Walkover Report

Erring Burn

(River Tyne Catchment)

16/02/2017

Undertaken by Gareth Pedley, Wild Trout Trust

Key findings

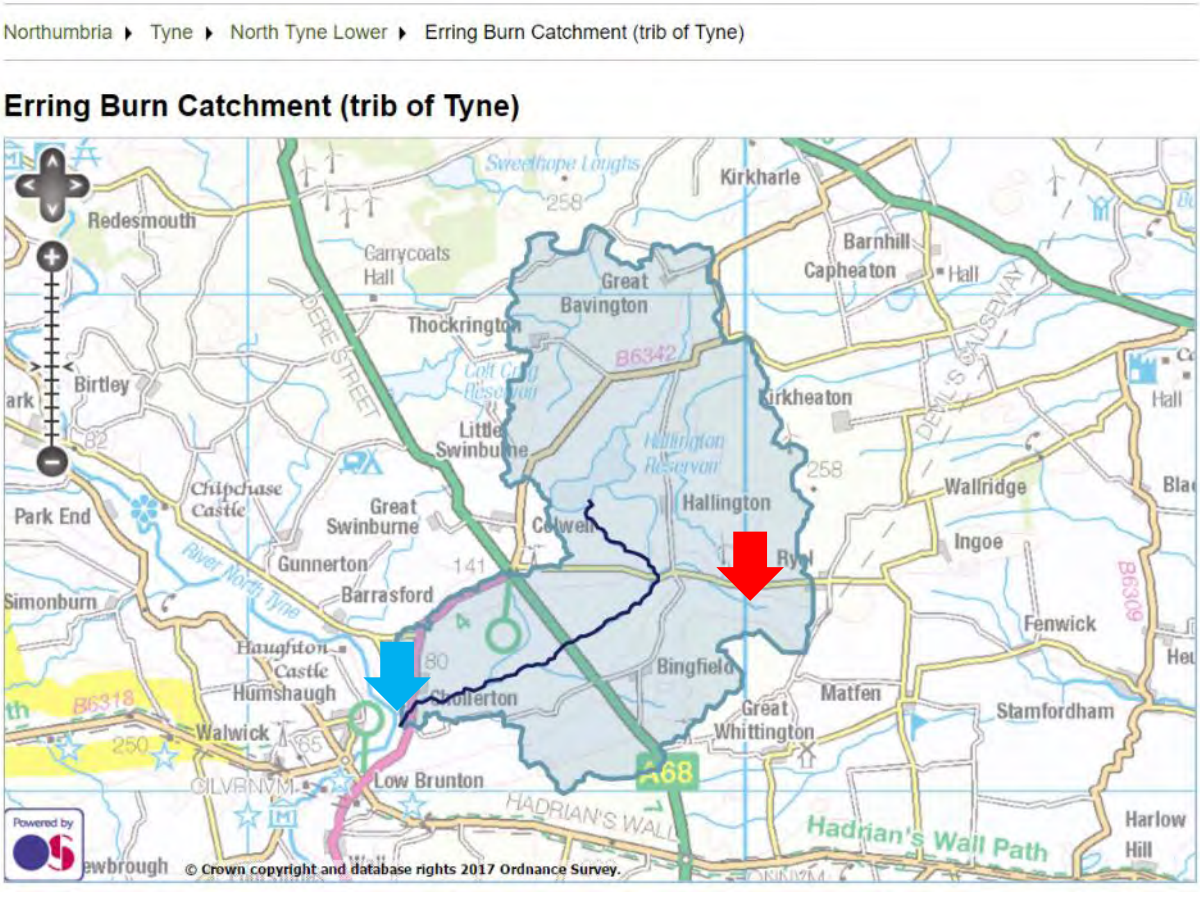
- Past channel maintenance and dredging has reduced the habitat quality of the burn resulting in lowering of the bed, even where some sinuosity of the channel planform has been retained.
- Fine sediment input from several sources degrades the quality of substrate habitats for invertebrates and salmonid spawning. The most notable input was direct runoff from arable fields.
- Minor fish passage issues were noted through shallow water at a road crossing.
- Limestone geology in the Erring Burn catchment is likely to naturally increase the productivity of the burn over that of other less calcareous Tyne tributaries.

1.0 Introduction

This report is the output of a site visit to the Erring Burn by Gareth Pedley of the Wild Trout Trust (WTT). This work was initiated as part of the Tyne Tributaries Project: a collaboration between the Tyne Riparian Owners Association (TROOA), the Tyne Rivers Trust (TRT) and the Environment Agency (EA). Also present on the walkover were Simone Price (TRT), John Wollaston and Sarah Gilliand (TRT volunteers). The walkover assessment was undertaken from the headwaters of the Fairspring Burn, which confluences with the Eairspring Burn which, in turn, confluences with the Hallington Burn to form the Erring Burn. The report pictorially illustrates the habitat assessment, with captions highlighting issues in each photo. A previous inspection of areas of the burn was undertaken by Andy Thomas of the WTT in April 2014. The report can be found on the WTT website – www.wildtrout.org/sites/default/files/private/North%20Tyne%20Tributaries%20.pdf.

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

Erring Burn, Water Framework Directive Waterbody ID GB103023074870.



Overview of the upstream (red arrow) and downstream (blue arrow) limit of the Erring Burn catchment walked (taken from the Environment Agency Catchment Data Explorer).

2.0 Habitat Assessment

Photo DSCN6010. The burn was walked from NY 99337 74233, which is almost the u/s extent of the Fairspring Burn. At this point, the watercourse is very small originating in a field of rough, boggy, low density grazing land.

Photo DSCN6011. In the next field d/s, the grazing density/intensity increases and with no buffer strip, poaching becomes an issue.

Photo DSCN6012. Ideally livestock would be excluded from the watercourse but this may be an issue for the land user that is actively trying to improve grazing on the wet areas of the field. Note the recently topped sedges and other rank grasses.

Photo DSCN6013. Poaching was also noted to be an issue at the d/s extent of the field where the burn becomes fenced.

Photo DSCN6015. A small spring creates a wet area in the farthest d/s corner of the field (NY 99091 74375). This area, and the water quality of the burn d/s, would also benefit from stock exclusion.

Photo DSCN6018. Much of the channel has been straightened, greatly degrading the habitat but fenced areas at least prevent detrimental livestock access and erosion.

Photo DSCN6031. Where some sinuosity has remained (or recovered) improved habitat can be found and is likely to be capable of supporting juvenile salmonids. However, the quality is still far below that which would be expected within potential salmonid juvenile and spawning areas. A general lack of gravel bars and potential spawning habitat was observed in this area.

Photo DSCN6021. Tufa (calcium carbonate precipitate) was observed on some of the substrate, signifying a limestone geology, high calcium content within the water and high pH. This is a useful clue that the watercourse is likely to have an increased productivity over other more peaty burns.

Photo DSCN6033. The confluence of the Fairspring and Eairspring Burns. The resulting Eairspring Burn appears to have been realigned to the left side of the field. Note the improved, grazed nature of the RB land in contrast to the ungrazed LB. Habitat benefits could be gained through a buffer fence along the RB or, ideally, restoration of a natural, sinuous, less incised, self-maintaining channel. The farmer here indicated that he has to periodically re-dredge the channel.

Photo DSCN6034. Mootlaw Burn is similarly straightened and livestock access is resulting in erosion and fine sediment input. Vegetation in the burn again hints at the high productivity of the watercourse.

Photo DSCN6036. Occasional patches of gravel with some potential for salmonid spawning and improved invertebrate habitat were observed, but were scarce.

Photo DSCN6040. A concrete apron associated with a road culvert (NY 98453 74436) creates a potential issue for fish passage. This could be easily improved with the installation of baffles that would not only allow access for potential spawning fish but also juveniles wishing to disperse u/s.

Photo DSCN6042. Interestingly, a suspected redd was observed at the tail of the pool d/s of the culvert. This could signify an obstruction or a lack of habitat u/s. Note the already problematic level of silt/fine sediment.

Photo DSCN6043. The field immediately d/s of the bridge (NY 98417 74428) slopes to the watercourse and surface runoff of fine sediment/topsoil was observed to be an issue here, with visible pathways and a major impact upon the substrate composition d/s (Photo DSCN6048).

Photo DSCN6048. Fine sediment and excessive algal growth smothering the bed d/s - severely impacted invertebrate habitat.

Photo DSCN6051. In pool areas, the fine sediment issue becomes even more evident. Being at the top of the catchment, this is a major issue degrading potential salmonid spawning and juvenile areas and impacting upon all of the watercourse d/s.

Photo DSCN6052. A small block stone weir/crossing point in front of Hallington Mill (NY 98304 74358) impounds the watercourse u/s and poses a small impediment to fish passage. It may be easy to gain permission to remove such an inconsequential structure.

Photo DSCN6053. Relatively unencumbered fish and sediment passage is afforded at the road culvert in front of Halllington Mill.

Photo DSCN6059. Hallington Mill is located at the confluence of the Earspring and Hallington Burn, which form the Erring Burn. The old weir on Hallington Burn (the other Erring Burn tributary) associated with Hallington Mill has fortunately washed away (reducing potential flood risk to the property and improving fish passage; however, some of the gravel deposition from the pool tail remains. This will continue to regrade over time, further reducing the barrier.

Photo DSCN6057. A pipe/culvert on the Hallington Burn at the u/s end of the mill pond poses some issue for fish passage and should ideally be removed.

Photo DSCN6056. Some reasonably good habitat was observed in the lower reaches of the Hallington Burn but fine sediment also appeared to be an issue. Further investigation of the burn u/s would be beneficial.

Photo DSCN6061. The road culvert on the Hallington Burn just u/s of the confluence with the Earspring Burn poses no issues for fish or sediment passage; accepting that the over-widened channel immediately d/s may lead to sediment deposition there over time.

Photo DSCN6063. The lower 50m of the Hallington burn appeared relatively healthy with active gravel transport – probably supplied by the disintegration of the mill weir and liberation of the once impounded sediment.

Photo DSCN6067. The field of the Erring Burn, d/s of the Eairspring/Hallington Burn confluence, is very rough, unimproved land and would make a great potential river restoration site, through which the burn could be returned to a more natural, sinuous channel. Alterations to the channel here probably related to a now dilapidated weir a few hundred metres d/s (Photo DSCN6076).

Photo DSCN6069. At NY 98208 74194 a small, disused, degraded pipe crossing could be quickly and easily removed to improve sediment transport and fish passage but poses a very minor impact.

Photo DSCN6076. The dilapidated weir (NY 98084 74000) that historically impounded the reach upstream, through which the burn has managed to form a channel. The weir is no longer a major issue for fish or sediment transport but should ideally be removed (at least the central section).

Photo DSCN6077. The channel d/s of the weir begins to take on some more natural characteristics but remains notably impacted by fine sediment.

Photo DSCN6079. Sections of the burn still appear to have been realigned, possibly associated with plantations/past land management. From here on, for some distance, the riparian land is rough grass, with some adjacent plantation.

Photo DSCN6084. In most areas, the substrate of the burn is relatively natural, allowing that the uniform width and somewhat incised channel limits the aggradation of finer material, particularly the size-sorted gravels and cobbles required for salmonid spawning.

Photo DSCN6085. At NY 97912 73815, a quad bike and horse riding track creates another fine sediment input where the banks have become trodden/poached.

Photo DSCN6087. Channel modification work has clearly been undertaken in this area and another remaining but dilapidated weir (NY 97853 73771) poses a small obstruction. Ideally this should be removed.

Photo DSCN6091. The channel d/s displays a more variable width and, consequently, depth. But the sediment issues are all too evident in the slower flowing pools.

Photo DSCN6092. Shallower, wider riffles provide fry and parr habitat, often lacking elsewhere.

Photo DSCN6095. Some pool and riffle/gravel bar features do provide potential for salmonid spawning

Photo DSCN6096. Where the pools dissipate flow energy sufficiently to provide appropriate spawning habitat for smaller resident trout - the fine sediment component greatly degrades its quality.

Photo DSCN6097. In some areas the channel displays a degree of sinuosity but appears dredged and over-deepened.

Photo DSCN6098. On some of the bends, a reasonable level of active sediment transport and retention can be observed.

Photo DSCN6099. In most areas, a wide, roughly vegetated buffer protects the burn from arable land use and surface runoff, although several natural gullies/watercourses, field drains and potential conduits for fine sediment-laden water were observed (NY 97413 73610).

Photo DSCN6103. In the less obviously dredged and modified, less-incised sections, the true character of the burn and its potential as juvenile salmonid habitat begins to emerge.

Photo DSCN6109. At NY 96786 73125 a particularly problematic field drain supplies fine sediment and elevated nutrients to the burn.

Photo DSCN6114. In the section u/s of the A68, dredging becomes more prominent and the channel is more obviously incised, probably owing to the immediately adjacent arable farming land use. Impoundment from the footings of the A68 culvert also degrades the habitat quality.

Photo DSCN6116. The immediately adjacent arable farming (minimal buffer strip) in the 800m u/s of the A68 is also leading to notable surface runoff and fine sediment input, further degrading the already impacted salmonid and invertebrate habitat.

Photo DSCN6122. The A68 road culvert poses no impediment to fish passage or sediment transport.

Photo DSCN6130. The LB d/s of the A68 is well buffered with a large area of uncultivated land/plantation extending to the next tributary d/s. Areas of the RB are grazed and correspondingly exhibit greater signs of erosion. The general character of the burn suggests that the history of dredging and realignment continues through this reach.

Photo DSCN6133. Although subject to past maintenance, some areas of higher quality habitat were observed, particularly where bankside trees protrude into the channel.

Photo DSCN6134. At the end of the plantation (NY 95966 72516) a LB tributary joins the burn. The tributary is notably straightened and shows further signs of fine sediment input. A recently installed/renovated field drain creates a visible input.

Photo DSCN3135. Although dredged/straightening of the tributary is obvious, the work appears to have been historical and the channel has recovered somewhat, providing some potential spawning and juvenile habitat. The watercourse is also flanked by a beneficial rough grassland buffer.

Photo DSCN6137. Areas of the Erring Burn d/s of the tributary also provide some high quality salmonid spawning habitat, demonstrating the potential of the burn before the land drainage impacts.

Photo DSCN6138. A further impact of the straightening and dredging of the channel was observed though the significant encroachment of emergent vegetation; a sure sign of impacted geomorphology that is less able to support a self-cleansing channel.

Photo DSCN6143. The next tributary d/s (NY 95418 72380) has minimal buffer along its LB, with low areas/suspected surface runoff from the adjacent field.

Photo DSCN6139. Although difficult to discern from the photograph, several low points in the arable fields adjacent to the main burn, between the tributary and NY 95119 72255, provide conduits for surface runoff, sediment, and almost certainly nutrients.

Photo DSCN6141. Where land has been set aside for tree planting, a much greater buffer alleviates the issues with surface runoff and excessive fine sediment input. However, in many areas the channel remains overly uniform in width and depth, lacking meanders and or a natural planform.

Photo DSCN6145. Iron oxide precipitation was observed in several small springs/drains but the volumes discharged and the extent of the issue are unlikely to have much of an impact upon the burn.

*Photo DSCN6146. In several areas of the floodplain (like NY 95173 72354**), the burn's natural** paleo-channel and past maintenance of it (flood banks) can be observed. Note the greater amplitude of the paleo-channel meanders (inset) than those of the current straightened but somewhat naturalising channel. This demonstrates the shortening and steepening of the watercourse that has occurred and the loss of discrete pools and riffles that has resulted.*

Photo DSCN6149. In some areas, willows have encroached right across the channel, driving lateral scour into the banks. Sheep are also clearly breaching the buffer fence in places (NY 94729 72147).

Photo DSCN6151. In the un-buffered section on the RB (NY 94620 72065 - NY 94144 72007), major erosion and bank slumping are occurring. Ironically, this is likely to be accelerating the recovery of the channel diversity somewhat (post dredging). However, the extent of erosion that would be required to reinstate a natural length, shape and quality of channel in most areas would result in significant inputs of bank material.

Photo DSCN6156. From the next field d/s (NY 94144 72007) the burn has a reasonable buffer and no major grazing issues, except the first few metres, where lateral erosion has breached the fence.

Photo DSCN6160. Some areas display the signs of past straightening and dredging but rough vegetation is consolidating the banks and tree planting has been undertaken on the LB.

Photo DSCN6164. Towards the Chollerton viaduct, the channel shape and form improves, likely due to a reduction in historical dredging and realignment. Consequently, the channel is more sinuous and less incised, with a much greater occurrence and quality of pool and riffle features.

Photo DSCN6166. Immediately d/s of the viaduct the channel is straightened and bank armoured alongside the road. Although impacted, areas of the habitat are suitable for juvenile salmonids.

Photo DSCN6170. The Chollerton road crossing is a clear span bridge and poses no issues for fish passage or sediment transport.

3.0 Recommendations (from the u/s to d/s extent of the watercourse)

Issue	Proposed action	Photos	Priority (1-3)
Poaching and livestock access to Fairspring Burn (NY 99337 74233).	Buffer fencing. Possible issues as land is being actively managed to utilise all potential grazing.	DSCN6011, DSCN6012 & DSCN6013	2
Poaching and sediment input from spring in field (NY 99091 74376).	Fence off wet corner of field.	DSCN6015	2
Livestock access and bank erosion on Erring Burn and Mootlaw Burn.	Install buffer fencing.	DSCN6033 & DSCN6034	2
Channel realignment and loss of habitat quality and	Possible options river restoration site, particularly conducive owing to	DSCN6033 & DSCN6034	3

increased requirement for dredging.	the large unused buffer strip along the LB side of the channel.		
Poor fish passage.	Install baffles on apron and through culvert to increase water depth and reduce velocity.	DSCN6040	1
Major fine sediment input/runoff from adjacent field.	Seek greater buffer and drainage of any runoff to rough, well vegetated ground. Alterations to field tillage direction to reduce runoff.	DSCN6043, DSCN6048 & DSCN6051	1
Impoundment, and minor barrier (NY 98304 74358).	Remove block stones from across the channel.	DSCN6052	2
Weir at Hallington Mill pond (NY 98238 74333).	The weir has collapsed, now only the sediment deposition remains. Ensure that the weir structure is not reinstated.	DSCN6059	1
Pipe/culvert at u/s end of Hallington Mill pond (NY 98196 74400)	Remove pipe to reinstate uninterrupted fish passage. A small, simple and cheap project.	DSCN6057	2
Fine sediment issues on Hallington Burn	Investigate fine sediment inputs on the Hallington Burn catchment.	DSCN6056	2
Un-natural channel.	Possible river restoration site in first field d/s of Hallington Mill.	DSCN6067	3
	Further possibilities to improve the channel right throughout the section between Hallington Mill (NY 98268 74323) and NY 97103 73286 where although relatively sinuous, past channel maintenance has left straightened sections and degraded habitat − land use offers potential.	DSCN6079, DSCN6091 & DSCN6097	3
Pipes/crossing point (NY 98208 74194).	Remove pipes. A simple, by hand, volunteer workshop task.	DSCN6069	3
Dilapidated weir (NY 98084 74000).	Remove remains of weir or at least remove a section down to river bed level.	DSCN6076	3
Dilapidated weir (NY 97853 73771).	Remove remains of weir or at least remove a section down to river bed level to remove impoundment and improve sediment transport.	DSCN6087	2
Point source runoff (NY 97413 73610).	Seek improved land management.	DSCN6099	2

Point source runoff and elevated nutrient levels (NY 96786 73125).	Seek improved land management and larger un-vegetated buffer.	DSCN6109	1
Point source runoff and elevated nutrient levels (NY 96521 72988).	Seek improved land management and larger un-vegetated buffer.	DSCN6116	2
Point source runoff on 1st LB trib d/s of A68 (NY 95966 72516).	Monitor reassess to identify whether the issue at the recent land drain improves. Investigate tributary u/s for further inputs.	DSCN6134	3
Point source runoff on 2nd LB trib d/s of A68 (NY 95966 72516).	Investigate tributary u/s for further inputs. Suspected source - lack of buffer along LB of trib. Possibly also grazing and straightening u/s (as observed from Aerial photography).	DSCN6143	1
Point source runoff on LB (NY 95119 72255).	Alter direction of tillage. Possible installation of settlement lagoon within buffer.	DSCN6139	2
Major channel realignment around NY 95173 72354.	Possible river restoration site. Reconnection with the floodplain could also improve flood storage.	DSCN6146	3
Livestock access through buffer fence (NY 94729 72147).	This is a general issue, particularly where sheep fencing is plain strand wire. Such fencing requires maintenance.	DSCN6149	3
Un-buffered section on the RB (NY 94620 72065 - NY 94144 72007)	Buffer fence.	DSCN6151	2

4.0 Further assistance

The Tyne Tributaries Walkovers were initiated to identify the range and location of issues impacting upon selected underperforming watercourses within the River Tyne catchment. The accompanying reports highlight potential solutions to the issues encountered and provide the supporting evidence for future projects and funding bids.

Further to the walkover reports, the WTT can undertake specific Project Proposals for the more complex issues highlighted, detailing exactly what is required and how the work can be undertaken. Project Proposals then

often form the supporting documentation for any EPR applications and consents that may be required.

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

www.wildtrout.org/content/index

We have also produced a 70 minute DVD called 'Rivers: Working for Wild Trout' which graphically illustrates the challenges of managing river habitat for wild trout, with examples of good and poor habitat and practical demonstrations of habitat improvement. Additional sections of film cover key topics in greater depth, such as woody debris, enhancing fish stocks and managing invasive species.

The DVD is available to buy for £10.00 from our website shop http://www.wildtrout.org/product/rivers-working-wild-trout-dvd-0 or by calling the WTT office on 02392 570985.

5.0 Acknowledgement

The Wild Trout Trust would like to thank the Environment Agency for supporting the Tyne Tributaries Project through their Fisheries Improvement Programme (funded through rod licence income), and the Tyne Rivers Trust for their support with the work, for obtaining permissions and for organising volunteer assistance where required. We would also like to thank the Tyne Riparian Owners and Occupiers Association for initiating the project and the volunteers that assisted with the walkovers for providing their time.

6.0 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.