



Walkover Report
Gunnerton Burn
(River Tyne Catchment)
02/02/2017



Undertaken by Gareth Pedley, Wild Trout Trust

Key findings

- Despite showing as being in Good Ecological Status (GES) under the Water Framework Directive (and high for fish under the 2016 classification), this burn is suffering from severe erosion and fine sediment inputs and is suspected to be at serious risk of deterioration, as can be clearly seen within this report.
- Fish passage is a problem on the burn, with a combination of man-made and natural obstructions. The man-made obstructions should be removed or eased, the natural ones left unaltered.
- Despite the limited range of the issues on Gunnerton Burn, the severity of them makes it a high priority for improvement work. This also highlights the major limitation of restricting funding work on watercourses assessed at being GES. This watercourse is clearly in need of a lot of improvement.

1.0 Introduction

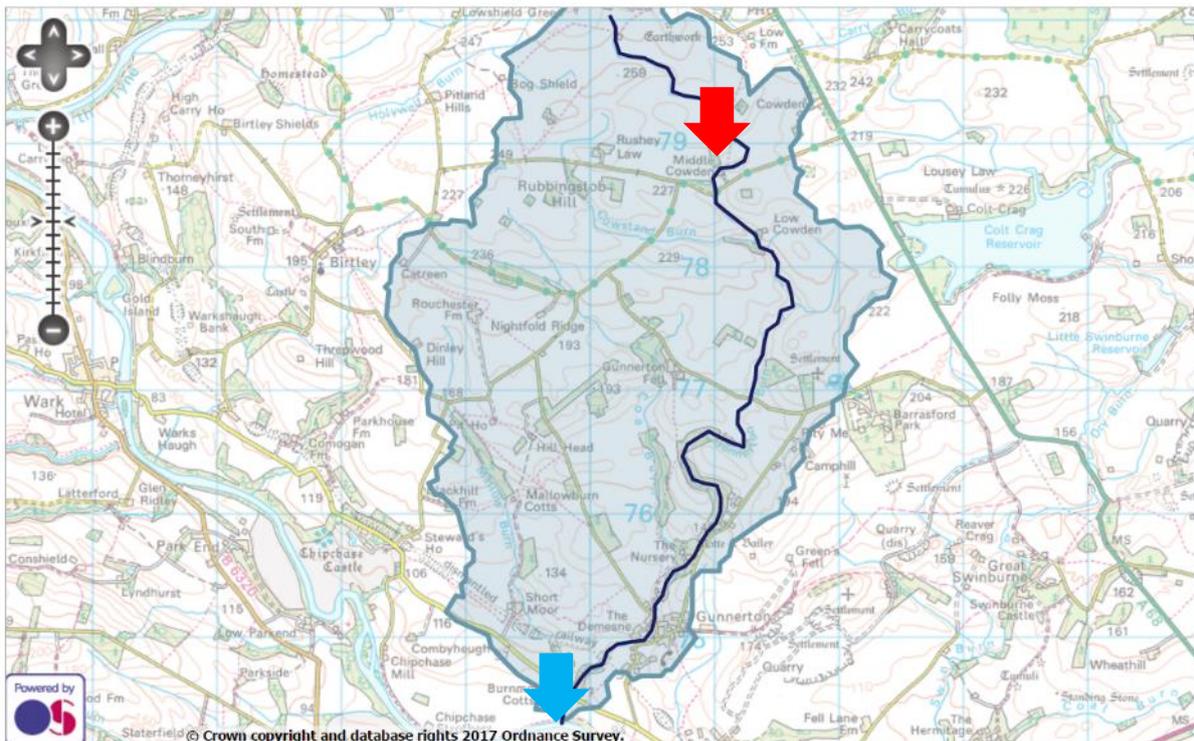
This report is the output of a site visit to the Gunnerton Burn by Gareth Pedley of the Wild Trout Trust (WTT). This work was initiated as part of the Tyne Tributaries Project: a collaboration between the Tyne Riparian Owners Association (TROOA), the Tyne Rivers Trust (TRT) and the Environment Agency (EA). Also present on the walkover was Simone Price (TRT), and Alan Gray and John Wollaston (TRT volunteers). The walkover assessment was undertaken from the headwaters of the Cowden Burn, working downstream to the River Tyne. The report pictorially illustrates the habitat assessment, with captions highlighting the issues observed 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 the 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.

Gunnerton Burn, Water Framework Directive Waterbody ID GB103023074880.

Northumbria ▶ Tyne ▶ North Tyne Lower ▶ Gunnerton Burn from Source to N Tyne

Gunnerton Burn from Source to N Tyne



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

2.0 Habitat Assessment



Photo DSCN5558. The Gunnerton Burn catchment was walked from Cowden Burn, Nr Middle Cowden (NY 90988 78749). At this point Cowden Burn and a small tributary confluence (to the left of shot). Both watercourses u/s of this point are small and have the potential to support juvenile salmonids and invertebrates. Owing to the watercourse sizes, the only likely remediation required would be buffer fencing to exclude livestock and reduce bank erosion/siltation and allow tree regeneration.



Photo DSCN5562. The road crossing near Middle Cowden poses no major obstacle to fish passage.



Photo DSCN5566. Land use d/s of the road, where the watercourse becomes the Gunnerton Burn, is unimproved grazing and while the intensity is relatively low, it is sufficient to be exacerbating bank erosion and preventing tree and vegetation regeneration. Consequently, the only trees observed were old and riparian habitat is sub-optimal.



Photo DSCN5574. Bedrock outcrops along the course of the burn creating a natural, passable impediment to fish passage. The impermeable barrier of bedrock within the ground appears to be causing iron laden water to resurge, where it oxidises and precipitates out of solution. Note the old trees/shrubs and lack of regeneration and the embankment/dredged material.



Photo DSCN558. A short section of plantation/buffer fencing (NY 91329 78211 - NY 91390 78137) d/s of the bedrock offers protection to bankside vegetation and trees. The channel in this section has been notably straightened and the habitat is therefore degraded. Possible mini restoration site.



Photo DSCN55582. Despite the elevated iron within the water, relatively sensitive mayflies (Ephemeroptera) were observed through stone turning. Iron oxide deposition tends to appear worse than it is. It is often the other contaminants within mine waters (often associated with ochreous staining) that actually causes water quality issues. In this case, the naturally low occurrence of iron is unlikely to be a problem.



Photo DSCN5584. Obvious signs of major channel realignment were observed in several locations where the burn had been relocated to a straightened channel to the side of the floodplain (right of shot). The grazing remains relatively low intensity but still limits tree and vegetation growth.



Photo DSCN5586. From NY 91499 77983 a marked increase in the intensity of grazing was noted, with a reduced sward and an associated increase of bank erosion. The channel is, however, more natural in planform, which creates the potential for notable improvement through simple fencing.



Photo DSCN5589. Some areas of substrate with good potential for salmonid spawning were observed, but fine sediment input from erosion is already having an impact upon the quality of that habitat.



Photo DSCN5598. In the next field d/s (NY 91559 77632 - NY 91384 77292) the intensity of grazing increases further and erosion through fording and poaching become severe, with the above scene observed at three different points within a 200m section.



Photo DSCN5594. Erosion around the base of bankside alder trees is so severe that they are becoming completely separated from the bank in many areas.



Photo DSCN5601. By this point, the consequential fine sediment is already a blatant issue on the bed of the burn.



Photo DSCN5604. To compound the sedimentation issues from livestock, as soon at the land use changes and livestock are excluded, arable runoff becomes an even greater issue (NY 91308 77212). Sediment pathway straight from the field (ellipse circle).



Photo DSCN5605. High volume of topsoil that has been washed off the surface of the field and to the burn during high rainfall. Some is trapped within the buffer but the volumes are clearly so high at times it is simply flowing straight through the rough vegetation.



Photo DSCN55609. A disused weir has collapsed, freeing up fish passage; however, the substrate is now so degraded that invertebrate and salmonid spawning habitat is utterly compromised. Aside from the fine sediment inputs/runoff, stock exclusion has reduced erosion and improved riparian habitat quality.



Photo DSCN5612. At NY 91279 77090 another gully that clearly also reaches the burn was also observed. Between these points another one that likely reaches the burn was also observed. These are such an issue they are clearly visible form aerial photography.



Photo DSCN5617. At the d/s, burn end of these gullies (NY 91307 77064) massive accumulations of fine sediment can be observed along the bank and across the burn bed. Again, the improved tree and vegetation cover through livestock exclusion otherwise provides improved bankside habitat.



Photo DSCN5618. Even light agitation of the bed liberates plumes of fine sediment. Most of the substrate observed was degraded past the point of supporting salmonid spawning.



Photo DSCN5620. A road crossing/bridge at NY 91277 76932 poses no impediment to fish passage but the land use d/s of this point reverts to unrestricted sheep grazing (see DSCN5627).



Photo DSCN5627. With the grazing comes more erosion and siltation (red circle – also see DSCN5641). Closely adjacent arable farming also contributed further runoff and fine sediment (blue circle).



Photo DSCN5628. Bankside erosion is a continuing problem throughout the grazed field and is threatening bankside trees in many places.



Photo DSCN5635. A small field at the d/s end of the intensive grazing is currently being grazed less intensively and a short section of improved habitat exists, just u/s of a coniferous plantation. The impact of long-term grazing upon vegetation and a lack of tree regeneration remain.



Photo DSCN5636. At NY 91037 76617 the burn enters a stock-excluded plantation and habitat improves; however, the closely planted conifers offer poorer habitat than a natural deciduous woodland and bring their own issues in terms of reduced light penetration/ground cover and impacts upon the watercourse.



Photo DSCN5638. Bank erosion amongst the shallow rooted conifers has allowed some interesting bends and in-channel features to develop, potentially creating spawning areas if the fine sediment inputs can be curtailed.



Photo DSCN5641. Land use adjacent to the plantation/wood is arable and sediment pathways were noted traversing the wood, right to the burn (appeared to be originating from a gully at NY 90939 76694 but entering the watercourse near NY 90776 76557).



Photo DSCN5644. At a small break in the woodland (NY 90745 76473), livestock access again creates poaching and sediment issues, although not quite as severely as u/s.



Photo DSCN5646. The next woodland d/s of the break is predominantly deciduous and provides much higher quality riparian and in-channel habitat with beneficial woody material readily input to the burn. However, even the beneficial morphological features are not sufficient to scour and sort the bed free from fine sediment.



Photo DSCN5649. At NY 90932 76245 a poorly passable natural obstruction was observed. While an impediment, this bedrock structure is likely to be passable to some fish at high flows.



Photo DSCN5657. A pipe discharge was observed at t NY 91031 75945. Although no obvious source was observed during the walkover, inspection of aerial photography identified a series of lagoons/sewage works at the top of the adjacent hill, which may be the source. No signs of elevated sediment or nutrient (algae, excessive biofilm etc) were observed to be associated with the pipe.



Photo DSCN5667. Typical of many peoples attitude to watercourses: That being they are a useful waste disposal mechanism. The Coal Burn tributary is obviously used as the repository for ash from the fire of the adjacent house (NY 90786 75640). While the impact is initially limited, over time the input is likely to have an impact on the ecology of the small burn.



Photo DSCN5670. The next property d/s (NY 90576 75338) also uses the burn for rubbish disposal, tipping waste onto the bank, knowing full well it will be carried away on the next flood. A subsequent summer visit by EA fisheries officers noted drying up of the burn at NY 90685 75534. This creates yet another impact upon the burn, and should be investigated by the EA groundwater team but it should not inhibit much needed improvements to the sections u/s and d/s as electrofishing data indicate that this remains an important salmonid spawning tributary.



Photo DSCN5671. At the second house where the waste was being dumped on the bank (NY 90572 75328), two pipes were observed, neither appeared to be an issue on the day of the visit.



Photo DSCN5672. The discharge point of the farthest d/s of the two pipes (red circle - NY 90556 75311).



Photo DSCN5673. Buffer fencing would be beneficial for a short section of field d/s of the house, u/s of Gunnerton village (NY 90535 75294).



Photo DSCN5675. The road bridge in Gunnerton (NY 90516 75131) poses no real issues for fish passage, being clear span over bedrock any obstruction there is natural.



Photo DSCN5676. The first field d/s of the bridge in Gunnerton and u/s of the sewage treatment works (STW) is buffer fenced. The benefit to bankside vegetation, habitat and bank stability is clearly evident.



Photo DSCN5680. Alongside the sewage treatment works pre barrages have been installed to improve fish passage at a natural bedrock obstruction. Easing natural obstructions is not advisable, unlike man-made obstructions which should be removed if at all possible. No major issue was observed associated with the discharge of the STW, but note the ongoing impact of siltation.



Photo DSCN5684. At NY 90323 74962, wet ground and poaching around a gateway poses another potential fine sediment input. Better drainage of the area and/or installation of hard-standing could improve the situation.



Photo DSCN5686. What appeared to be a natural rock obstruction (NY 90206 74938) will limit fish access up the burn; however, any structures known to be natural should not be altered.



Photo DSCN5687. Livestock access to the banks in the field between the rock obstruction and the disused railway culvert is greatly limiting the quality of the riparian habitat (NY 90135 74907).



Photo DSCN5689. The railway culvert (NY 90128 74832) poses a notable obstruction to fish passage. However, it is improved somewhat by significant degradation of the culvert bed. This has created a valuable increase in roughness which dissipates the flow energy and should assist fish in ascending the burn. Installation of culvert baffles would improve the situation further.



Photo DSCN5692. Access into the culvert is reasonably good as a small step d/s drowns out the entrance.



Photo DSCN5693. Small step and shallow water just d/s of the culvert – the lesser of two evils in that it improves passage into the less passable culvert by drowning out the entrance.



Photo DSCN5697. The fine sediment inputs u/s continue to have a major impact upon substrate habitat for the remainder of the burn, d/s to the Tyne, significantly degrading the habitat quality.



Photo DSCN5699. Mallow Burn which joins the Gunnerton Burn at NY 89864 74575 clearly also suffers similar fine sedimentation problems and requires further investigation.



Photo DSCN5704. The road crossing of Gunnerton Burn, just d/s of Mallow Burn, poses no issues for sediment transport or fish passage.



Photo DSCN5708. The section d/s of the Mallow Burn to the Tyne was the first area in which Himalayan balsam was observed on the catchment, suggesting that it may originate from the Mallow Burn – another reason to investigate it further.



Photo DSCN5710. The incised channel along with over-shading by snowberry (Symphoricarpos alba) is leading to exacerbated bank erosion in the straight section u/s of the Tyne. Possible past channel maintenance may also be contributing.

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

| Issue | Proposed action | Photos | Priority (1-3) |
|--|---|-------------------------------|-----------------------|
| Livestock poaching and bank erosion (NY 90988 78749). | Buffer fence the watercourse and provide alternative watering and crossing points. Will stop excessive erosion and | DSCN5558 | 2 |
| Livestock poaching and bank erosion d/s of the road (NY 90994 78585 - NY 91499 77983). | Buffer fence the watercourse and provide alternative watering and crossing points. | DSCN5566 & DSCN5574 | 3 |
| Increased grazing pressure and erosion (NY 91499 77983 - NY 91559 77632). | Buffer fence the watercourse and provide alternative watering and crossing points. | DSCN5586 | 2 |
| Major grazing and erosion issues. (NY 91559 77632 - NY 91384 77292). | Buffer fence the watercourse and provide alternative watering and crossing points. | DSCN5594, DSCN5598 & DSCN5601 | <u>1</u> |
| Major issues of arable field runoff (NY 91308 77212 and NY 91279 77090) | Farm advisory visit to discuss options with farmer. Alteration to direction of tillage, buffer along gullies (rather than cultivation – temporary watercourses are effectively being cultivated). | DSCN5605, DSCN5612 & DSCN6517 | <u>1</u> |
| Major grazing and erosion issues. (NY 91277 76932 - NY 91037 76617). | Buffer fence the watercourse and provide alternative watering and crossing points. | DSCN5627 & DSCN5628 | 1 |
| Major issues of arable field runoff at NY 91168 76776 and traversing wood/plantation (NY 90939 76694), both from same filed. | Farm advisory visit to discuss options with farmer. Alteration to direction of tillage, buffer along gullies (rather than cultivation – temporary watercourses are effectively being cultivated). | DSCN5627 & DSCN5641 | <u>1</u> |
| Grazing pressure and poaching/erosion (NY 90745 76473). | Buffer fence the watercourse and provide alternative watering and crossing points. | DSCN5644 | 2/3 |

| | | | |
|--|--|----------|---|
| Fire waste disposed of in Coal Burn (NY 90786 75640) | Advise tenants to dispose of on land. | DSCN5667 | 3 |
| Drying of the river bed | Investigation of the issue by EA groundwater team | | |
| Waste disposed of on banks of Gunnerton Burn (NY 90576 75338). | Advise tenants to dispose of on land. | DSCN5670 | 3 |
| Grazing pressure and loss of marginal vegetation (NY 90535 75294). | Buffer fence the watercourse and provide alternative watering point. | DSCN5673 | 3 |
| Poaching around gateway (NY 90323 74962). | Install hard standing/improve drainage. | DSCN5684 | 3 |
| Grazing pressure and loss of marginal vegetation (NY 90135 74907). | Buffer fence the watercourse and provide alternative watering point. | DSCN5687 | 3 |
| Fish passage issue at disused railway culvert (NY 90128 74832). | Ideally install baffles to further baffle flows and increase depth. | DSCN5689 | 2 |
| Fine sediment and balsam issues on Mallow Burn, u/s of NY 89864 74575. | Undertake further investigation to identify sources of fine sediment input and balsam. | DSCN5699 | 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.