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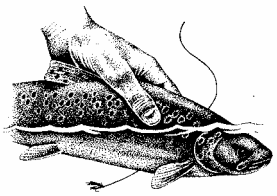


Report sponsored by
The Wild Trout Trust.

Consultants : Freshwater Fisheries, Conservation & Wetland Ecology

Report on Advisory Visit to River Wey, Oxenford Farm, June 2004

Summary

1. Nick Giles walked the Peper Harow Park Flyfishers Club water, River Wey on June 7th in the good company of Mr Charles Stuart, Dr Nigel Pringle and Mr Chris Patrick (Bishopstoke Fly Fishing Club, River Itchen). The fishery runs for around a mile and a quarter through Oxenford Farm of mostly double bank fishing. The Club, comprised of 37 rods, currently fishes the water with a relatively low intensity, stocking 300 brown trout in 2004. During the 2003 season 62 stocked trout were recorded caught, plus around a dozen small wild brown trout. The vast majority of wild trout caught are thought to be returned. The Club wishes to encourage the wild trout stock and to generally improve the waters for fly fishing.
2. Clearly, there is a wild trout stock in the Wey which spawns successfully but, at present, the location of the gravel spawning beds is unknown. Some spawning may take place in the main river channel but few areas appear suitable. It seems probable that the Royal Brook, which we also walked, is a likely candidate. Water quality is very good (Ecdyonurid mayflies, varied caddis larvae, shrimps, damsel and dragon flies and native crayfish). The surrounding wetland areas of Royal Common and Bagmoor Common ensure a high water table and few polluting influences. It is recommended that a back-pack electric-fishing survey of the brook is conducted to discover whether a decent population of juvenile brown trout is present. If so, it is recommended that habitats within and along the Brook are improved with a gradually implemented project. This should include:
    - gravel-jetting to improve spawning gravels.
    - the possible introduction of new spawning gravel.
    - the leaving alone of all deadwood in the channel (important cover for trout and crayfish).
    - the sky-lighting of the stream by felling mature alders every so often (to promote weed growth in the stream to the benefit of wild trout, native crayfish and other invertebrates.
    - Ensuring that the current environmentally-friendly farming regime continues to protect the fragile habitat of the Brook.

- In view of the presence of (rare) native crayfish and lampreys, funding to help with habitat improvements may be forthcoming from The Environment Agency / English Nature. It is well worth enquiring whether this is possible (recommend contacting John Sutton).

3. The Environment Agency, in 2003, constructed a fine new rock and gravel riffle on section A2 of the main river, this has been populated by a varied invertebrate fauna (see Appendix), has been successfully planted with Ranunculus (water crowfoot) and is thronging with minnows and other small fish. 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 sandy desert with very few pore spaces and an inhospitable shifting surface, 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, possibly, for trout spawning.
    - Faster, better-oxygenated summer flows which should attract both stocked and wild trout, as well as other fish species (including spawning lampreys).

Whilst it is thought unlikely that an abundant wild trout stock can be built up in the river as it stands, if the Royal Brook proves to be a spawning and nursery habitat and if the new riffle is used by spawning trout, then the outlook is encouraging for markedly increased wild trout stocks. If the cost can be justified, another two or three strategically-placed riffles would greatly enhance the fishery. In order to keep the riffles in good condition, it is recommended that they are gravel-jetted every two or three years.

4. The farming in the riparian meadows appears, currently, to be mostly for cattle and grass production. Some of the banks are fenced, and are in generally good condition. In a few locations, mature alders have, in the past, fallen into the river, leaving large scour holes in the bank. Because of the sandy nature of the soils, these scour holes have caused sand to enter the river channel. Areas of bank erosion could be tackled via the use of live willow stakes, inter-woven with live withies (‘spiling’). If done properly, at the right time of year, this leads to the rapid growth of a very strong live willow revetment which will protect the bank for many years to come. There must be many other sources of sand as the bed of the river is generally coated with a thick layer – little gravel shows over most of the fishery. Sources of sand may include farmland ditch systems, especially soon after they are cleared out (leaving bare soil banks), eroding sections of river bank associated with cattle drinking and other areas. The sandy bed of the River Wey means that a relatively impoverished invertebrate community is present, aquatic plant growth is hampered and spawning for trout is made difficult. It appears that the river has been dredged in the past, degrading the physical river channel habitats even further.
5. At the time of my visit, the ponds were growing a lot of algae and not much in the way of submerged water plants. It is recommended that the numbers of both grass carp and domestic ducks are reduced to improve water quality on the fishery.

6. Much of the River Wey fishery and Royal Brook has dense shading from mature trees on at least one bank. This greatly reduces the amount of sunlight reaching the stream bed and has the following adverse effects:
    - Poor algal and weed growth,
    - Relatively few aquatic invertebrates,
    - Relatively few young wild trout, lampreys and native crayfish.

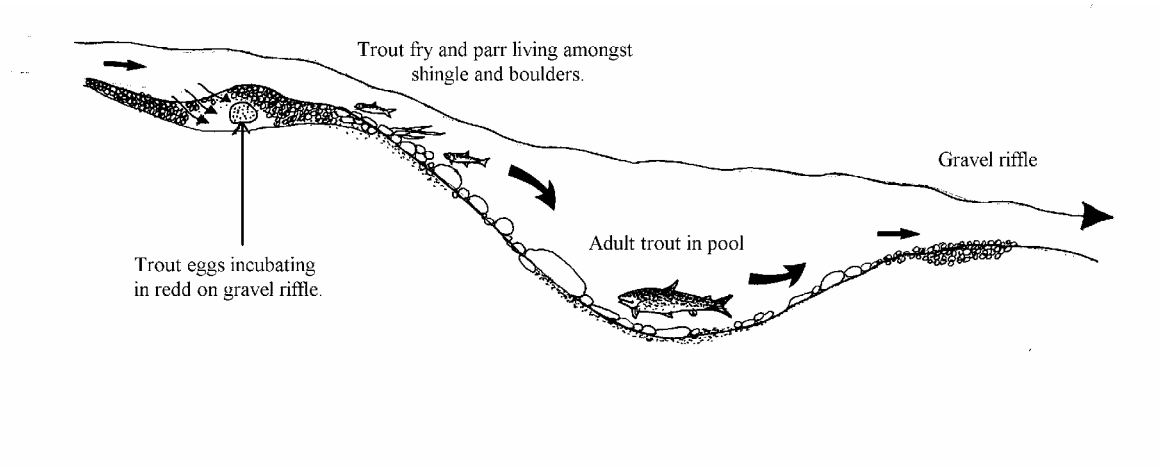
It is recommended that a long-term tree management programme is designed which will gradually lead to a mosaic of light and shade along both the River Wey and Royal Brook.

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, but also for stocked fish. 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. Environment Agency permission is required before any in-river habitat work is attempted.
8. The recent capture of a 21 pound pike indicates a possible need to control pike numbers, reducing predation pressure on both wild and stocked trout.

Background notes.

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 diagram below shows how a short section of good habitat can provide everything a wild trout needs throughout its life cycle:



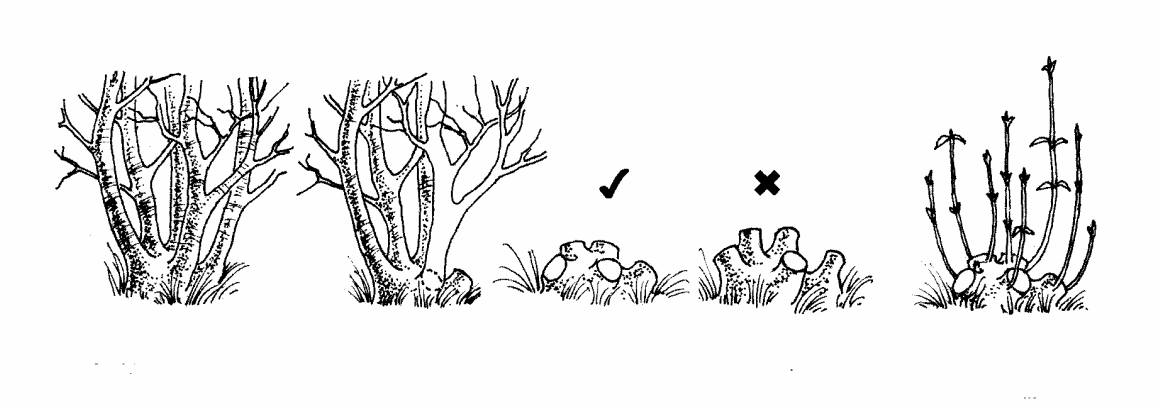
Siltation of spawning gravels

The wild trout is certainly being adversely affected by a river bed which is extremely sandy, 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. Crayfish will also use this improved cover habitat. 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

If it proves to be an important wild trout and native crayfish habitat, extensive tree pruning exercise should be carried out to let light into the Royal Brook. Live willow collected during winter pruning work can be used to reinforce areas of bank where too much erosion is taking place - this will form a sustainable live bank revetment. Where extra physical cover is needed, alder logs can be staked to the bed to provide shelter for trout.

Good coppicing practice:



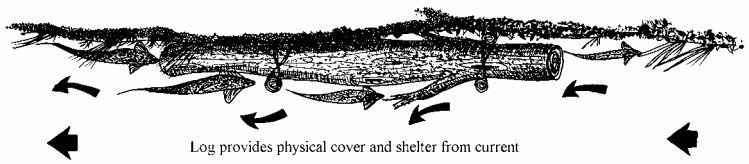
Old growth Correct coppice Spurs too long Useful re-growth

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. Pike can seriously affect wild trout stocks on small rivers and should be removed from the river by angling each winter (or by properly conducted electric-fishing). 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.

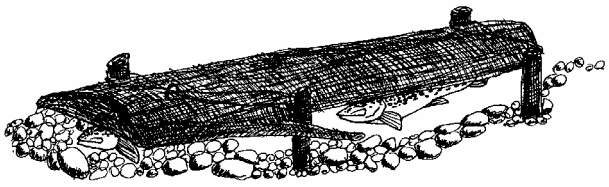
Trout using dead wood cover feature - staked close to well vegetated bank.



Log provides physical cover and shelter from current

Most of the Peper Harow 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

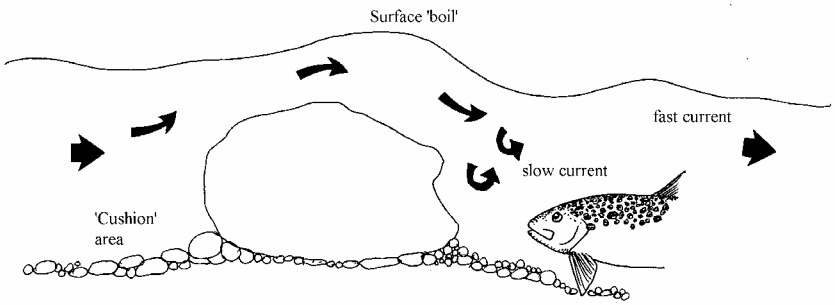


safe cover is provided for two adult trout

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.

'Trout use of 'dead spot' behind boulder



This is not to say that previous rock emplacements have been a bad idea; in fact, they have worked well to raise the river bed and to promote better diversity of flows in the river channel and cover for trout. What may be best now, however, is to concentrate on building-up excellent, secure, year-round dead wood habitat along river margins, on the inside of bends and adjacent to pools, where the trout are most likely to use it.

Appendix – Dr Nigel Pringle Invertebrate recording sheet

Peper Harow spread sheet for recording Biological Monitoring Work Party Scores.

To Use **Enter a value under the date column according to abundance of the taxa in the sample**

Either use A= 1-10

B=11-100

C=101-1000

OR enter the actual number of each taxa present in the sample.

Oxenford Bridge

Grid Refrence

Devised and designed by Nigel Pringle 936434

Common Name	**Family**	**Original BMWP Score**	**Revised BMWP Score**	Original	Revised	**Date**	Origi
						8/3/2003	
Flatworms Tricladida	Planariidae	5	4.2				
	Dendrocoelidae	5	3.1				
Snails Mollusca	Neritidae	6	7.5				
	Viviparidae	6	6.3				
	Valvatidae	3	2.8				
	Hydrobiidae	3	3.9	3	3.9	A	3
	Lymnaeidae	3	3				
	Physidae	3	1.8				3
	Planorbidae	3	2.9				3
Limpets and Mussels	Ancylidae	6	5.6				
	Unionidae	6	5.2				6
Mollusca	Sphaeriidae	3	3.6	3	3.6	A	3
Worms	Oligochaeta	1	3.5				
Leeches	Piscicolidae	4	5				
Hirudina	Glossiphoniidae	3	3.1				3
	Hirudididae	3	**0				
	Erpobdellidae	3	2.8				
Crustaceans	Asellidae	3	2.1				
Crustacea	Corophiidae	6	6.1				
	Gammaridae	6	4.5	6	4.5	B	6
	Astacidae	8	9	8	9	A	8
Mayflies	Siphlonuridae	10	11				
Ephemeroptera	Baetidae	4	5.3	4	5.3	A	4

	Heptageniidae	10	9.8	10	9.8	A	
	Leptophlebiidae	10	8.9				10
	Ephemerellidae	10	7.7	10	7.7	A	10
	Potamanthidae	10	7.6				
	Ephemeridae	10	9.3	10	9.3	A	10
	Caenidae	7	7.1				
Stoneflies	Taeniopterygidae	10	10.8				
Plecoptera	Nemouridae	7	9.1				
	Leuctridae	10	9.9				
	Capniidae	10	10				
	Perlodidae	10	10.7				
	Perlidae	10	12.5				
	Chloroperlidae	10	12.4				
Damselflies	Platycnemidae	6	5.1				
Odonata	Coenagriidae	6	3.5				
	Lestidae	8	5.4				
	Calopterygidae	8	6.4	8	6.4	A	8
Dragonflies	Gomphidae	8	**0				
Odonata	Cordulegasteridae	8	8.6				
	Aeshnidae	8	6.1				
	Corduliidae	8	**0				
	Libellulidae	8	5				
Bugs	Mesoveliidae *	5	4.7				
Hemiptera	Hydrometridae	5	5.3				
	Gerridae	5	4.7	5	4.7	B	
	Nepidae	5	4.3				
	Naucoridae	5	4.3				
	Aphelocheiridae	10	8.9				
	Notonectidae	5	3.8				
	Pleidae	5	3.9				
	Corixidae	5	3.7				
Beetles	Haliplidae	5	4				
Coleoptera	Hygrobiidae	5	2.6				
	Dytiscidae	5	4.8				
	Gyrinidae	5	7.8				5
	Hydrophilidae	5	5.1				
	Clambidae	5	**0				
	Scirtidae	5	6.5				
	Dryopidae	5	6.5				
	Elmidae	5	6.4				
	Chrysomelidae *	5	4.2				
	Curculionidae *	5	4				

Alderflies	Sialidae	4	4.5				
Caddisflies	Rhyacophilidae	7	8.3	7	8.3	A	
Trichoptera	Philopotamidae	8	10.6				
caseless	Polycentropidae	7	8.6				7
	Psychomyiidae	8	6.9	8	6.9	A	
	Hydropsychidae	5	6.6				5
Caddisflies	Hydroptilidae	6	6.7				
cased	Phryganeidae	10	7				
	Limnephilidae	7	6.9				7
	Molannidae	10	8.9				
	Beraeidae	10	9				
	Odontoceridae	10	10.9				
	Leptoceridae	10	7.8				
	Goeridae	10	9.9				
	Lepidostomatidae	10	10.4	10	10.4	A	
	Brachycentridae	10	9.4	10	9.4	A	10
	Sericostomatidae	10	9.2	10	9.2	A	10
True flies	Tipulidae	5	5.5				
Diptera	Chironomidae	2	3.7				2
	Simuliidae	5	5.8	5	5.8	B	5
		BMWP Score	**Original BMWP Score**			117	
		ASPT	**ASPT-Orig**			7.3125	
		Number of taxa.	**Number of taxa.**			16	