



**HABITAT ADVISORY VISIT TO THE
BLICKLING FISHERY, RIVER BURE, NORFOLK**

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BLICKLING FISHING CLUB, MARCH 2006**

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1.0 Introduction

This report forms the output of a site visit to the River Bure at Blickling Norfolk on 10th March 2006 on behalf of the Blickling fishing club. Information in the report is based on observations on the day of the visit and additional comments provided by Michael Roberts, club secretary. This visit was funded by the Environment Agency (EA), as part of the Cinderella chalkstreams initiative.

Blickling fishing club had 40 members. They controlled approximately 5km of fishing, largely within the boundary of the National Trust's Blickling Hall Estate, with the downstream boundary located at Ingworth Bridge.

Throughout the report, normal convention is followed, with right bank (RB) and left bank (LB) identified when looking downstream.

2.0 Habitat Assessment

This advisory visit was undertaken following a period of heavy rain. As such, visibility into the channel was poor. Some of the habitat assessment was therefore, by necessity, inferred.

Upstream of Ingworth, the river was constrained by high banks of spoil deposited largely on the RB, following historic dredging operations. As a consequence, the hydrological connectivity between the river and its floodplain had been significantly. Some sections of the raised bank appeared to be comprised largely of finer sediment, with other sections clearly having a larger percentage of flint gravel.

The river had an artificially straightened channel form. The RB was fenced against agricultural stock, with a well-developed marginal fringe of emergent vegetation, largely branched bur-reed *Sparganium erectum*, reed canary grass *Phalaris arundinacea*, reed sweet grass *Glyceria maxima* and sedge *Carex* spp. The LB fringe was substantial but less well developed.

The channel was overdeep as a result of the dredging, with a substrate largely comprised of fine sediment. There was little evidence of gravel bedded shallow riffles within this section.

An old meander loop had been cut off from the main river, probably during the dredging.

A small carrier was present in the RB field. Flow in this channel was derived from overspill water from the upstream Blickling Estate lake. This channel had sections of gravel bedded shallows, with some evidence of agricultural stock erosion.

The main river was bounded by isolated stands of alder *Alnus glutinosa*, some of which were infected with the fungal disease *Phytophthora infestans*.



Downstream reach of the Blickling fishery

Approximately 600m-800m upstream, instream habitat was substantially improved, with a more meandering planform, steeper gradient, greater diversity in flow, and an increased abundance of shallow, gravel bedded riffle sections. The banks of the river were not as high, probably indicating that less dredging had been undertaken historically. Both banks were well fenced against stock, with strong marginal growth present. There was more tree cover in this reach, with the upper section bounded by a wood.

Throughout both reaches there was a lack of Large Woody Debris (LWD) in the river, with an associated lack of scouring of the bed and sorting of substrate. Generally, the club had a policy of removing fallen branches and trees from the river during winter working parties. Some light trimming of bankside trees had also been undertaken in order to allow access for flyfishing.

At the upstream limit of this reach, the gradient of the stream increased slightly, with more gravel riffles present. These areas were known to produce good numbers of wild trout to members throughout the fishing season. There was a poorly fenced cattle drink adjacent to a long riffle. Sediment was clearly being mobilised from the exposed mud at this location into the river.



Shallow gravel riffle adjacent to poorly fenced cattle drink

There were small stands of mixed weed within the channel including water crowfoot *Ranunculus* spp, lesser water-parsnip *Berula erecta* and starwort *Callitriche* Spp. In contrast to the downstream Abbot's Hall fishery, very little weed cutting is routinely undertaken.

Through the Slaughter's Loke reach, woodland cover increased, with a strong LB fringe of mainly alder. The RB was more open and fenced, with land use beyond the fence line dominated by wet grassland. The channel was between 4m and 6m in width, and had a relatively steep gradient. There was a much less obvious raised flood bank along the river, indicating that less bed material had been removed during past dredging. The increased amount of shallow gravel riffle and glide habitat throughout the reach tended to confirm this observation. There were stands of lesser water parsnip in the channel, with a well-developed fringe of common reed *Phragmites australis* on the LB.

Undercut banks, and tree root systems provided cover in channel, although there was again a lack of LWD in the river, with the EA routinely removing all fallen trees and branches every 2 years.

A small groyne had been constructed from flints. This was functioning well to create increased flow diversity and local scouring of bed sediment.



Flint groyne



Increased gradient and shallow riffles in Slaughter's Loke

Upstream of Slaughter's Loke, the river ran through a wooded section. The channel was relatively shallow and wide, with significant amounts of fine sediment entrained within the sections of shallow riffle. As a consequence, the substrate was very uniform. This section of river would benefit greatly from an increase in the amount of LWD in the channel. The club had attempted to address the relative lack of feature in the channel by the construction of a number of small upstream facing 'v' groynes constructed from a mix of flint and wooden stakes. These were functioning well.



Upstream 'v' groyne

Upstream on Blickling Mill the river was far more in connectivity with its flood plain, with less evidence of extensive past dredging. The river had generally good in-channel habitat and had produced large numbers of wild trout in the past. However, recently catches had declined. The river was fenced, although some of the LB fencing had fallen into disrepair. Despite this there were well-developed margins of emergent vegetation along both banks. Land use was wet grassland on both banks.

A significant amount of dredging of the small floodplain drains and streams had recently taken place here, and elsewhere on the fishery. The logic of this work was not clear. However, what was clear was that there had been a significant and probably damaging impact on the ecology of these channels and the surrounding land.

Sections of this reach ran through woodland, with increased shading cast over the river. As a consequence, the channel was wider, with little sorting of the uniform, silty bed. A series of groynes had been installed in order to provide some diversity in the flow. Little LWD remained in the channel. A combination of selective rotational coppicing and the introduction of LWD would have a significant beneficial impact on this reach.

A little egret *Egretta garzetta* was noted at the site. This species is a recent addition to the bird fauna of the Bure. Whilst welcome, there is a potential for increased predation from these birds unless adequate cover is provided for fish throughout the fishery, particularly during the winter period.

3.0 Fish Stocks

The club stocks up to 500 brown trout in excess of 30cm annually. Catch returns produced by members since 1998 indicate an annual rod catch of between 360 and 680 fish, with approximately 25% and 60% of these assessed as being wild trout.

4.0 Recommendations for enhancement

- The past dredging of the river has seriously degraded habitat in some reaches, with a paucity of gravel riffles. This could well be a limiting factor on the brown trout population, with a habitat bottleneck potentially present for the spawning and juvenile lifestages.
- In order to redress this habitat deficit, the raised banks created by deposited dredgings could be partially or totally removed in various reaches of the river. Screening of the dredgings could potentially create a valuable source of gravel for the replacement of previously excavated riffles. Small trial pits should be dug into the raised gravel bunds in order to ascertain the percentage of gravel present. If adequate amounts of gravel were found, then it would be worth screening the gravel on site and using it in the construction of new riffles. In addition, carefully planned excavation could result in the creation of a wide marginal berm at or just above summer water level, with associated benefits to a range of wildlife, and increased hydrological connectivity between the river and its floodplain. It is understood that the National Trust has an aspiration to improve the quality of riverside flood meadows for wading birds and wildfowl. Adoption of this prescription would be one mechanism for achieving this goal.
- The other significant constraint on the fishery quality was the heavy loading of sediment present in the river. Much of this clearly originated from diffuse source run-off within the catchment. It is understood that the Environment Agency has undertaken some work to address this issue. They should be supported with any initiatives aimed at reducing the input of fine sediment. Major landowners within the catchment, including the National Trust, should be asked to provide their endorsement of any 'Landcare' type scheme; such positive management would compliment the National Trust's 'whole farm plan' approach to its holdings.
- More broadly, the National Trust supports fishing on its properties and is keen to see fisheries developed, both as recreational and ecological assets. The Trust has produced a fishery management publication for its fisheries (copy enclosed). It would be worthwhile for the club to contact Mark Walsingham mark.walsingham@nationaltrust.org.uk who deals with fisheries for the Trust at national level.
- 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. It is understood that the downstream Abbot's Hall fishery has a set of jetting equipment that could potentially be hired to the club. 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 old meander loop at the downstream limit of the fishery could be excavated and reconnected to the main river, restoring some sinuosity in this otherwise relatively

straight reach. Partial infilling of the present channel would be necessary in order to force water down the restored channel. The present river could be retained as a flood relief channel, with the infill used to create an overspill at an agreed level. Alternatively, if flood defence constraints permit, the present channel could be infilled with the spoil excavated during the restoration of the meander.

- Despite the presence of good fencing along most of the fishery, short sections remained un/poorly fenced, for instance at the cattle drink in the lower fishery. These remaining sources of fine sediment should be addressed, with adequate fencing provided against agricultural stock.
- Where the fishery is adequately protected against agricultural stock grazing, it would be of great value to plant trees along both banks of open sections of the river. Suitable trees including goat willow, hawthorn, ash *Fraxinus excelsior* and hazel *Corylus avellana* could be planted in small blocks.
- If the recommendations of this report are adopted, and if increased control of sediment run-off is achieved on a catchment-wide basis, there is a possibility that the number of stocked fish could be reduced. This would not only save the club money, but would reduce any pressure on wild trout stocks from introduced fish. If a reduction in stocking is planned, the club should still make a Section 30 consent application to the EA for 500 fish, thus safeguarding its stocking level for the future under the terms of the Agency's Trout and Grayling strategy.
- Where the river was overshadowed by riparian trees, a programme of rotational coppicing should be implemented in order to reduce shading of the channel. Careful selection of the multi stemmed alder and hazel stools for cutting over a 10 year period will ensure a mix of open and part shaded sections of channel and a mixed age stand of re-growing marginal trees. A felling licence may be required from the Forestry Commission for any felling. Timber resulting from the cutting programme can be sold as firewood or used in the construction of LWD groynes (see below).
- The lack of any LWD in the fishery reduced the habitat quality significantly. In low energy lowland streams, the presence of LWD is one of the few habitat features that can increase local flow velocity enough to cause scouring and sorting of the bed. Without LWD in the channel, instream habitat will remain relatively homogeneous, with a uniform layer of fine sediment present over much of the bed. 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. Faggot bundles could be constructed from brushwood and used to infill the areas behind the LWD groynes. The groynes would scour relatively homogeneous riffle areas, creating deeper pools for used by adult fish. These small pools can provide shelter areas adjacent to riffles during spawning periods, increasing the numbers of spawning fish. Provided that the LWD is adequately secured in the channel there is very little risk of it posing an unacceptable local flood risk, particularly as land use either side of the fishery is managed as wet grassland or wet woodland.
- Subject to full Health and Safety Training, a hand operated Tirfor winch <http://www.tirfor.co.uk/> would be of great use for the construction of groynes from felled timber.



LWD in the Bure at Blickling

- It is important that the EA 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. There seems little logic in the EA's continued removal of LWD from the channel in what appeared to be a relatively low risk area with respect to flooding. It is recommended that the Agency should be asked to justify their present policy that is having such a detrimental impact on the ecology of the river.
- Otter *Lutra lutra* and water vole *Arvicola terrestris* were present at the site, with a programme of mink control designed to protect voles, ongoing using Game Conservancy designed trapping rafts. Much of the work recommended in this report would be of great benefit for both of water vole and otter.
- 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.
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