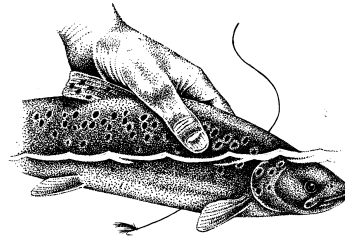


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Consultants : Freshwater Fisheries, Conservation & Wetland Ecology

To Mr C. Druce
River Frome, Notton.

August 25, 2002

Report on one day visit to
River Frome, Notton, Dorset.

Report sponsored by



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Introduction

This visit was requested by Mr Charlie Druce whose family have owned and fished this section of the Frome for many years. On the day of the visit (August 25th 2002), I was accompanied by Mr Druce who provided useful information and advice on the local problems affecting the fishery. The River Frome is a well known chalk river supporting populations of salmon, sea trout and wild brown trout, grayling and coarse fish.

Much of the Frome is stocked with hatchery-bred brown trout but, refreshingly, no stocking is done at Notton. For this reason, self-sustaining trout stocks are vital for the continuation of the fishery. The Druce Family are keen to improve the abundance of the wild trout stock and to take every opportunity to enhance the conservation value of the river and its wildlife.

Current condition of the fishery: Overview

The upper Frome is an excellent small river trout water. The Notton fishery is comprised of a series of shallow gravel bars (riffles) interspersed with deeper glides and pools. The bed of the river is, however, seriously 'concreted' with lime and in-filled with sand and silt. For successful trout spawning, this situation needs addressing via a programme of gravel-jetting (see below).

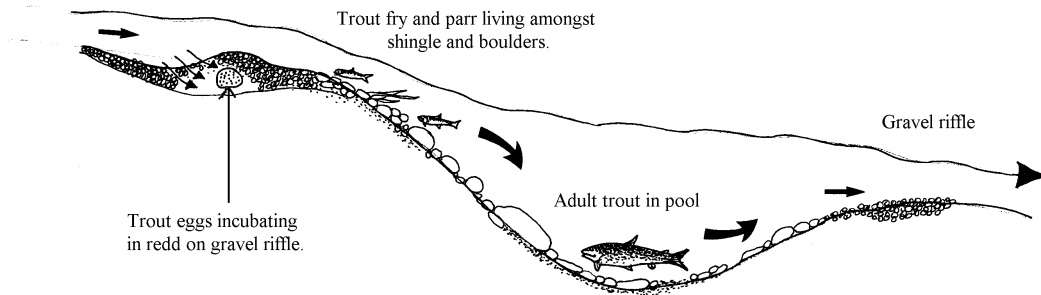
The invertebrate community has abundant shrimps, mayfly nymphs, numerous cased and caseless caddis flies, river limpets and other snails, chironomid midges, blackflies, leeches and other groups. At the time of my visit water quality appeared very good. The jetting of riffles will open up the bed, greatly increasing the habitats available for invertebrates and improving the opportunities for water crowfoot (*Ranunculus*) beds to develop and spread.

The fishery generally has a good balance of open and shaded sections. Some sky-lighting of the wooded lower section would be of value, especially if the weir is restored (see below).

The banks are generally in good condition and there is an abundance of tree root cover - a vital habitat component for wild brown trout. If the over-shading of grasses and reeds by the extensive Himalayan balsam beds leads to excessive bank erosion, then winter staking with live willow is recommended for localised revetment work. Inter-weaving thin live willow branches between the stakes ('spiling') so that rooting can occur into the bank will provide further protection from erosion. Where erosive energy is greatest (outside of sharp bends), backing the spiling with a layer of coir membrane will provide further bio-degradable protection until the willow is fully established. Willow used in this way will need periodic management and fencing off from cattle.

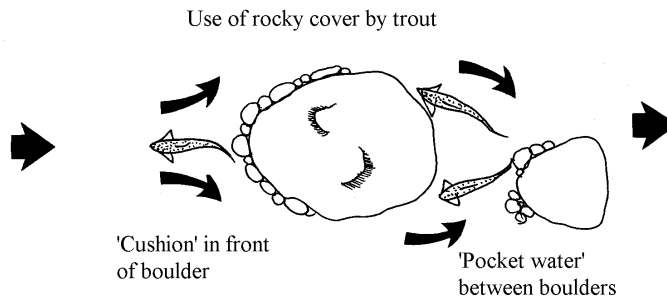
Wild trout habitat

Wild trout need good, clean flows, relatively silt-free gravel for spawning, abundant cover from predators and a nice varied sequence of shallow riffles, 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:

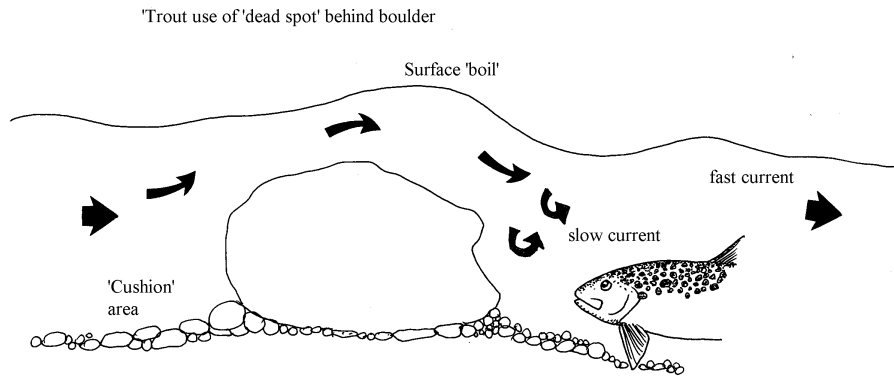


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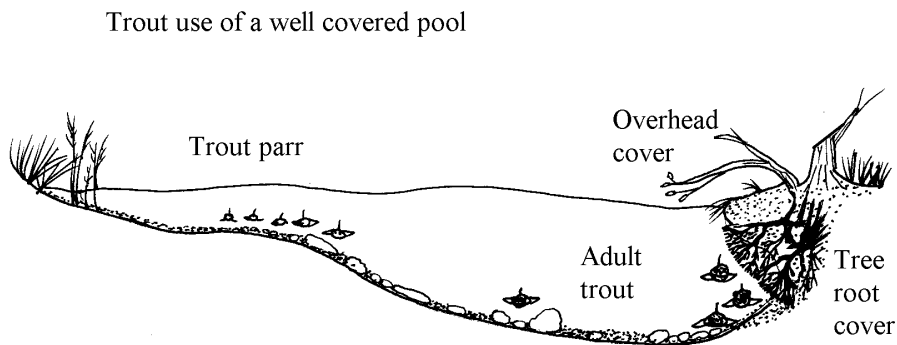
The gradient of the river bed in the above diagram is greatly exaggerated - riffles and pools tend to be spaced fairly regularly down a fishery and there may be a pool every 6-10 stream widths on streams with fairly easily-eroded banks. Trout use all available cover to reduce energy expenditure fighting the force of the current and to avoid predators. Cover can be provided by boulders, by deadwood in the margins or by undercut banks bound by tree roots (especially alder and willow).



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A good pool for trout provides adequate depth, cover, current speeds and food supply (insects from upstream riffles, bankside vegetation, etc).

Key findings from river walk

1. Siltation

The upper Frome is suffering from sediment (sand, soil, silt) inputs associated with intensive livestock and arable production. Impacts on the ecology of the river may include:

- Silt and sand entering the river from stock grazing, ploughing and ditching activity.
- Fertilisers are washing into the river from arable and grassland.
- In places cattle are breaking down banks and causing soil to enter the river.

Until truly sustainable farming practices are introduced, wherever possible, buffer-zoning should be introduced to the river corridor.

Silt clogs spawning gravels for salmon, trout, grayling, dace, bullheads and lampreys. Silt and sand also clog gravel beds for invertebrates which normally live in the spaces between the gravel (eg snails, caddis larvae, shrimps). Ideally, silt inputs to the stream should be minimised through buffer-zoning riparian meadows and through careful ditching and drainage works which minimise silt and sand inputs to the system. The Environment Agency leaflet - "Ditching advisory guide; damaged environments and ditching" provides valuable information and advice on this topic. Copies of the leaflet should be available from the nearest Environment Agency Area Office.

Livestock

Wherever livestock break down stream banks they can have the following impacts:

- Adding to silt inputs
- Over-widening the channel
- Lowering water levels in the over-wide stream
- Over-grazing marginal and in-stream plants
- Possibly introducing SP sheep dip and other pollutants.

The solution is the routine fencing-out of livestock, where appropriate. Sometimes electric fencing is all that is required to limit stock access to banks.

2. Over-shading

A varied mosaic of light and shade along the fishery is good for fish, wildlife and for fishing.

Over-shading of a river has the following adverse effects :

- Killing of bank side grasses, sedges, rushes and reeds which bind the banks with their roots. This leads to bank erosion back in under the trees and to an over-wide, shallow, silty river channel.
- Reduced in-stream aquatic plant growth, providing summer cover for fish.
- Reduced production of aquatic invertebrates including insects essential for feeding wild trout, bullheads, stone loach, other fish and birds.

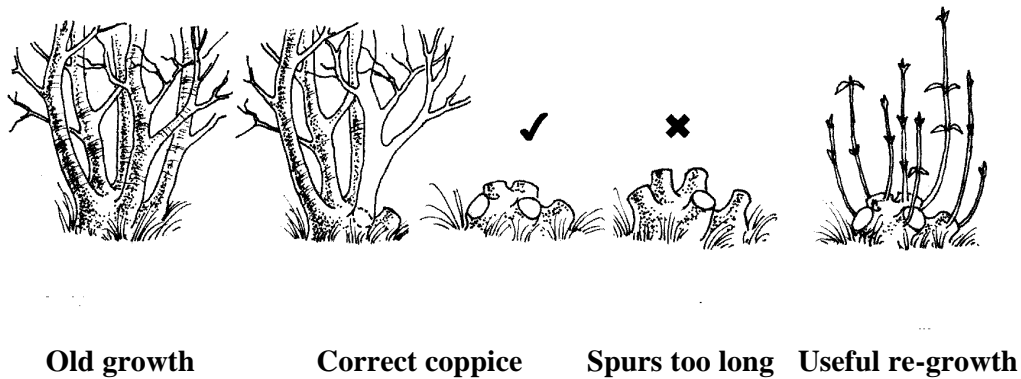
Cutting back carefully-selected trees in winter stimulates plant growth both on the banks and in-stream. This will have the following benefits :

- Better resistance to bank erosion and better bank side habitats for mammals, birds, insects and marginal cover for fish.

- Better marginal grass and rush growth and better moss and algal growth.
- More aquatic invertebrates including better fly hatches.
- A natural re-narrowing of the channel as marginal vegetation grows back along the edges of the channel. This optimises the use of available flows.

Some of the timber produced during the tree management work could be used to improve marginal cover for trout and for bank protection. The wood at the bottom end of the fishery is clearly a candidate for sky-lighting work on the river.

Good coppicing practice:



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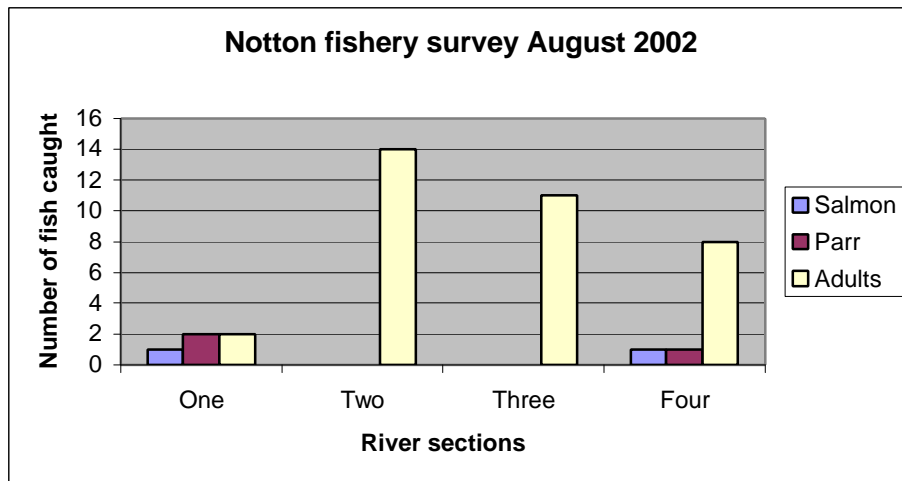
In winter, when the sap has dropped and trees have stored most of the mobile energy reserves in the lower trunk and root systems, the following species should tolerate coppicing: Ash, Hazel, Alder, Goat willows (Sallows). Coppicing lets light into the stream, prolongs the life of the tree, maintains bank protection through strong root growth and provides raw timber materials for habitat improvement projects.

3. Impoundment

The weir at the bottom end of the fishery has fallen into disrepair and a long impounded section of river immediately upstream has become seriously silted-up. This silted section is around 200m x 10m (2,000 m² in area). Important species such as *Ranunculus*, bullheads and wild brown trout are unable to self-sustain in this silted habitat and, therefore, reparations to the weir are recommended (see below).

Findings from Game Conservancy Trust electric-fishing survey

Dominic Stubbing kindly provided the following data from the survey of four 50m sections of the Notton fishery carried out last week:



The river sections surveyed start just upstream of the wood and follow on upstream.

Key points of interest are:

- Adult trout (older than 1 year) are present in moderate numbers.
- Trout parr are almost absent (poor spawning habitat).
- Occasional salmon parr are present.

These results underline my view that the spawning habitat at Notton needs attention if a thriving wild trout fishery is to be developed. The current sub-adult and adult wild brown trout stock is probably recruiting from upstream.

Recommended solutions

1. Poor trout spawning habitat: Gravel-jetting.

Wild trout must have relatively clean gravels to spawn in - their eggs need a clean water supply whilst buried deep in the gravel over-winter. Ideally, as mentioned above, excess sediments should be kept out of streams but, in the real world, this seldom happens. Spawning gravels (usually found in a bar diagonally across the stream at the tails of pools - a 'riffle') can be de-silted by high-pressure water-jetting. A small, portable petrol-driven water pump can readily be rigged up with a hose ending in a tubular metal probe which has been hammered flat to produce a high pressure jet. This probe should be inserted in the gravel at the head of the riffle and worked thoroughly through the gravel working across and downstream to create a de-silted area. This should be done in late September / early October before trout look for spawning habitats. It is important to do such work in areas where trout naturally spawn and careful targeting is essential to success. In addition to professional advice;

- Look for trout redds in winter to target where future work should be done.

- Hire, beg, borrow (Nick Giles Associates or Environment Agency?) or make a water-jetter and try it out on some limited areas this autumn.
- A two-man team on a stream the size of the upper Frome should be able to clean three riffles in a full day's work.

2. Tree work

Over-shaded streams have lower weed, invertebrate and fish stocks than streams which have been 'sky-lighted' to let in the light and promote productivity. Ideally, a stream should have well-bound banks with tree, shrub and grass roots and have a mosaic of well-lit and shady sections. This is best achieved by drawing up a coppicing / pollarding management plan and then tackling it section-by-section. The results can be startlingly good and encourage further work.

The Notton fishery generally has too much shade in the wood, an ideal balance through the middle section and too little along the uppermost meadow.

3. The weir

The weir is currently comprised of:

- 1/. A fixed HEP take-off point which is no longer functional or required.
- 2/. A 5 gate sluice which is mostly in disrepair and unable to be finely regulated.
- 3/. A fixed take off which supplies an old leat running towards Frampton.

Upstream, at the lower edge of the wood there is a take-off channel which formerly supplied a water meadow system, now owned by the Dorset Wildlife Trust. The Trust wish to irrigate part of the former wet meadow each spring to encourage a re-establishment of the wetland flora. This requires regulation of water heights via the sluiced weir downstream.

It is recommended that:

- 1/. The HEP side of the weir is, with the owner's permission, shut down.
- 2/. At least three, and preferably all of the sluice gates are restored to full working condition.
- 3/. That the sluices are then set full open during each winter so as to facilitate the gradual de-silting of the channel; upstream of the weir whilst also maintaining the required flow in the side channel to Frampton and to the water meadow off-take.
- 4/. As flows drop in the late spring the sluices should be progressively closed so as to maintain sufficient impounding effect and water height to feed the water meadow channel and the Frampton side-channel.
- 5/. As winter flows resume the sluices should once more be kept open for as long as possible to flush out the upstream channel and to help restore a gravel-bedded habitat suitable for Ranunculus, bullhead, lampreys, wild trout, salmon and a wide range of aquatic invertebrates.

Reference

Environment Agency (2001) Ditching advisory guide; damaged environments and ditching. Produced in south-west region.

Draft report August 25th 2002, by Nick Giles