Advisory Visit

River Nidd, Harrogate Angling Association

15/06/2018

Key Findings

- Both instream and bankside (riparian) habitat are generally good throughout Harrogate Angling Association waters. Indeed, buffer strip maintenance in the eastern half of Ribston Park is exemplary. However, the presence of historic flood bunds is causing considerable incision of the channel and leading to some sluggish impounded sections.
- Maturity, and lack of natural regeneration, of the riparian tree cover in the upper waters is of concern.
- Small tributaries to the north of the Nidd are generally in poor condition, being used as part of a drainage network. The Crimple was not investigated but probably contributes to the fish population.
- The Environment Agency gauging weir at Hunsingore is a major obstacle to fish passage but is to be addressed in the very near future.
- Current conditions on the Nidd are perfect for a mixed fishery with trout contributing but unlikely to form any significant proportion. While stocking has been attempted in the past, it will not be a 'cost-effective' method of diversifying the fishery, and all the available science and fishery data point to it being detrimental both to wild trout and coarse species populations.

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1.0 Introduction

This report summarises the observations and discussions of a site visit to the Harrogate Angling Association waters on the River Nidd, N. Yorkshire, undertaken by Jonny Grey of the Wild Trout Trust. The invitation was suggested by the local Environment Agency Fisheries Officer, primarily to assess the suitability of habitat for trout (stocked and wild); several members of the HAA committee accompanied the walkover.

Normal convention is applied with respect to bank identification, i.e. left bank (LB) or right bank (RB) whilst looking downstream. Upstream and downstream references are often abbreviated to u/s and d/s, respectively, for convenience. The Ordnance Survey National Grid Reference system is used for identifying locations.

	Upper Section	**Lower Section**
River	R Nidd	R Nidd
Waterbody Name	Nidd from Low Bridge on Briggate (Knaresborough) to Crimple Beck	Nidd from Crimple Beck to River Ouse
Waterbody ID	GB104027068298	GB104027068292
Management Catchment	Swale Ure Nidd and Ouse Upper	Swale Ure Nidd and Ouse Upper
River Basin District	Humber	Humber
Current Ecological Quality	Overall status of **Moderate** ecological potential based upon an overall ecological status of **Moderate** and overall chemical status of **Good**	Overall status of **Moderate** ecological potential based upon an overall ecological status of **Moderate** and overall chemical status of **Good**
U/S Grid Ref inspected	SE 38858 54400	SE 40535 53074
D/S Grid Ref inspected	SE 40535 53074	SE 44779 54005
Length of river inspected	~900m in total	~1250m in total

Table 1. Overview of the waterbody: details of sections visited. Information sourced from (http://environment.data.gov.uk/catchment-planning/WaterBody/)

Under the Water Framework Directive (WFD), the two separate waterbodies of the Nidd (Table 1) have a hydromorphological designation as Heavily Modified (HMWB). Through two cycles of assessment, both achieved *Moderate Ecological Potential* overall. It is important to note that five ecological classes are used for WFD Water Bodies: high, good, moderate, poor, and bad. These are assessed against 'ecological status' (or 'ecological potential' in the case of HMWBs). The overall evaluation of *Moderate Ecological Potential* was derived from an overall ecological classification of Moderate and overall chemical classification of Good. Invertebrates were classified as High, despite Phosphate (Poor) dragging the physico-chemical quality parameters down. The upper waterbody was also classified as Poor for fish.

2.0 Habitat Assessment

2.1 Ribston Park

The small (un-named?) beck joining the Nidd from the LB marks the upper limit of the HAA waters (Fig 1). The confluence was assessed and while passable to small fish, the incised nature of the tributary channel, shallow depth of water of the featureless silty bed, and the dense stands of Himalayan balsam (*Impatiens glandulifera*) indicate that the beck is probably fishless. A quick scan of maps online points to New Cut and Great Dike upstream, hinting at the degradation of a former beck into a ditch system which probably conveys a considerable amount of fine sediment from agricultural practice into the Nidd during spate flows.

Fig 1. The mouth of the small (un-named?) beck that joins the Nidd from the LB and marks the upper limit of HAA waters. The beck is heavily incised and the bed a deep fine silt. Himalayan balsam was rife.

The mainstem Nidd is fairly deep and sluggish as it hits the natural side of the valley at High Wood and returns across the valley via a series of gentle meanders. What was once probably the natural path of the river has effectively been 'fixed' in position by flood bunding evident on Ordnance Survey maps. Recent storm damage had introduced some relatively large woody material into the river (Fig 2). While this may be considered as untidy and a potential blockage, it is entirely natural, and rarely will such jams obstruct fish passage. Instead, it is providing vital refugia for fish of all species as well as good feeding opportunities. Better to have some areas where fish can reside safe from angling or predation pressure than have every metre of fishery accessible to anglers.

Fig 2. Recent storm damage and clear evidence of bankside trees trapping flood debris. All this low cover is vital for protecting fish from predation and providing flow refugia.

Under different ownership and livestock regimes, it is clear to see the contrasting grazing pressure on opposing banks (Fig 3). Low density of livestock on the LB has resulted in a diverse sward where even slumps in the bank have revegetated and stabilised, as compared to the heavily grazed and almost monoculture grass with evident erosion patches on the RB. However, even on the LB, there was a distinct lack of tree regeneration via self-setting, except in very inaccessible areas; livestock will favour browsing on saplings because of their higher nutritional content (see Fig 5). Set back from the bank top, near to Ribston Hall, are several small fenced exclosures where trees have been planted. As many of the trees lining the river bank are mature, it will be necessary to exclude livestock in this manner to establish a more diverse age structure to the riparian tree community. The lack of age diversity means that there are no or few trees to replace those that will, with time, be lost.

Fig 3. Both banks are grazed by livestock, but the LB (right of picture) is at much lower livestock density and the difference in sward height and composition is evident. The arrow highlights a former slump in the soil which has been almost completely revegetated and stabilised, creating a better bank profile.

On the inside of a sweeping bend, several large crack willow (*Salix fragilis*) had been recently removed, presumably to reduce erosion pressure on the RB (Fig 4). However, at the top of the RB, there was an obvious lack of root structure (caused by the continual grazing of the shoots; see Appendix) which should provide a matrix to bind soils together (Fig 4; lower panel). Hence, as was clearly evident elsewhere both u/s and d/s, if a natural and diverse flora is maintained (by livestock exclusion or substantial reduction in density), then river banks are much more resilient to erosion during spates, even on the outside of bends. The retention of the crack willow stumps maintains slack water refugia which will be of benefit to fry and invertebrates favouring more depositional habitats.

Fig 4. Clearance of large crack willows on the LB, presumably to reduce erosion pressure on the RB on the outside of the bend. However, a high density of cattle with unfettered access to that bank will always cause erosion issues. Lower panel highlights backwaters created by remnants of willow from the clearance; these are important refuge areas for fry.

Fig 5. Fantastic low cover (fry habitat) provided by willow immediately adjacent to a shallow riffle (potential spawning and later juvenile habitat). Close linkage of habitats is important to maximise wild fish production. Note the lone willow in the foreground – despite low livestock density, young self-set trees were comparatively rare because they are preferentially browsed upon.

Some anglers express concerns regarding the overgrowth of willows, as well as whether to remove standing dead wood. Both are important habitat features that should be retained wherever possible. Aside from stabilising the bank toe with their roots, willows often develop trailing branches that provide essential, low cover to hold all life stages of fish depending upon adjacent habitat and water depth (Fig 5). This can be particularly important for grayling and other weaker swimming coarse species in the spring. They also provide vital structure in which fish can evade predators and present a natural method of reducing predation. On occasion, these may trap floating debris and build up rafts which allow trout, grayling and chub (and some ambush predators like pike and perch) to feed securely out in the main flow where there will typically be a greater supply and diversity of food in the drift and on the surface. They rarely constitute a flood risk as a small rise in river level will tend to break up and disperse such rafts. The fish holding capacity of a river will be greatly increased by the presence of such features. Fishing to the feature maybe slightly trickier, but will bring greater reward through the increased number of fish it holds than if the feature were not there at all. On longer sections (>50m) of willow on both banks, it might be worth the club coppicing one or two on a rotational basis, or hinge some over the water (e.g. to recreate what has happened naturally in Fig 5 & 6) to allow some angler access and to stimulate growth at the base of the trunk. A simple management regime will break up an otherwise uniform canopy, but it should be remembered that the exercise is not to 'tidy up' the river.

Fig 6. A fantastic example of natural woody material contributing to channel habitat. A crack willow has hinged under its own weight and is now growing horizontally in a d/s direction. It has encouraged the development of a deposition bar of cobbles and gravel, while the living crown is providing low cover refuge from predators and spate flow. It is likely that roots have struck from the horizontal trunk into the soil wherever there is contact, thereby increasing bank resilience to erosion and naturally anchoring the tree.

At several locations within Ribston Park, the Nidd has split around an island (Fig 7). Typically, there is a deeper and wider channel carrying the majority of flow and a shallower, narrower 'backwater' channel providing very different flow characteristics and habitat features. The latter will be typically used by smaller individuals or at specific times of the year, e.g. as a nursery for fry, but may also feature as a temporary spate refuge for larger individuals. While the smaller channel may not have much direct worth for angling, it must be remembered that such habitats are vital for fish of different life stages at specific times of the year.

Fig 7. Two examples of where the channel has split around an island with each sub-channel providing different habitat features and, hence, contributing to greater diversity overall.

Some sections within the upper part of Ribston Park are quite sluggish and canal like. The actual impounding features appear quite natural; seams of bedrock. However, the depth and lack of energy in the reaches u/s have been historically (and are still) exacerbated by the flood defence bunds, probably derived from dredged material, evident on both banks (Fig 8). These constrain the lateral movement of water (and hence energy) under spate flows, resulting in the erosive power digging ever deeper into the bed. Only by removing the bunds and allowing the river to reconnect more naturally with its flood plain, will any significant rehabilitation of the channel cross-section be achievable.

Fig 8. A deep, sluggish, impounded section. While the actual structure causing the impoundment was a seam of bedrock and hence entirely natural, the bunds (highlighted by the dashed white line) exacerbate the problem.

Fig 9. Considerable erosion where livestock are accessing the river and crossing. This is exposing the roots of the stand of mature trees on the far side (RB) and will cause ingress of the fine, friable soils via guttering during rainfall, ultimately leading to the loss of those trees. This will, in turn, lead to further, more serious bank erosion.

One of the seams of bedrock was being used by cattle as a crossing point (Fig 9). While the low density of stock is retaining the bank profile and vegetation structure in reasonable condition elsewhere (while noting the lack of self-set trees), the erosion is focussed at the access points on both banks, leading to considerable areas of bare soil and guttering along the tracks, in turn leading to soil ingress to the river. It does not appear necessary for cattle to cross here, and ideally should be discouraged.

Fig 10. Some fairly natural sequences of pool-riffle-glide were evident above the main Ribston Park bridge, with the shallows well populated by water crowfoot and starwort.

Fig 11. Colonisation of a deposition bar by terrestrial plants has consolidated it into another small island that diversifies the channel shape. It was good to see dead wood left standing; it provides important habitat for many decomposer invertebrates and potentially as a roost for bats.

Despite still being heavily incised (the river level is a long way below bank top level; again, a function of the flood bunds), the channel is sufficiently wide above Ribston Park Bridge to allow the (re)development of natural features: deposition bars, meanders, islands, and pool-riffle-glide sequences (Figs 10 & 11). In the shallow riffles, there were luxuriant stands of water crowfoot and starwort, perfect for macroinvertebrates. This mosaic of habitat is ideal to host a greater range of species and life stages, both for fish and their food. The remnants of a stone check weir u/s of the bridge does not pose any issues for fish passage (Fig 12).

Fig 12. The remains of a low, stone check-weir to align the river with the ornamental bridge is degraded sufficiently so as not to obstruct fish passage.

Fig 13. Examples of relatively generous riparian buffer-strips protecting the river.

Downstream of the bridge, the banksides (riparian zone) take on different characteristics as the livestock are excluded by fencing and, even in the arable fields, the river is protected by an ample buffer strip, generally >8m and in some places up to 30m (Fig 13). This is fantastic habitat for invertebrates which may end up on the fish menu at a later stage, so care should be taken when creating access to swims / pegs. Unfortunately, there was evidence of giant hogweed and Himalayan balsam, two invasive non-native species, and having pioneer species traits (which means they take advantage of and readily colonise any disturbed areas), these are likely to spring up along tracks and in prepared pegs. Extreme care must be taken when dealing with the former, but the club seems well versed in its treatment.

The river was spot checked near to the beehives and from opposite the confluence of the R Crimple. Fish access to the tributary appeared good, but there is apparently a major obstruction to passage just a short way u/s (see Recommendations). Aside from the issues of channel incision, there were plenty of willows growing near to the toe of the bank, providing low cover and diversifying the flow and depth regime (Fig 14). Shallow riffles were well populated with water crowfoot and there was abundant fly-life on the few stones that were turned. Indeed, when wading to examine the invertebrates, several large fish were disturbed, their presence revealed by large bow-waves moving off to the nearest overhanging willow. Again, there was ample evidence of a rich habitat mosaic, providing closely linked niches for a variety of fish species and life-stages (Fig 15).

The abundance of trailing branches, submerged weeds, and silt free gravels maintained by the focussed flows between the submerged weed stands (e.g. Fig 16), provide good habitat for spawning for all the fish species so that component of the life-cycle is unlikely to be a bottleneck. The most vulnerable stage is generally the fry, soon after emergence, as they are poor swimmers so they need slack water refuges in the form of backwaters and overhanging / submerged vegetation. Again, such habitat did not appear to be in short supply but it is one of the most threatened, inadvertently so by over-zealous work-parties.

Fig 14. Abundant overhanging and trailing branches from willow provide excellent refugia from spate flow and predators. Water crowfoot dominates the shallower riffles and glides between pools, again providing cover and no doubt full of food.

Fig 15. A 'Mr Crabtree' swim if ever there was one! Good depth variation in cross section and plenty of natural low cover for fish.

Fig 16. The tail end of a glide, into a shallow riffle. Streamers of water crowfoot help to focus the flow energy and keep the gravels loose and sparkling.

At the eastern side of Ribston Park, a small tributary enters the river near to the gatehouse (SE 41193 53239; Fig 17). It was only viewed from The Avenue and walked to its confluence. As for the tributary forming the u/s limit of HAA waters, this has clearly been straightened and dredged to act as a drain for farmland. Silt and nutrient problems were evident, but gravels were in abundance, so the lowest 100m or so might be worth investing a bit of time in to improve conditions for spawning habitat.

Fig 17. Upper left panel: looking u/s from the bridge (The Avenue) near to the eastern end of Ribston Hall at the incised and straightened tributary channel. Upper right panel: a small step into the bridge culvert is mostly passable and natural substrate throughout the culvert retains water depth. Lower panel: the tributary u/s of its confluence with the Nidd indicates fine sediment and excess nutrient ingress is an issue, but gravels hint at suitable substrate for spawning.

2.2 Hunsingore

Fig 18. Looking u/s from the footbridge at Hunsingore to the weir. The river is dominated by deeper glides but still with relatively natural riparian vegetation providing good cover.

A short section of HAA water at Hunsingore (SE 42832 53015) was viewed from the LB, between the substantial weir and the footbridge. The weir is an obvious barrier to fish movement, but it appears to be on the EA priority list to improve passage prospects; it will be worth the club keeping tabs on developments for this site with the local fishery officer. Giant hogweed was prolific near to the weir. Otherwise, emergent macrophytes (LB) and low, overhanging native tree cover (RB) provided good habitat.

A small dyke entering the Nidd from the LB d/s of the footbridge appeared lifeless and the strong smell and presence of sewage fungus prompted an immediate report via the EA hotline (0800 80 70 60). The small size of the waterbody and the degraded (straightened, trapezoidal channel) habitat with a perched confluence indicate that it is of little worth as fish habitat, but water quality should be monitored and reported whenever there are issues since this will affect the mainstem Nidd.

2.3 Cattal

Upstream of Cattal, a spot check was undertaken on ‘the match section’. Despite being constrained within flood bunds and thus maintaining a relatively uniform width, there were clear and marked depth changes in the channel profile, probably accentuated by the instream and riparian vegetation, and providing great habitat diversity (Fig 19).

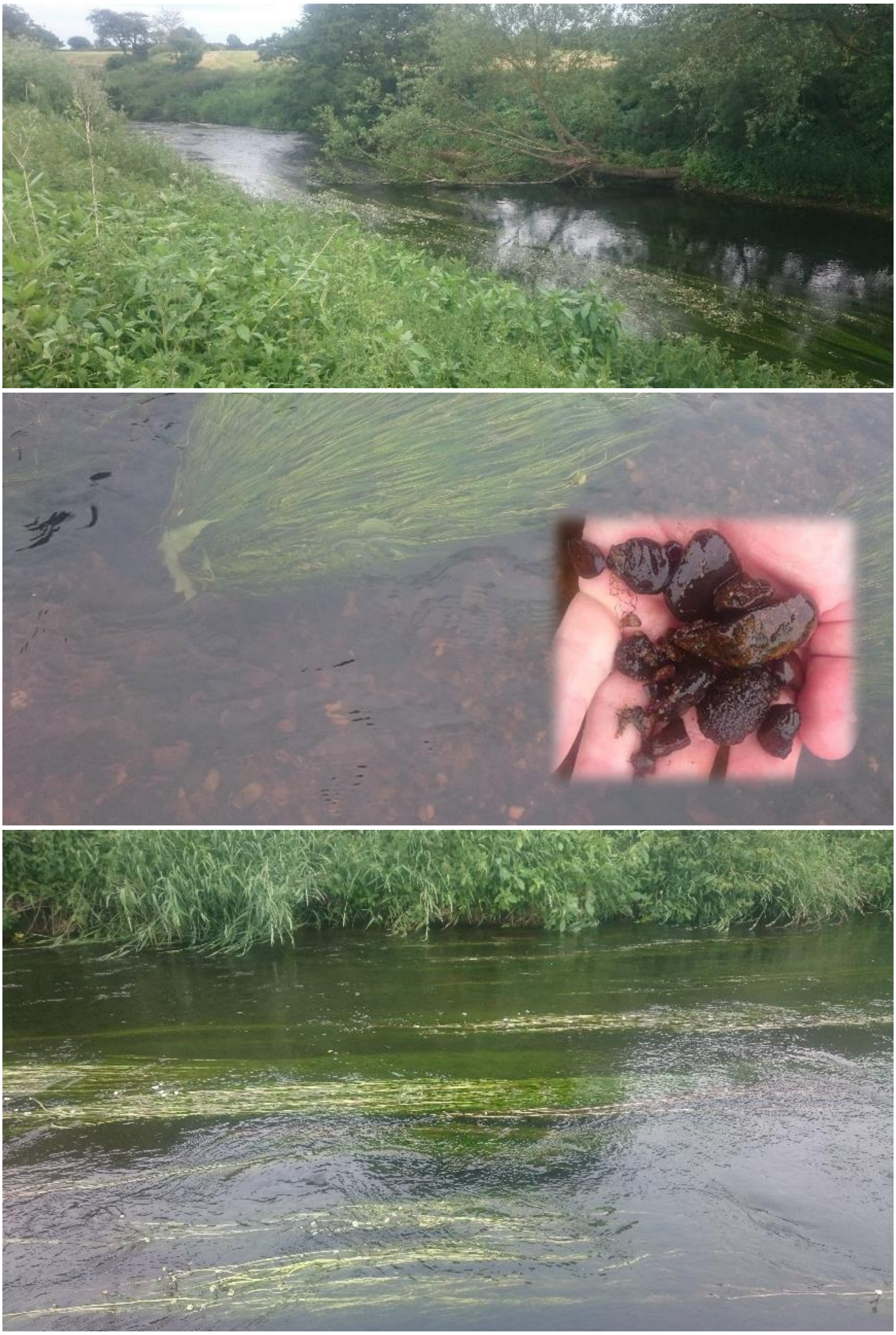

Fig 19. Shallow riffles with abundant submerged weeds force the water around the stands and through the gravels, keeping them clear of silt. Shaggy marginal vegetation slows the flow at the banks and provides refuge for smaller individuals and fry. Overhanging willows create deeper scour pools for larger fish.

At Cattal village, the channel is clearly incised and straightened to maintain its course through the historic bridge and hence the cross-sectional plan of the river is more uniform; it is relatively deep with sluggish flow (Fig 20). Water crowfoot and other submerged macrophytes provide the only instream habitat diversity, while emergent macrophytes line the banks. Some willows have been allowed to grow close to the waterline and their low trailing branches provide good cover, which should be maintained.

Fig 20. Looking u/s (upper panel) and d/s (lower panel) from Cattal Bridge.

3.0 Fishery Overview

The Nidd is a lowland river by the time it reaches HAA waters and while it has obviously been subjected to much historical dredging, straightening and flood bunding (which leaves a legacy of impact), the channel and habitat within is relatively diverse and generally in good condition. This is definitely helped by considerable protection of the riparian zone, especially through Ribston Park. A primary reason for the WTT visit was to assess the suitability of habitat for trout, so it is useful to take a step back and reflect upon the river as a whole.

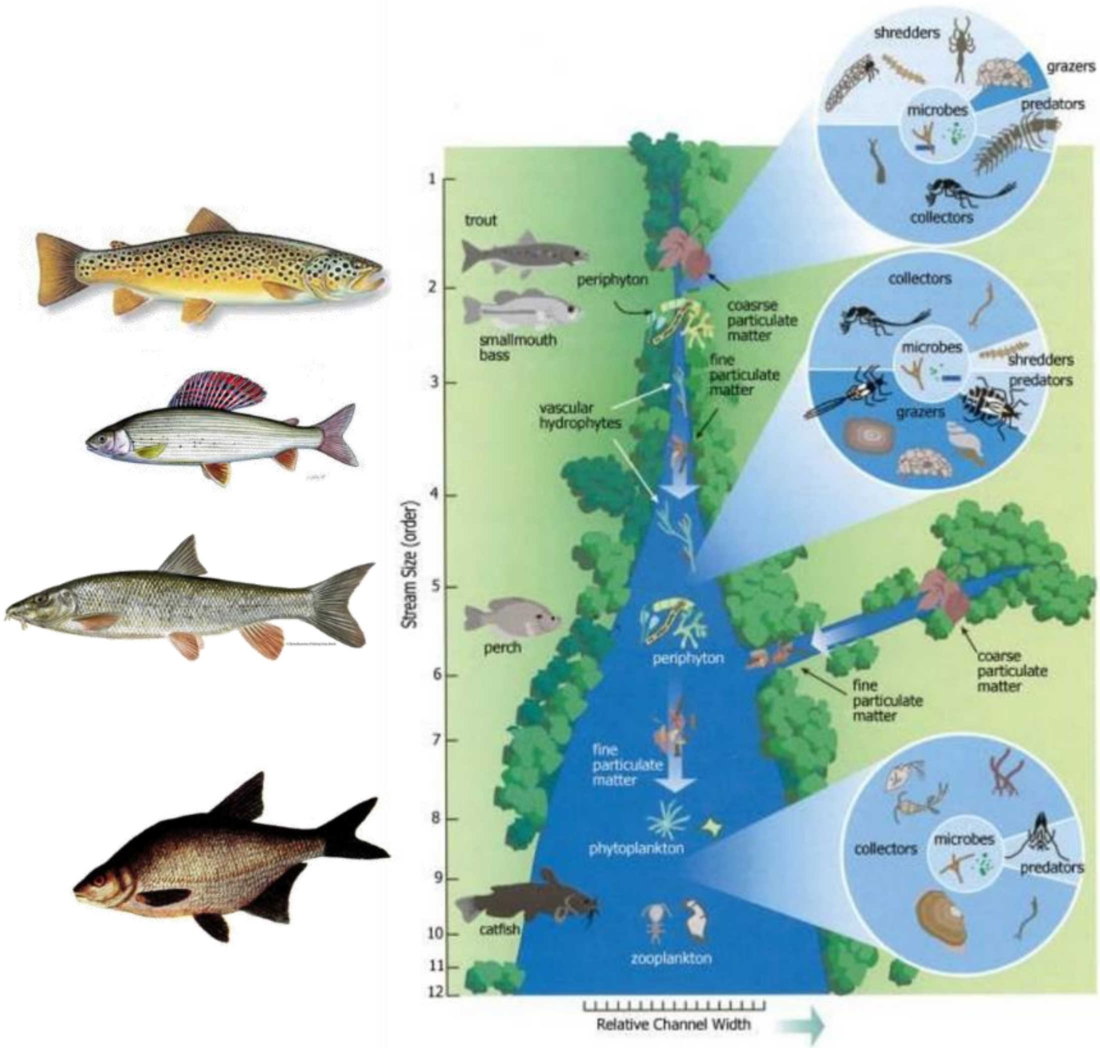

Fig 21. A schematic of the River Continuum Concept (Vannote et al 1980) with the classic European fish zonation (*sensu* Aarts & Nienhuis, 2003) added to the left panel.

There are various ways of classifying the zonation of rivers, the simplified description of typical changes from headwaters to estuaries, using characteristics such as the basis of production (what provides the energy at the bottom of the food web) right through to the fish communities. Figure 21 is a composite schematic of the classical description of zonation as a continuum (the River Continuum Concept proposed by Vannote et al 1980) overlaid by the European fish zonation (as proposed by Aarts & Nienhuis, 2003). Essentially, the HAA waters lie on the cusp of what are classified as Grayling and Barbel Zones, and while brown trout will be present, they are unlikely to contribute substantially to the biomass of the fish community as a whole. Historically, brown trout may have been more prevalent in the system (they dominate the headwaters) when it was more nutrient poor, but agricultural intensification has led to enrichment of the majority of our rivers and allowed coarse fish species to colonise further upstream, as has the channel degradation and reduction in flow diversity. Current conditions clearly favour grayling and barbel.

HAA used to stock trout, but the current scientific evidence and that derived from angling clubs' experience all points to such endeavours as having negative impacts, not only on the residual wild population of trout, but also on coarse species. One reason is that stocked trout are not as fit as their wild counterparts and will tend to occupy the deeper and slower flowing parts of the system, and over time, move inexorably downstream to be lost from the club waters. However, whilst residing in those areas, they are more likely to interact with coarse species (compete for food, displace in aggression, prey upon smaller species) but they are also more difficult to angle for with the fly, so there is no gain from attempting to diversify the angling experience by introducing stocked trout. However, there is enormous potential for diversifying the angling opportunities for fly-fishers to target quarry such as grayling, pike, barbel and chub, with the occasional trout as a bonus.

WTT has extensive lay-summaries on the pitfalls of stocking on the website, and also a considerable number of club experiences with regard to the benefits of not (or stopping) stocking which may be of interest: **www.wildtrout.org/content/trout-stocking**

4.0 Recommendations

There are a few actions that might improve the fishery, and potentially the standing stock of wild brown trout in HAA waters.

4.1 Removal of flood bunds

This would be a major undertaking and would obviously involve considerable landowner buy-in (and funding). However, the single most beneficial action along the majority of the mainstem river would be to reconnect it with its floodplain and thereby reduce the incised nature. Regrading or reprofiling the banks would allow more energy dissipation over the floodplain and prevent the river continually digging deeper, reducing the number of canalised sections, renaturalising the channel, and improving access. It would also reduce flooding issues further d/s.

4.2 Fencing

Preventing livestock from accessing the riverbank is typically one of the greatest improvements that can be made to habitats on a river. This is generally not an issue along most of the HAA waters, except for tree regeneration in Ribston Park (see the Tree section), although some of the tributaries might need better protection.

If livestock poaching becomes an issue anywhere, then fencing should be considered and access to drinking water provided via mains supply (reduces issues with disease) or via solar (Fig 22) or pasture pumps (Fig 23). Watering points should be sufficiently removed from the watercourse so any poaching and accumulation of faecal material that develops around the focal point does not act as a source of sediment to the river.

Existing lengths of fencing should be maintained / repaired to ensure that they continue to fully exclude stock, particularly sheep which will gain access through the smallest of gaps. Sheep, although small, can cause significant issues due to their browsing/grazing style, which crops any growth back almost to ground level, leaving very little ground coverage or root structure remaining. Fence maintenance is especially important to check in fields that are only sporadically used for livestock; it is easy to forget to check the integrity of these.

Negotiations regarding fencing will have to be undertaken with any landowners / tenant farmers. Besides the environmental benefits, there are likely to be benefits from a land maintenance / animal husbandry perspective as well. Some incentives may be available through agri-environment schemes.

It is recommended that the Yorkshire Dales Rivers Trust are contacted as an ally in initiating any fencing schemes. Trust staff should have an understanding of the potential funding that may assist with the cost of fencing and are likely to be involved with similar work in the wider catchment. Note that Himalayan balsam stands will require more management where livestock are excluded.


Fig 22. Cattle excluded from a river bank and drawing water from the river via a pasture pump which they activate themselves by pushing it with their noses.


Fig 23. Solar-powered pumps to fill water troughs. Image courtesy of Ribble Rivers Trust.

4.3 Fish passage improvement

As noted in the main text, the weir at Hunsingore was the only major obstruction noted on the Nidd during the visit, and should be in line for fish passage improvement by the EA in the very near future. The weir on the Crimple is likely to be the focus of another WTT visit (invited by the EA in early 2019), so access along the Crimple is likely to improve soon.

4.4 Tributary care

The small beck at the eastern end of Ribston Park would benefit from some TLC to flush out some of the silt (although it would be wise to investigate the source and prevent it from entering the system).

Currently, it maintains a trapezoidal channel with little sediment sorting. By installing a series of off-set woody deflectors, a focal flow of water could be encouraged to meander more, thereby diversifying the depth regime. Interspersed, via the installation of paired deflectors, it is relatively simple to scour and sort clean gravels into specific locations that could be used by trout for spawning.

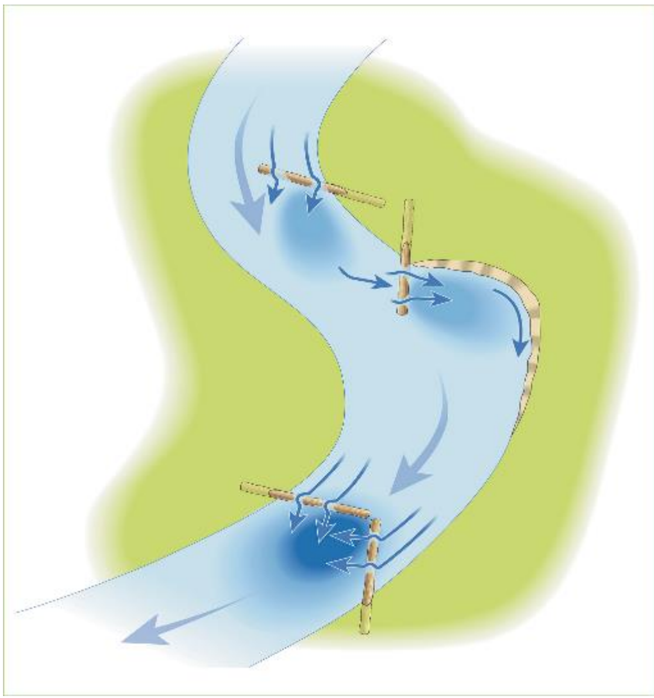

Fig 24. Conceptual diagram of use of woody material as deflectors. From the top of the figure:

Upstream angled – diverts flow to the centre of the watercourse, and creates localised scour; locating deflectors on opposite banks of a straightened section, but off-set in position can create sinuosity of flow without eroding the banks.

Downstream angled – diverts flow toward the bank, increasing likelihood of erosion and can be used to increase sinuosity of the entire channel. NOT TO BE USED HERE.

Paired upstream angled – focuses more flow to the centre and creates a deeper scour pool with associated ramp of sorted substrate further downstream.

Fig 25. Paired upstream deflectors being installed into Cock Beck, a tributary of the Wharfe.

4.5 Tree Work

The majority of HAA waters have fantastic cover from bankside trees. There was little evidence of pruning and tidying which is to be commended.

4.5.1 Planting

Most of the Nidd has sporadic, mature riparian cover comprising appropriate native trees, but is often only 'one tree deep'. As such, if a mature tree is lost, there is no self-set regeneration to plug the gap, and that gap is often quickly exploited by the river during spates, leading to the more rapid loss of adjacent trees via erosion. A riparian strip of trees of differing age structure and several trees depth (width) will provide a more varied light / shade regime, and more resilience. Planting is recommended wherever there is a lack of low cover and structure along the river margins, particularly within the fields that have been subject to prolonged livestock access. Most native deciduous species would be beneficial but particularly alder as its leaves are very rich in nitrogen (fixed by bacteria on root nodes) and it thus provides better quality leaf litter for invertebrates in autumn. Note that adequate fencing is key to protect such measures, as without it, any planting is likely to be targeted for browsing by livestock.

4.5.2 Laying

Where trees are already established along the bank, habitat improvements can be easily achieved by laying the trunks, or selected branches down into the watercourse to increase low cover and in-channel structure, particularly for fry refugia. This has occurred naturally at various points (Figs 6 & 15) but more could be introduced along sections where it is more scarce, or on the tributaries to pinch the flows and keep silt from settling. The laying method is usually limited to willow, elm, hazel, hawthorn and small alder, but some others can be laid carefully. Small to medium shrubs tend to work best.

The process involves cutting part way through the stem/trunk, a little at a time (like laying a hedge), until it can be forced over into the channel (Fig 26). The depth of the cut should be limited to only that which is required to bend the limb over, as this will retain maximum strength in the hinge and maintain the health of the tree/shrub.

Fig 26. Hinged willow.

4.6 Pollution

No obvious point sources of nutrient pollution such as sewage treatment works were noted except from that at Hunsingore. However, diffuse nutrient sources are clearly rife along the tributaries at either 'end' of Ribston Park. Well vegetated buffer zones of appropriate proportions should be afforded along all water courses to protect them from sediment and nutrient ingress - see the Fencing section.

4.7 Invasive species

Giant hogweed was noted in several stands at various locations throughout the walkover, but quite often on the opposing bank from HAA jurisdiction as the club seems to have a grasp on the problem from their banks. These stands need reporting via the Yorkshire Wildlife Trust INNS mapper tool: **http://ywt-data.org/inns-mapper/home**

Himalayan balsam was present in stands all along the main-stem Nidd, and it requires a concerted effort to control, starting at the u/s extent to prevent recolonisation. Unchecked, it causes erosion problems and reduced invertebrate abundance and diversity.

If every angler did a little bit on each visit or on a dedicated work party, then inroads can be made. Hand-pulling will probably be most effective at the density observed; strimming below the first node prior to flowering and definitely before seed formation can also be effective.

Whether a co-ordinated approach for either or both of these species could be drawn up with other angling clubs and the Yorkshire Dales RT / Yorkshire Wildlife Trust should be pursued.

5.0 Making it Happen

The WTT may be able to offer further assistance:

- WTT Project Proposal
  - Further to this report, the WTT can devise a more detailed project proposal report. This would usually detail the next steps to take and highlight specific areas for work, with the report forming part of a land drainage consent application.
- WTT Practical Visit
  - Where recipients are in need of assistance to carry out the kind of improvements highlighted in an advisory visit report, there is the possibility of WTT staff conducting a practical visit. This would consist of 1-3 days' work, with a WTT Conservation Officer teaming up with interested parties to demonstrate the habitat enhancement methods described above. The recipient would be asked to contribute only to reasonable travel and subsistence costs of the WTT Officer. This service is in high demand and so may not always be possible.
- WTT Fundraising advice
  - Help and advice on how to raise funds for habitat improvement work can be found on the WTT website - **www.wildtrout.org/content/project-funding**

The WTT officer responsible for fundraising advice is Denise Ashton: **dashton@wildtrout.org**

In addition, the WTT website library has a wide range of free materials in video and PDF format on habitat management and improvement:

http://www.wildtrout.org/content/index

Similarly, the Grayling Research Trust have a range of useful materials available from their website, which will soon include a Grayling Conservation Guide:

http://www.graylingresearch.org/

6.0 Acknowledgement

The WTT would like to thank the Environment Agency for supporting the advisory and practical visit programme in England, through a partnership funded using rod licence income.

7.0 Disclaimer

This report is produced for guidance; no liability or responsibility for any loss or damage can be accepted by the Wild Trout Trust as a result of any other person, company or organisation acting, or refraining from acting, upon guidance made in this report.

8.0 Appendix

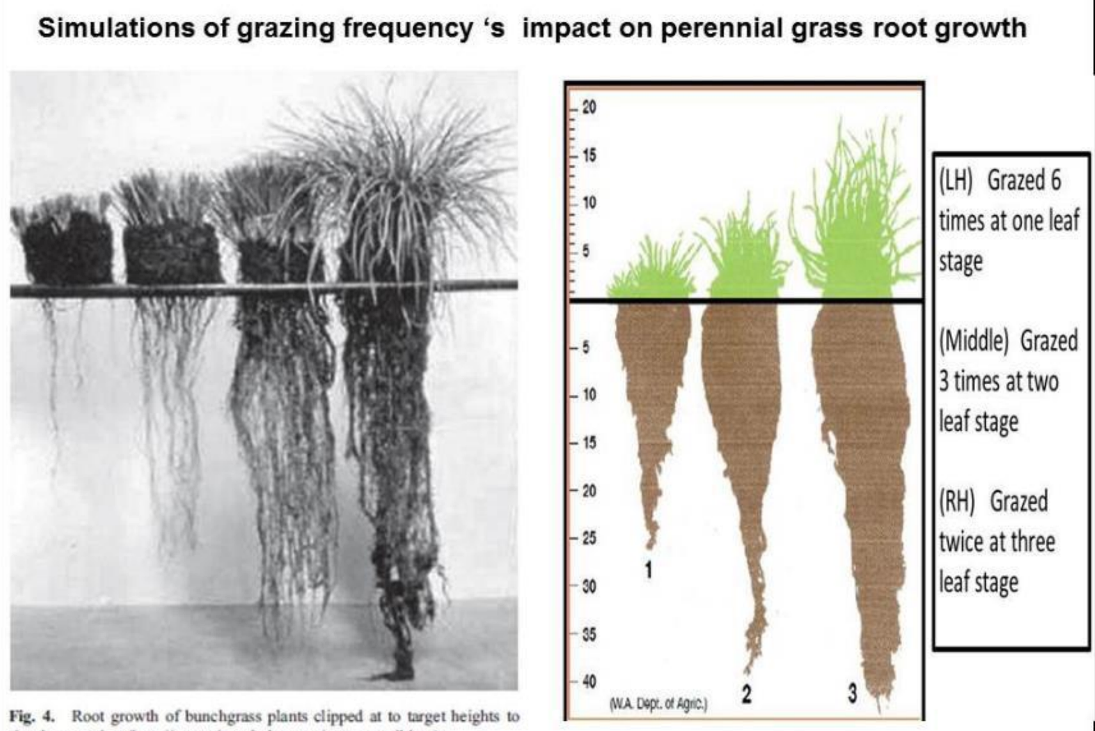

Fig. 4. Root growth of bunchgrass plants clipped at to target heights to simulate grazing (http://managingwholes.com/new-topsoil.htm).

Online **Source**