

Feature
CITIZEN
SCIENCE

Going mainstream

Motivated to make a difference in their communities, local people across Cumbria are working and campaigning for better protection for waterways. We find out more about the work of the citizen scientists

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PHOTOGRAPHY NICOLA FEARNLEY ARPS & CLEAN RIVER KENT CAMPAIGN

It was the dead fish that triggered it. The discovery in July 2021 of bodies of stone loach, bullhead, stickleback, crayfish and juvenile trout and Atlantic salmon in the shallow water of summer was evidence, say anglers and residents, of a toxic event in the River Kent.

The river is one of the best in Europe for its native crayfish population, which survives when many other rivers have lost theirs, and is one of the reasons why the Kent is designated as a Special Area of Conservation and Site of Special Scientific Interest.

Such incidents continue to anger river users and upset those who live by the Kent, not least in Staveley, which has also experienced incidents of sewage in the streets.

Staveley with Ings Parish Council has been aware of problems with the river's water quality for a number of years. Its log of so-called 'events' appears to show their

regularity was increasing and it was already in discussions with the local water company, United Utilities, about upgrading its facilities and water treatment infrastructure in Staveley before the 2021 'fish kill'.

Resident and campaigner Isobel Stoddart explains: "When there is a lot of heavy rain the sewer can't cope and it builds up and spills into the streets. We have sewage coming out of the manhole covers. I've had it in my own back garden. That for us was a red flag and we felt we needed to support the parish council in their discussions, which had already started."

By October 2021, the Clean River Kent Campaign (CRKC) was formed and held its first meeting. The group is a coalition of communities living along the River Kent, including Burneside and Kendal, all focused on keeping the river clean for water-based recreation and to protect ecology and wildlife.

At its heart is an impressive group of women including Isobel, from Staveley, who is a freelance sustainable transport consultant, Carole Wood, of Kendal, and Sheila Adam, from Staveley, coincidentally both former directors of public health.

Their main objective was to work with others to reduce the amount of effluent discharged into the Kent from a variety of sources with the principal focus on ensuring the wastewater treatment facility a mile downstream from Staveley was adequate to meet both current needs and those of new housing development, and any additional pressures resulting from climate change.

"Our rationale was to first understand what was happening rather than apportioning blame," says Isobel.

Carole adds: "We have tried to have constructive dialogue with United Utilities, we haven't been vocal or particularly antagonistic. Our energy has gone into

mobilising volunteers and awareness raising. We see it as a long-term project."

One of the few tools they discovered available to them to secure official protection for the river was to apply for bathing water status under a process available through the Department of the Environment, Food and Rural Affairs (Defra).

Carole took charge of exploring this avenue, and they also made contact with a group in Ilkley, West Yorkshire, that had applied successfully for bathing water status for the River Wharfe in 2020.

An application required surveys and data collection so, to galvanise support, the group created a Clean River Kent Campaign Facebook page. It delivered weekly updates and a monthly newsletter to supporters and held two open days which attracted over 100 people from as far as eight miles away and all along the river. A training day for recruited volunteers took place last May.

Sheila explains: "We introduced the two things we wanted to focus on, first the Defra application for which we needed to collect data on recreational river use so paddling, swimming, kayaking, angling and walking and also doing surveys of those users to tell us what they thought about the river and any problems they had encountered. It was a good way to engage people."

Volunteers were given specific tasks to help prove the sustainability of the site for bathing status, gathering evidence of need and use of the river with surveys – 308 in total – counts, diary entries, statistical analysis, tables and graphs and photographs.

"As people found their feet and wanted to get more involved some created artwork and one produced a video and a Declaration of Rights of River Kent. They took part in events, gave talks and ran information stands," says Isobel. Sheila adds: "It was very inclusive. There was lots of bonding and it was a really supportive process bringing volunteers together. People love the river, it's very emotive."

Local students used the citizen science project as the volunteering requirement of their Duke of Edinburgh's Award, Staveley Primary School got involved and the group engaged with organisations like Lakeland Canoe Club, Kent (Westmorland) Angling Association, other local and national campaign groups, MPs and councils and the media.

The team also established links with the University of Cumbria and worked with a third-year student who based their dissertation on the River Kent's water quality. This connection extended to the

group calling on Dr Gill Notman to proof its final report, along with well-known ecologist Professor Rick Battersby, giving it added credibility.

The second commitment the group made was to follow Ilkley's lead and test the river water for faecal bacteria, not mandatory for the Defra bathing water status bid, but part of their mission to find out what was going on in the river.

"Demonstrating faecal activity is quite motivating to people. It was a good way of starting to build up pressure and support as well as to gather evidence about the state of the river," says Sheila.

The Ilkley group shared its experience and methodology to ensure the Staveley testing was accurate and robust, but the decision to go for bacterial testing had a cost implication and the group had to raise funds as well as recruit volunteers for water sampling.

"We also had to learn where Natural England, Ofwat, the Environment Agency, South Cumbria Rivers Trust, the Freshwater Biological Association and all the other local organisations fit in, what their objectives and responsibilities are and where they aligned with ours," explains Sheila.

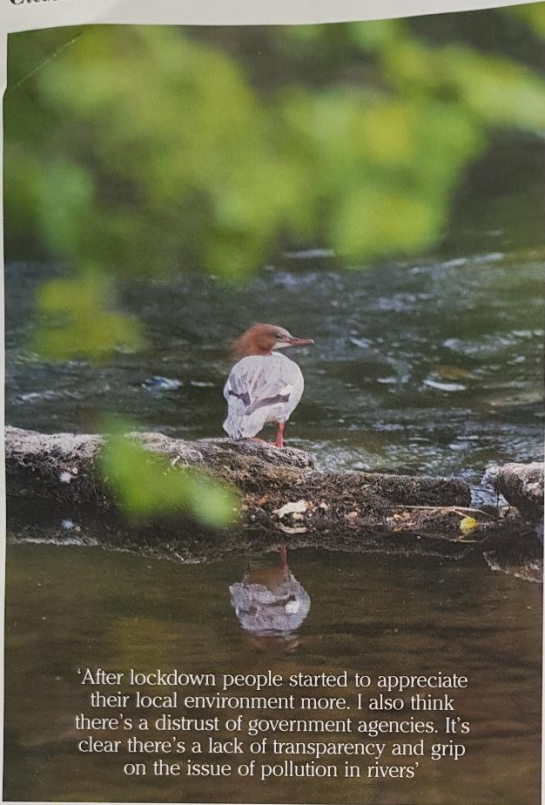
Isobel adds: "There are certain skills you definitely need as a community group. For example, we had to raise £7,500 as the laboratory testing cost £50 per sample. You need project management and organisational skills, good communication and social media skills. There are people with time and energy but coordinating everyone takes a lot of work."

"Over time you get clearer about roles and the demands on them and can mix and



Some of the Clean River Kent Campaign volunteers

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'After lockdown people started to appreciate their local environment more. I also think there's a distrust of government agencies. It's clear there's a lack of transparency and grip on the issue of pollution in rivers'

match with responsibilities and capabilities."

Carole ran a crowd funder that raised £1,500 and the group also secured funding from Staveley with Ings and Burnside Parish Councils, Kendal Town Council, Lake District Foundation that gave two grants from the Lakes Distillery, Burnside Community Energy, Rotary and British Canoeing.

She is clear why people wanted to help: "After lockdown people started to appreciate their local environment more. I also think there's a distrust of government agencies. It's clear there's a lack of transparency and grip on the issue of pollution in rivers.

"People just want to do something and the avenue for taking action opening up was empowering. We found there were tasks that people enjoy doing that bring them into contact with likeminded people.

"We never had a problem recruiting volunteers. You like to think you are making a difference, and you are freer as a community group.

"People aren't just concerned about humans, it's the animals as well and creatures that have every right to be here and deserve good water quality."

Multiple surveys were carried out and samples were driven to Preston from where they were couriered to a laboratory in Coventry. The test results showed poor/unsatisfactory levels of two bacteria: E.coli and Enterococcus Spp.

In parallel with this work volunteers co-ordinated by Staveley with Ings Parish Council monitored discharges from Staveley water treatment works.

The application was made to Defra for bathing water status, the group convinced that even failure would highlight the state of the river and prompt any remedial action.

Indeed, it all appeared to have come to nought on March 10 when Defra announced that it had rejected CRKC's application among a raft of rejections for others around the country (all but one of nine applications were rejected campaigners claimed).

In informing supporters of the news CRKC said: "Unfortunately their criteria aren't published and they don't give any reasons for their decision. We are in the process of trying to get more information. Of course, we are disappointed, but we are proud of the work we undertook and grateful for the support we received from both funders, academics, volunteers, local landowners, councils and key stakeholders."

They maintain several valuable and positive outcomes from the work undertaken for the application, including how it demonstrated the importance of the river Kent to local communities and shone a light on the issues the river faces, enabling them to increase pressure on United Utilities and the Environment Agency.

They remain undeterred: "We established our profile as an effective community-based group, and we will continue to take our campaign forward to fight for clean water for humans and wildlife in the river Kent."

Plans to create a 2023 citizen science programme and to carry out genetic testing of the water (funding permitting) to understand the sources of pollution are already underway.

They are also keen to continue working with local farmers, recreational groups, other river users and with Freshwater Watch, a global Earthwatch citizen science programme, to extend their reach; to support local conservation group programmes and strengthen partnerships with other organisations.

A priority will be to hold United Utilities, which they say has failed so far to provide up to date information, to account for its responsibility to manage wastewater in the best interests of wildlife and those who enjoy water-based leisure pursuits. They also plan to press the Environment Agency for urgent investment in the local wastewater treatment works and sewerage infrastructure.

Sheila says: "Some national groups are starting to gather together in coalition to really push a national campaign, being more demanding than you can be at local level."

Isobel adds: "We are at that table if we want to be. It gives us that opportunity to feed up as a local case study to national level and for a volunteer to keep motivated they want to see results.



"Because our campaign has gained media attention and it's kept traction and is actually increasing, it encourages the average person who realises they can make a difference."

Opinion on how much citizen science can achieve is mixed, but it is certainly growing buoyed by some successes.

The 2021 'fish kill' in the Kent was not the only incident raised with authorities by Kent (Westmorland) Angling Association. The volunteer club successfully took Cumbria County Council to the High Court in 2019 – the case brought on its behalf by environmental organisation Fish Legal – after the council allowed United Utilities to continue using a 'temporary' sewage outfall for three years after the permanent outfall was washed away in Storm Desmond.

More recently so-called 'sewage litter' – hundreds of sanitary towels and condoms hanging from tree branches – was filmed at a section of the river at Watercross caused after a storm overflow was operated, as permitted, after a period of heavy rainfall. Whilst residents are reminded not to flush such items down the toilet, campaigners say the sewage outfall should have a 6mm grid to stop such pollution getting into the river.

Jim Bickley, of Kent (Westmorland) Angling Association, says: "We support the Staveley campaigners and others on the river; their objectives are our objectives.

"Traditionally anglers and canoeists don't get on, but this is one thing we all agree on and we have got an alliance of conservationists, anglers, swimmers and paddlers who all come together on these issues.

"We encourage our members to carefully put back any Atlantic salmon to do our bit for conservation and we would like to see it reciprocated by the water companies and the regulatory agencies. We are an amateur volunteer club and our



Citizen science taking place along the river Kent

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capacity to challenge and hold to account a large company like United Utilities is massively limited.

"The bigger question is why is it falling to citizen science and communities to look after this gem of a river? I defy anyone to show me any river in the UK with stretches more beautiful than we have in the Kent. We are really very lucky but the fact that it is falling to volunteers to look after it is pretty depressing."

It is a view shared by perhaps the area's best known citizen scientist, zoologist and conservationist Matt Staniek. His "passion project" turned full time job has been to draw attention to what he says is a very sharp decline in biodiversity in Windermere caused by sewage pollution.

"What's really fantastic, and something I have noticed for Windermere, is how local communities really care. They can add their voices to protect their local rivers and be actively engaged and that's powerful," he says.

"We can't rely on government regulators or the water industry to do what is required to protect our waterways. I know the scientific principals, but you don't have to be an expert. I knew nothing about freshwater, I started because I saw a decline in water quality before my eyes."

The biggest current example citizen science is the Big Windermere Survey that has recruited more than 100 volunteers to gather water samples from the lake and its feeder rivers and streams, three times so far with a fourth sampling taking place on April 23.

The project is led independently by scientists from Lancaster University and the Freshwater Biological Association. They have cautioned that long-term data is required to officially classify the status of

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water bodies against standards in order to account for changes in water quality through time such as across seasons or with variable weather conditions.

The latest results showed bacteria levels – indicators of potential contamination of water by faecal material either from humans or animals – were generally low with just over 95 per cent of surveyed sites consistent with standards for 'good' or 'excellent' bathing water.

However, analysis of phosphorus in samples collected revealed that only 21 per cent of lake sites had concentrations that were sufficiently low to meet 'good' standards, likely to be due to a cyanobacterial, or blue-green algal, bloom.

Matt questions why, after almost 100 years of the Freshwater Biological Association on Windermere, more data is needed when the toxic algal blooms are all the evidence that is needed of unsustainable quantities of phosphorus being dumped in the lake.

He is, therefore, working with the charity WildFish, to do invertebrate sampling saying lake creatures are the "canaries in the coal mine".

He adds: "There were seven million visitors in the Windermere catchment in 2019; it's probably the best-known waterway in the UK after the Thames. People are coming to marvel at it, they think it's pristine, yet we allow sewage into it.

"Some people perceive what I'm doing as being anti-tourism, but nothing could be further from the truth, I'm trying to protect tourism and business in the long term. What do we want the lake to be in 25-50 years' time?"

"Windermere is the epitome; it's the case study where this can be rectified. It's a jewel in the crown, it's a national park, an Area of Outstanding Natural Beauty, a UNESCO World Heritage Site. If we can't protect Windermere, we can't protect anywhere."

United Utilities, which Matt says is the biggest depositor of phosphorus into the lake, was contacted as part of this feature but has not supplied a response.

Citizen science is, however, receiving support from perhaps an unexpected quarter.

Jim Ratcliffe, environment, planning and engagement manager of the Environment Agency (EA) for Cumbria and Lancashire, says: "We monitor water quality and invertebrate life and do regulatory work with officers on the ground doing inspections. We target resources where we think the most pressing issues are, but there is a finite amount of resource.

"Citizen science is a positive thing. More people are aware of their local environment and want to see it improved and that can



Enjoying the river Kent



Citizen science takes place in all weathers and seasons.

only be a good thing and will accelerate the rate of progress. I don't mind the challenge from people or groups who want, or expect, more.

"We can't be everywhere at once and if there is a wider data set we could use in partnership or take into account that's a good thing; it all helps build up understanding."

On the issue of bathing water designation, he says it can be "one of the drivers for water company investment".

Either as a result of, or in spite of, the growing citizen science movement, there appears to be regulatory progress too, with the government's new Plan for Water. Locally, improvements aimed at reducing phosphorus in the Kent are scheduled before March 2025 and the Environment Agency says it is "pushing United Utilities" for the implementation of its improvement plan on phosphorus at Staveley and Grayrigg in 2025-2030.

This summer EA is undertaking bathing

water monitoring in the Kent catchment "to help build up a better understanding".

Meanwhile, from an audit of operations at Staveley wastewater treatment works, Jim says: "We have drawn some conclusions and we have presented that to the [water] company and we are in discussions about what that means."

When the information can be shared, the citizen scientists will be ready to listen.

sustainablestaveley.org.uk/clean-up-the-kent/
Anyone interested in being added to the Clean River Kent Campaign mailing list, or wants further information about volunteering for it in 2023, contact senstaveley@gmail.com or fta.org.uk/volunteer/the-big-windermere-survey
mattstaniek.co.uk
Environment Agency data for the Kent catchment can be viewed at environment.data.gov.uk/catchment-planning/ManagementCatchment/3045