



**HABITAT ADVISORY VISIT TO THE DODNASH
BROOK, SUFFOLK.**

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1.0 Introduction

This report is the output of a site visit undertaken by Vaughan Lewis, Windrush AEC Ltd to the Dodnash Brook on behalf of the Wild Trout Trust.

Comments in the report are based on observations on the day of the site visit, and discussions with Carol Gurney and Rupert Eley. 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.

2.0 Habitat Assessment

The Dodnash Brook was a small tributary stream of the River Stour, near East Bergholt, Suffolk. Catchment land use was dominated by mixed agriculture, with a considerable area of arable land present.

Much of the channel was heavily shaded by riparian trees, with species including ash *Fraxinus excelsior*, pedunculate oak *Quercus robur*, hawthorn *Crateagus monogyna* and blackthorn *Prunus spinosa* present. In some reaches, shading was so dense that the river was totally 'tunnelled', severely restricting the growth of instream and marginal vegetation.



Tunnelled section of the Dodnash Brook

The narrow channel was heavily incised within a woodland setting, with up to 1.5m between the water level and surrounding land. The instream habitat was varied with sections of shallow glide, deep glide and pool. However, the availability of gravel bedded riffles was restricted. Those sections present had a substrate dominated by fine gravel, with a heavy burden of sand and fine sediment considerably reducing the value of the gravel for the incubation of trout eggs.



Fine sediment on the bed of the brook

Much of this fine sediment appeared to have originated from the surrounding arable fields, with crops such as wheat, potatoes, barley and sugar beet being cultivated on very fine, light and friable soils. Well-developed grass buffer strips protected the main brook from sediment-laden run-off over much of its length. Where arable fields ran close to river, the width of the buffer strip was reduced. A number of small tributary streams ran through the arable fields with only limited buffer strips present alongside these. As a consequence, they carried a heavy burden of sediment that bypassed the grass buffer strips and entered the main river.

Flow within the river was very low, further exacerbating the issue of deposition of fine sediment in the channel.

The main river was fenced for most of its length, preventing access to agricultural stock and consequent damage to the banks and associated flora. However, the close proximity of the fence to the bank top minimised the width of the ungrazed buffer strip present, as well as preventing access along bank for angling.

In sections of the river that were not tunnelled, there was a strong growth of marginal vegetation, including species such as hemp agrimony *Eupatorium cannabinum*, fool's water cress *Apium nodiflorum*, water forget me not *Myosotis scorpioides* and meadowsweet *Filipendula ulmaria*. There was some Large Woody Debris (LWD) present in the channel, particularly where trees or large limbs had fallen into the water. The presence of well-developed tree root systems provided valuable erosion protection to the banks and a substantial element of cover for trout.

There were a number of mature cricket bat willows alongside the brook.

Immediately upstream of the roadbridge, a small RB tributary stream entered the brook. The stream ran through a wetland area continuing water speedwell *Veronica anagallis-aquatica*, brooklime *Veronica beccabunga*, water cress *Rorippa nasturtium-aquaticum* and meadowsweet, forming a valuable silt detention zone. Similar features

could usefully be created at the confluence of the other RB tributary streams with the Dodnash Brook.

The macroinvertebrate fauna appeared strong, with large numbers of freshwater shrimp and cased caddis along with smaller numbers of Baetid nymphs present on larger stones and clods of earth in the channel. Inferred water quality was thus good. In addition to the identified invertebrates, there were a number of what appeared to be crayfish burrows present in the banks of the brook. Enquiries should be made with the Environment Agency to ascertain whether any species of crayfish has been identified locally.

3.0 Fish stocks

The Dodnash Brook is known to have held stocks of wild brown trout in the recent past. However, the status of the fish stocks in the brook at present is not known, as no electrofishing or catch data were available.

4.0 Recommendations

The dominant features of the stream were its overshadowed nature and its heavy silt burden. The following recommendations are made with respect to the brook:

- A pre-requisite of any enhancement strategy is an assessment of the fish stocks within the brook. It is recommended that the local Environment Agency fisheries team be approached with a view to them undertaking a semi-quantitative electrofishing survey of the brook. Data may already be available for other sections of the brook.
- The cricket bat willows were at a stage where they could be harvested to yield a valuable crop. Income from the willows could potentially be used to finance some of the recommended enhancements to the river. Harvesting of the willows would require removal of the fence for access. It is recommended that the fence should be re-erected further back from the river, in order to improve access and widen the ungrazed buffer zone.
- Coppicing or pollarding of riparian trees in sections of heavily shaded channel can be of great benefit. Coppicing and pollarding of trees are traditional and potentially valuable methods of managing trees. Wildlife associated with coppiced trees depends on maintaining a diversity of light and shade, so blocks of trees should be cut in rotation. Fringing marginal vegetation resulting from coppicing is of great importance to the survival of juvenile salmonids. However, some caution should be exercised in the cutting of trees as too much light falling on the channel may encourage the development of excessive emergent vegetation, particularly where the gradient is shallow. Ideally, coppicing should be restricted to those sections of the river where water velocity exceeds 20cmsec^{-1} , effectively limiting the growth of emergent plants.

The length of the coppicing cycle can vary between six and fifteen years, with a short cycle preventing development of mature trees, encouraging vigorous root growth and the dappled shade required by some specialist flora and fauna. This regime may well be suited to reaches of river where fishing is practised, allowing maximum room for casting. Species that can be successfully coppiced include hazel (*Corylus avellana*), alder, and (*Fraxinus excelsior*).



Growth of emergent aquatic vegetation in sections with reduced shading

- An alternative strategy for previously coppiced trees is ‘singling’. This involves selecting the most upright stem for retention and cutting out the remaining stems close to the stool. This is a less risky option where there are concerns over regeneration due to grazing stock.

The ratio of shaded to open bank receives attention in the literature. The *Forests and Water Guidelines* (Forestry Commission 1991) recommends maintaining about half the length of the stream open to sunlight, with the remainder under dappled shade to create desirable conditions for a diverse aquatic ecosystem. The *Guidelines* further state that it is particularly important to maintain open ground to the south of the stream to allow more light to penetrate and to increase the water temperature for better aquatic plant and invertebrate growth. 40-60% tree shade is recommended to maintain cool water for trout. In order to achieve this, trees on the south side of the river should be managed to give gaps of approximately 20 m in length at 70 m intervals to permit macrophyte growth.

It is likely that all coppicing could be self-funding with local foresters often willing to undertake felling in return for the timber that can subsequently be sold as firewood.

- It is recommended that Large Woody Debris (LWD) should be introduced and stabilised in the channel in order to promote controlled bed scouring. The benefits for retaining LWD are clearly laid out in the recent EA R&D document, “Large Woody Debris in British Headwater Rivers”. Key conclusions of the report include:
 - An increase in both mean flow depth and velocity and variability of both parameters.
 - The development of high physical habitat diversity both in-channel and in the floodplain. Removal of LWD reduces both habitat quality and availability for juvenile and adult brown trout.

- Although active LWD dams may impair upstream migration of fish at low flows, they rarely do so at high flows.
- LWD have significant benefits to the control of run-off at the catchment scale.
- River and riparian management has important effects on the distribution and character of dead wood accumulation within the river system.

Practical management options to increase LWD include making use of fallen timber in order to create simple flow deflectors by wiring/staking these to the bank. These can be used to scour relatively homogeneous riffle areas in order to create deeper pools used by adult fish, and offer an effective and natural alternative to constructed gabion groynes. The resultant small pools can provide shelter areas adjacent to riffles during spawning periods, increasing the numbers of spawning fish.

It is important that the Environment Agency is made aware of any adopted policy to retain LWD in the channel, in order to prevent its removal during routine management operations undertaken by the Agency.

- A wide vegetated buffer strip should be created alongside all of the tributary streams and ditches in order to reduce the run-off of fine sediment into them. Additional protection from damaging fine sediment could be provided by creating reed-bed detention areas upstream of their confluence with the Dodnash Brook. Care should be taken when designing such systems not to damage the drainage regime of the surrounding arable land.
- Careful excavation of the steep banks could be undertaken in order to create wide low-level marginal shelves, valuable for the growth of emergent vegetation and increasing access for angling along key reaches. The low level damp margins created would also be of benefit to game birds, particularly pheasants, during periods of drier weather when access to water is at a premium. Excavated spoil could be disposed of under a Waste Licence Exemption on the surrounding arable fields outwith the flood plain. Information regarding waste licensing can be obtained from the local office of the Environment Agency. Prior to any work being undertaken, the estate should take steps to ensure that there are no water voles *Arvicola terrestris* present at the site. Water vole habitat is specially protected under the Wildlife and Countryside and Countryside and Rights of Way Acts, making it an offence to knowingly or recklessly damage or destroy it.
- It is understood that the estate may be entering the Higher Tier Countryside Stewardship Scheme. If this is the case, it would be possible to excavate some small flight ponds for duck shooting, along with associated wet flushes and scrapes in the floodplain near to the brook. These would have a high conservation value and, depending on the local surface geology, could provide a source of gravel that could be introduced into the brook in order to increase the abundance of riffle habitat, valuable for trout spawning. The best location for any such excavated wetlands would be in the old flood meadows towards the downstream end of the fishery.



Section of wet grassland that might be suitable for excavation of wetland area

- Access difficulties to the river preclude fly-fishing over much of its length, with bait fishing likely to be the only realistic option. Catch and release should be the norm in order to protect what is likely to be a limited and vulnerable stock of fish. Larger trout may enter the stream seasonally in order to spawn during the autumn with resulting parr likely to migrate downstream after one or more seasons.
- Note that all works to the bed or banks of the river or within 8m of its banks may require the written consent from the Environment Agency under the Land Drainage legislation. It is imperative that all relevant consents are obtained by the club prior to the commencement of any works.
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