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HABITAT ADVISORY VISIT, RIVER PANG AT MAIDENHATCH FARM, UNDERTAKEN BY VAUGHAN LEWIS, WINDRUSH AEC ON BEHALF OF MAIDENHATCH FISHING SYNDICATE MAY 2002

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1.0 Introduction

This report is the output of a site visit undertaken by Vaughan Lewis, Windrush AEC to the River Pang at Maidenhatch Farm, near Bradfield on 30 May 2002. The visit was sponsored by English Nature, as part of its commitment to support the biodiversity of chalk rivers through the offices of the Wild Trout Trust.

Comments in the report are based on observations on the day of the site visit and discussions with John Banks, a member of the Maidenhatch fishing syndicate. Throughout the report, normal convention is followed with respect to bank identification i.e. banks are designated Left hand Bank (LHB) or Right Hand Bank (RHB) whilst looking downstream.

2.0 Background

The River Pang is a small chalkstream tributary of the River Thames. It rises south of Compton (SU 526788) and flows initially in a southerly and subsequently generally northeasterly direction before joining the Thames at Pangbourne (SU633768).

The Pang has, in the past, been severely affected by groundwater abstraction for potable supply. However, recent changes to the abstraction at Compton have significantly reduced groundwater losses from the catchment, with a noticeably beneficial impact on river flows.

Within the boundaries of the Maidenhatch fishery, flow accretes to the Pang from the River Bourne from both discrete and diffuse inflows, and is lost via an overspill to the Maidenhatch Stream at the upper end of the fishery. This stream rejoins the Pang near to the downstream limit of the fishery.

Due to past anthropogenic changes to the river's course, the Pang is at a higher level than the Maidenhatch Stream and is thus effectively a perched channel.

The Maidenhatch syndicate owns the fishing rights to approximately 1200m of the river, from approximately SU 615732 downstream to SU624736. The syndicate comprises of 14 share holding members, with additional rods let on a day per week basis.

3.0 The Fishery

Beat 3:

At the lower end of the fishery, a grid had been installed across the width of the river by the syndicate, in an effort to prevent the escape of stocked fish. This was not in use on the day of the site visit, although members had expressed an interest in reinstating it.

The syndicate stocked approximately 600 fish annually. These were generally 12/13" in length, with a few larger fish. Members kill a percentage of these fish.

Structurally, the river was generally good, with a heterogeneous mix of habitat types including riffles, shallow glides and deep glides. These provided adequate habitat for juvenile and adult brown trout *Salmo trutta*. However, the quality of gravel in the riffles was generally poor, with a predominance of small gravel and sand, coupled with moderate levels of entrained fine silt. In addition, some of the riffle sections were overwide, consequently limiting the scouring and sorting of bed substrate.

This paucity of suitable spawning gravels was reflected in the intermittent recruitment of brown trout reported by the syndicate. It is understood that grayling *Thymallus thymallus* numbers have declined over the past ten years, with few fish now remaining within the fishery.

In-channel weed was moderately abundant, with water parsnip *Berula erecta* and starwort *Callitriche spp.,* the dominant species. Small patches of water crowfoot *Ranunculus spp.,* and unbranched bur-reed *Sparganium emersum* were also noted.

Riparian vegetation was generally abundant (see below), with strong marginal growth of yellow flag *Iris pseudacorus,* meadow sweet *Filipendula ulmaria,* hemlock water dropwort *Oenanthe crocata* and sedge *Carex spp.,* especially on the LHB.

Heavy shading was cast by mature riparian trees, particularly on the RHB (generally southern) bank. Some local coppicing had taken place. In addition, a number of large crack willow *Salix fragilis* had fallen into the channel and been removed, further reducing RHB shading.

The LHB has been regularly cut with a gang mower. In some places, this had left a rather narrow strip of emegent marginal vegetation, reducing cover for juvenile trout and potentially weakening vegetation protection of the bank.

Beat 2:

There were some short sections of reasonable quality gravel in this beat, with associated stands of water parsnip. RHB shading was extensive and heavy throughout the beat. Some short sections of overzealous bank cutting were again in evidence.

During the time spent walking this beat, it became clear that the water was becoming increasingly turbid, with a brown opalescence noticeable.

A number of downstream facing groynes were present in this beat. These had been installed by the syndicate with a view to addressing local issues of bank scour and to help scour deeper holding areas for adult trout. Access walkways had been constructed through sections of extensive marginal growth. These allowed anglers to cover the water without risking sinking into the soft sediment associated with the vegetated margins.

Beat 1:

A small concrete/plastic lined weir was noted at the lower end of this beat. Upstream of this, the river was over-wide, with a substantial covering of silt and fine sand on gravel riffles. Heavy shading was present from the RHB tree canopy. Further upstream, there were short sections of better quality gravel riffles. Well developed gravel/pebble point bars were present on the inside of meanders.

5.0 Recommendations

Following the site visit to the River Pang at Maidenhatch, a number of recommendations are made with a view to optimising the fishery value of the reach:

- There is little benefit to reinstating the grid at the lower end of Beat 3. Hatchery reared fish generally remain close to the site of stocking during the summer months, thus providing good recreational angling. During and after spawning, it is believed that the fishes inability to locate and occupy energetically efficient lies in the channel results in them being passively washed downstream and hence lost to the fishery. The provision of a screen will not prevent this. It will rapidly block with debris during high flow periods, causing water to overtop it, allowing access downstream for fish.

  One way of retaining stock fish during the winter that has proved effective is to feed the river on a regular basis with floating pellets. This has the dual benefit of providing much needed nutrition for fish during the winter months, whilst also behaviourally reinforcing the fishes association with the Maidenhatch reach of the river. Towards the latter part of the winter immediately prior to the start of the fishing season, feeding can be gradually reduced or stopped, allowing a return to a more natural regime.

- Given the fact that the majority of stocked fish stay reasonably close to the site of their introduction during the summer months, it is recommended that the whole of the Maidenhatch fishery is stocked, with fish introduced in small groups of 5 or so throughout its length.

- The quality and availability of suitable spawning gravel within the fishery is likely to be limiting the abundance of trout. The quality of the gravel can be improved by establishing a regime of cleaning spawning gravels each September. This can be achieved by either manual raking, or by the use of high-pressure water jets. Care must be taken to clean riffles rotationally, with only short sections being treated annually. It is important that the EA are contacted prior to any cleaning of gravel, due to the possible discoloration of water in the river resulting from the operation. The same concerns dictate that downstream neighbours should also be forewarned of the operation.

- The quality of the existing spawning gravel could be improved by selective narrowing of overwide riffles by the installation of faggot bundles. Narrowing of the channel can significantly increase water velocity, increasing scour and hence

decreasing the amount of fine sediment deposited on the gravel, whilst increasing the abundance of valuable marginal cover for swim-up fry. The arisings from the coppicing (see below) should be used to create faggots, roughly 2m long with a diameter of approximately 300mm. Once manufactured, the faggots can be used to locally narrow the channel. They should be pinned in place using wooden stakes and backfilled with secured brashings. The top of the faggots should be set at approximately 100-150mm above mean summer water level. Further details of faggoting techniques are provided in the Wild Trout Trust's "Guide to Improving Trout Streams" (attached).

- In order to increase the availability of spawning gravel, riffles can be constructed from imported gravel and stone. This is a very effective but relatively expensive operation. Typically, a 15m riffle would cost in the region of £1,500 to construct. It might be expected to produce perhaps 50 parr annually, hence reducing overall stocking costs. Work of this nature requires significant planning and should not be entertained without further detailed advice.

- Another potential source of semi-natural fish would be the use of a deep substrate incubation box. Basically, these are gravel filled boxes, approximately 0.6m in each dimension, that are filled with suitably sized gravel and seeded with 10,000 - 20,000 trout eggs. A water feed at the bottom of the box allows the eggs to incubate and hatch. Once they reach the swim-up fry stage, they leave the box via the overspill pipes, stocking themselves into the river. In effect, they are naturally reared fish without the unhelpful behavioural modifications associated with hatcheries. Such a system could be established using the existing impoundment at the upper end of the fishery, provided that the co-operation of the upstream riparian owner could be gained. More details on incubation boxes can be found on the Wild Trout Trust web site www.wildtrout.org or in Volume 2 of the Trust's magazine, *Salmo trutta*.

- If a regime of feeding stock fish over-winter and/or some of the recommendations to improve natural recruitment are adopted, then serious consideration should be given to increasing the level of catch and release of fish by members. By careful management, it should be possible over time to reduce the number of hatchery origin fish introduced annually, with associated ecological and financial benefits.

- A number of small groynes have been installed facing downstream. It is generally now acknowledged that groynes are best installed facing upstream in order to concentrate flow to the centre of the channel, reducing the amount of damaging downstream bank erosion.

- One of the most significant impacts on the fishery is the heavy shade cast in places by riparian trees, particularly those growing on the RHB. This shade is restricting the growth of marginal vegetation, with associated damaging impacts on the rate of erosion, the provision of marginal cover for fry, and water flow velocity. In order to address overshading, the establishment of a regime of limited, rotational coppicing would be of great benefit. Increasing light penetration into presently overshaded river sections would be of benefit to instream vegetation and valuable fringing marginal vegetation. The conservation value of the existing trees should not be under-estimated and great care should be exercised in the selection of trees

to be cut. A felling licence is required from the Forestry Authority. Clearly, the assistance and consent of Englefield Estate will be needed for any major tree work. It is possible that the Estate may be prepared to enter the riparian fringe on their side of the river into some type of agri-environment or woodland management scheme. It would be worth pursuing this idea with the Estate and DEFRA.

- The LHB of the fishery is cut to create an access for members. This in itself is fine. However, in places the cut has been rather heavy, reducing the marginal fringe to a very thin strip of little value. It is recommended that an un-cut margin of at least 1m (ideally more) is left in order to provide both useful habitat and an element of bank protection.

- The increase in turbidity at the fishery during the day was noticeable and interesting. It seems likely given the timing of the change and prevailing weather conditions (i.e. towards the middle of the day during warmish, bright weather) that the source of the turbidity lies in diatomaceous algal blooms. These grow on the bed of overwide, nutrient rich river channels, and combine with bacteria and organic/inorganic sediment to form a dense mat. As sunlight increases, photosynthetic activity causes the mats to "gas-up" and rise to the water surface. They then break up, releasing fine sediment into the water column. Control of these blooms is very difficult and requires considerable effort on a catchment scale to both improve channel form and reduce nutrient input. Recent and on-going changes to agriculture and the imposition of Nitrate Sensitive Zones throughout England are initiatives that may help in the resolution of this issue.

- It would be of benefit if a fishery survey were undertaken in order to provide a snapshot of fishery's status and to provide a baseline against which future changes could be monitored. Similarly, a macro-invertebrate survey would be useful, particularly given the recent installation of fly-boards at the fishery.

- Any works to the bed or banks within 8m of a river require the previous written consent of the Environment Agency. In addition, the Agency's consent is required under Section 30 of the Salmon and Freshwater Fisheries Act 1975, for the introduction of any fish or eggs to any inland water.