



## Citizen Science – monitoring Nitrates in the Foss

Anyone watching mainstream television will have seen on the news and in programmes such as Countryfile, as well as in newspapers, that UK rivers are less than pristine, and that one facet of this which has received particular attention recently is pollution getting into rivers via sewage treatment works (STWs). Most of this could be removed using suitable treatment methods, but underinvestment over decades means that our treatment works are woefully sub-standard.

A group of RFS volunteers has been monitoring nitrate and phosphate levels in the river at five points from Sheriff Hutton downstream to the city for some 7 years now, and our results clearly show the contribution of Walbutt's (now Haxby) STW to the level of nitrates in the river. Whilst it is not negligible upstream due to various mainly agricultural inputs, the nitrate level almost doubles passing Walbutt's, and is then gradually diluted as tributaries join the main river.

Another worry highlighted by media coverage is the level of pharmaceuticals which pass through the STWs or are discharged during overflows, legal or otherwise, and you may have seen Professor Alistair Boxall on television talking about this. He is currently running a three year-long project (Ecomix) taking water from several rivers across Yorkshire using autosamplers, with the RFS helping

by looking after three of these samplers between Stillington and the city. Initial results from York University laboratories reinforce the findings that the Foss is significantly polluted, as well as showing that caffeine and metformin (a treatment for type 2 diabetes) are commonly present. Paracetamol, which is removed by current sewage treatment, was also found in high levels. We'll have to wait until mid-year to see the full picture.

The future looks to be busy for the RFS, as we are also taking part in a wide ranging project designed to wid-

en the appeal of citizen science and make its findings more robust. The project is currently called 'Engaged Environmental Science' but a more self-explanatory title is sought. It is led by Dr John Wilkinson of York University, and after a year of hard work in putting forward a case, he has been award-

ed a grant of nearly £1m to look at how the contribution of citizen science in aquatic environments can be improved. Examples of issues to be tackled are: developing more accurate and affordable methods of monitoring for a wider range of pollutants, providing easily accessible training for participants, finding ways to make citizen science more inclusive, and how to store and make available the data gathered.

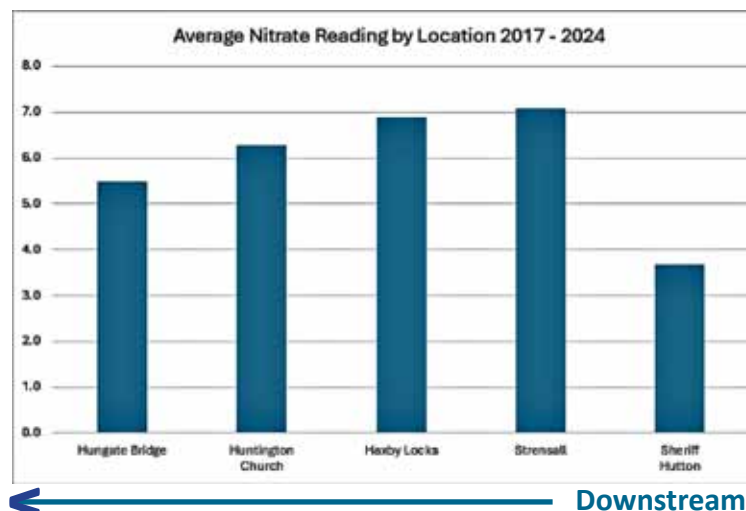
Having quality controlled and traceable results from methods of known accuracy and reliability should guarantee acceptance of citizen science's findings by the various regulatory bodies. This will ensure that all the effort put into monitoring provides data which can be compared UK wide, and be used as

the basis for highlighting problems and enabling action where needed.

Mike Gray



Checking nitrate levels in the Foss



Nitrate readings increase in the Foss downstream of Walbutt's sewage treatment works

The final litter pick for 2024 was on Saturday, 12 October. Only nine members turned up at the start point, the footbridge on Foss Islands Road. I allocated three persons to board the CYC boat, Foxy; the rest split into two groups to cover the river banks downstream to the Blue Bridge and junction with the River Ouse.

Despite some inclement weather, we had a successful day. Initially, Foxy headed upstream beyond Monk Bridge; here, 10cm diameter branches of a large tree were stopping Foxey and similar boats from heading upstream. These were all removed and placed on the river bank where the public have no access.

The picture was taken when we all met up at Castle



*The team at Castle Mills Lock*

## Lifting Lots of Litter

Mills Lock, over two hours after we started. The boat then returned to the start point, still collecting waste from the river; when we reached Foss Islands Road, all the rubbish was then transferred onto the back of a Council lorry.

*Barry Thomas*

## Remember – our Spring Newsletter, due early April, will list all the upcoming events for River Foss Society in 2025

This autumn, two groups of third-year students at the University of York undertook projects to help the River Foss Society's work. The students completed these projects for their Sustainability Clinic, an interdisciplinary module that allows students from any degree to get involved in local sustainability issues, and helps them build valuable transferable skills for the future. One of the projects focussed on finding litter hotspots between York city centre and Haxby.

The students surveyed the litter along the riverbanks for this six and a half mile stretch, and used the data to produce a map of litter distribution. They also provided the Society with their data collection methods, and offered some potential reasons for and solutions to the hotspots.

The other project aimed to educate local people about the ecological value of the River Foss, and thereby discourage littering. The group created designs for information boards that could be mounted at various points along the river, with information about local wildlife and nearby bin locations. Additionally, the group submitted an article for publication in the York Press, to raise further awareness about littering in and around the River Foss.

Upon recommendation from the River Foss Society's Lynette Mills, the students contacted Councillor Jenny Kent to learn more about requirements for putting up

the boards. Councillor Kent was eager to help, and the students hope that her support will pave the way for the River Foss Society to bring their designs to life.

## Looking at Litter



*Students from both groups outside the Sustainability Project room, where they met with representatives from the River Foss Society*

Both groups presented their projects to the River Foss Society in early December. Liv Rhodes, a student in the education group, says: "We would like to thank the River Foss Society for agreeing to collaborate with us on this project. It has been a great learning experience for all of us, and we have really enjoyed learning about the River Foss. We hope our project will make a difference to the Society's work protecting the river!"

The River Foss Society enjoyed working with the students and is now collaborating with the Council in the hope that the project's objectives can be fulfilled.

*Lynette Mills*

## On the Foss

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On a warm sunny day in September half a dozen volunteers from the River Foss Society, including your reporter, carried rucksacks, tools and waders across an arable field near Stillington. We were following a van driven by Monika Smieja, River Restoration Project Officer of the Yorkshire Wildlife Trust (YWT) for the Foss catchment area. Our task was to work on a 250m stretch of the East bank of the Foss which had been re-profiled by the Internal Drainage Board in order to slow the flow of the river and thus reduce flooding.



*The Foss bank after IDB reprofiling. Photo: Alison Scott.*

Confronting us was a long slope of earth which replaced the previous sheer river-bank. Our first task was to unload the wooden stakes which almost filled the van. Some of the group, clad in waders, stood in the river banging the upright stakes into the mud by the bank. Others, led by Pete Christopherson of the YWT on chainsaw, cut up scrubby trees with loppers and formed fascines by tying the smaller branches into bundles. These were rolled into the gap between stakes and bank, where they would fill the dual role of trapping silt run-off from the field above and stabilizing the new bank.

## High Stakes in the Bank



*Hammering in the stakes. Photo: Alison Scott.*

It was while standing in the river enjoying its coolness on my feet that I realised one foot was cooler than the other. A brief inspection revealed a hole in the knee of the waders! Thus ended my brief foray into the Foss.



*Stakes and fascines in. Photo: Alison Scott*

I went home later with a very muddy sock.

When I returned on the fourth and last day of the task I found quite a difference. Stakes and fascines were in along the whole length of the new bank, and coir matting had been unrolled to cover the soil. The intervening two days had not been without their challenges. The landowner, though sympathetic, would only allow the YWT van to cross the field on the first day, so much time had been spent hauling heavy rolls of coir across a very large field to the bank. The YWT handcart had got bogged down in the mud caused by recent heavy rain, and had to be abandoned.

Now, the task of another half dozen volunteers was to drive wooden pegs into the matting to anchor it down.

There was no time to lose as the river was rising due to the rain and this was our last day! Everyone set to work with a will despite being weighed down by our mud-clogged boots. Alas, the shortage of volunteers let us down. By hammering ever more frantically and spacing the pegs more widely, we



*Pegging in the coir matting. Photo: Yorkshire Wildlife Trust.*

did get the matting pegged down sufficiently, but time had run out and the plug plants had to be returned to storage. But we will be back! Watch this space!

*Alison Scott*



I'm Sally, and since 2018 I've been trying fifty-two things each year that I've never done before.

Walking from the start to the end of the River Foss was something I'd had my eye on doing for a few years, and this was the year I finally got around to it. It turned out to be one of the more 'challenging' of my 52 new experiences for 2024, and was both frustrating and beautiful.

## Sally walks the Foss – new experience Number 22

### Part 1

The signposted Foss Walk goes north from the city, through villages and countryside, finishing in Easingwold, a lovely market town with some mouth-watering coffee shops. However, it's an extra 4 miles beyond where the Foss springs up, and as I wanted to complete 'The Foss Walk' in one day, those extra miles were not appealing.

The Other Half left me with a cheery wave as he drove off leaving me at my starting point near the source of the Foss. Just the matter of covering around 23 miles (37 km) until I would see him again later that evening.

The September sun was shining, and whilst autumn was crawling in, it was still pleasantly warm and bright and perfect for a day of hiking. I started near an official finger post which clearly marked the Foss Way with the distinctive green and white frog emblem. I hoped this was a good indicator for the marking of the route throughout.

To start with, there was a nice obvious well-trodden trail to follow. However, it wasn't too long until the path crossed into another field where the thick grass rose past my knees and the brambles scratched at my legs.

My leggings protected me from piercing prickles, but this did make me wonder what I had let myself in for. If overgrown paths were going to be keeping me company, it was going to be slower and tougher going than I had anticipated.

Thankfully, the grass shrank back as I came to a forest. The shaded ground was much easier to traverse.

Leafy branches overhead provided perfect conditions for a muddy track through the trees. Glistening through the trunks, the sun danced on the ripples of Oulston reservoir with the chatter of other walkers in the distance.

In the centre of the trail stood a post marked with a clear frog sign and I confidently strode onwards, but it wasn't long until I had my first uncertain moment. A field of sheep seemed to stop their munching in synchronisation when they noticed me and watched intently as I strode through their grass.



*Oulston reservoir glistens in the September sunlight*

Further down the path I noticed a gate to my right with various footpath signs, but I couldn't see the reassuring Foss frog. So having consulted my map I followed the tree line at the edge of the field, where I caught my first proper sight of the River Foss. A small stream trickled between the undergrowth and down the slight hill. I wasn't quite at the spot where the water bubbled out of the ground, but I knew that wasn't too far away.

The first hour was fairly slow going, the hold-up mostly being my uncertainty over the directions. A finger post pointed directly across a field. I don't know about you, but this always feels like the opposite to what we're told to do. I'm used to walking around the edges of a field to protect whatever the farmer is growing. I could barely make out a path in this field. There were no clues to suggest that anyone had walked straight across recently, and I couldn't identify an obvious exit to the field where the walk would continue.

I double, and triple checked my maps, before crossing the field in the direction the signpost was pointing. The small gap in the boundary on the opposite side was quite overgrown, and at first, I missed it.



*Foss stepping stones*

Another field contained a signpost pointing across a field with an electric fence through the middle of it. It wasn't obvious which side of the wire I needed to be on, but luckily, it was low enough for me to be able to safely step over it without any sparks!

Having only progressed around 1.9 miles (3km) in those first 60 minutes, I

knew I'd have to be more decisive if I was going to finish before it got dark.

Happily, the next few hours were a little easier to navigate, (even when the way-markers weren't all that obvious), with clear tracks and paths to follow through ever changing scenery.

The biggest hill of the day was up the road to the gorgeous little village of Crayke.

*Part two of Sally's walk will appear in the next newsletter.*