larvae.



Over-shading

Good coppicing practice:



Old growth

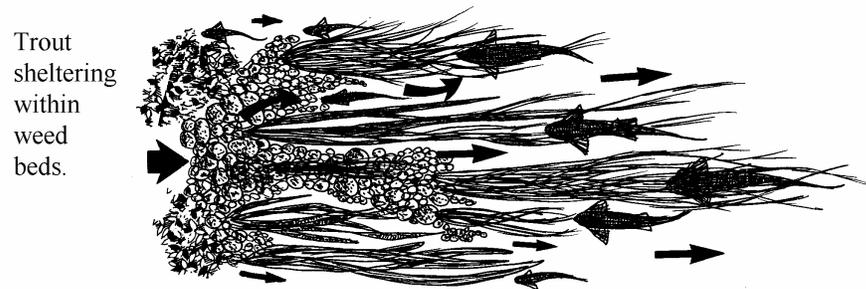
Correct coppice

Spurs too long

Useful re-growth

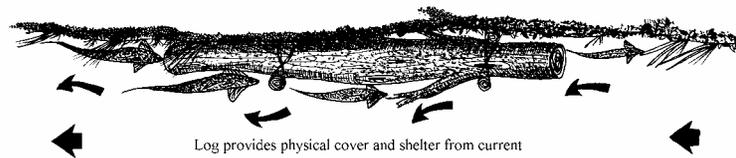
Physical cover

Trout parr (fish of up to a year's age) need relatively shallow water with cover from weed beds, boulders or deadwood (logs) staked securely along the margins. Adult trout continue to seek out habitat where year-round secure cover is available.



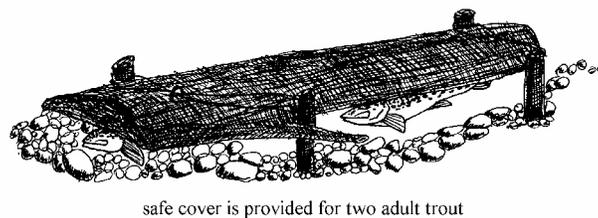
Whilst weed beds offer good summer cover, they die back in winter leaving fish stocks vulnerable in open water to a range of potential predators. These predators include herons, cormorants, pike, mink and otters. Trout streams with abundant cover hold much higher fish stocks than those where most or all of the dead wood cover has been cleared away. To create improved cover, logs or half logs can readily be pinned close to the bank, leaving a gap underneath them for sheltering brown trout.

Trout using dead wood cover feature - staked close to well vegetated bank.



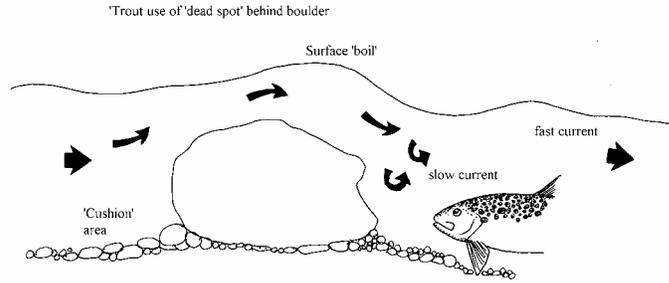
Most of the Hyde House Farm (and Hydlands Farm) fishery lacks fish cover in the form of deadwood and there is great scope to add cover along many suitable stretches, using timber boards or small logs.

Half log cover board staked to river bed



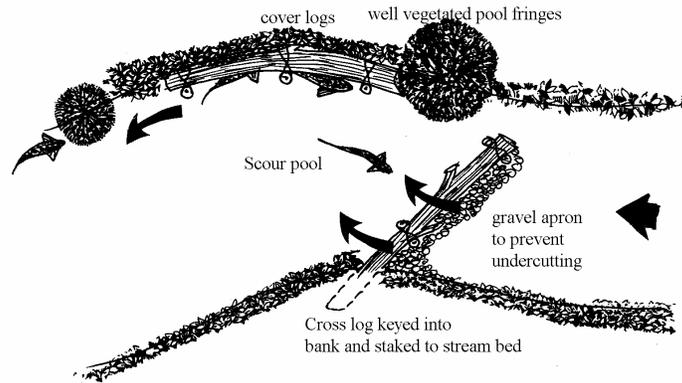
The boards / logs will not rot as long as they remain submerged year-round.

The addition of boulders to provide cover for trout also works well, but is much more labour-intensive and expensive than the use of appropriate timber structures.

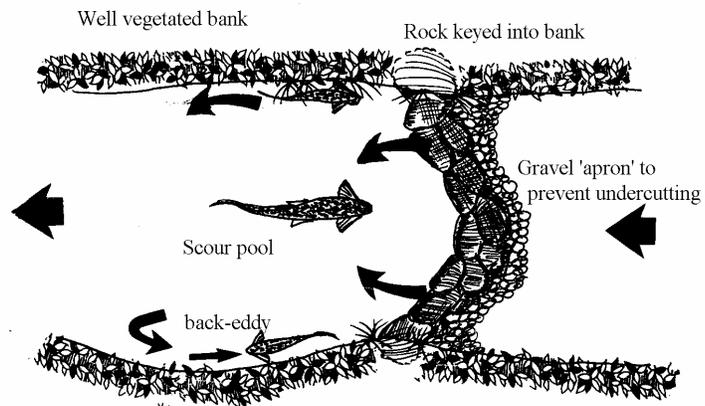


Re-directing flows to scour pools

Small stream cross log current-deflector



Small stream boulder weir



In small streams deep water adult trout habitat can readily be created by building upstream - curved weirs which concentrate flows in the centre of the channel. Cover logs along edges improve holding capacity.