



WildFish. SmartRivers

Our progress to date
February 2026

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We exist to protect wild fish and their habitats.

SmartRivers mobilises citizen scientists to collect scientifically rigorous data on river health across the UK.

This report outlines the project's progress and impact.

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Foreword

The SmartRivers WildFish citizen science project was born from a shared vision: to strengthen wild fish protection and recovery through robust evidence, deeper understanding, and community engagement.

At the heart of this work is SmartRivers' unique contribution to wild fish conservation. Through scientifically robust, standardised data collection, SmartRivers helps us identify pressures on river ecosystems, understand ecological change, and make evidence-based decisions about river recovery. This knowledge is essential for targeting conservation action where it's most needed and ensuring interventions deliver lasting benefits for wild fish populations and their habitats.

Equally vital is the project's connection with local communities. By empowering people to participate in meaningful data collection, the project bridges professional science and local knowledge.

We extend our sincere thanks to everyone who makes this work possible. We particularly recognise our volunteers, whose time, enthusiasm, and commitment underpin the programme's success. We're also grateful to the professional entomologists and scientific specialists whose expertise ensures the accuracy, credibility, and integrity of our data.

Together, these combined efforts demonstrate the power of collaboration in delivering meaningful, lasting conservation outcomes for wild fish and river ecosystems.



Dr Janina Gray
Head of Science & Policy, WildFish



Our approach

Building long-term data sets and relationships to drive action.

Freshwater ecosystems are complex, which makes comprehensive monitoring essential to ensure effective decision-making.

SmartRivers monitoring is dynamic and robust— delivering scientifically sound data that focuses on long-term goals while staying adaptable to change.

We have 46 rivers with four or more years worth of high-resolution ecological data.

Science you can trust

We empower local groups with citizen science of the highest grade, matching professional guidelines as closely as possible.

SmartRivers data is open access to all. We champion data being used to drive action rather than owned.

We focus on attention to detail and prioritise long-term dataset creation to identify trends and target action.

Impact-driven

SmartRivers groups design their monitoring networks based on local insight and community concerns. These sites are ground-truthed through our benchmarking process.

We constantly review findings and return to the group's original objectives, asking:

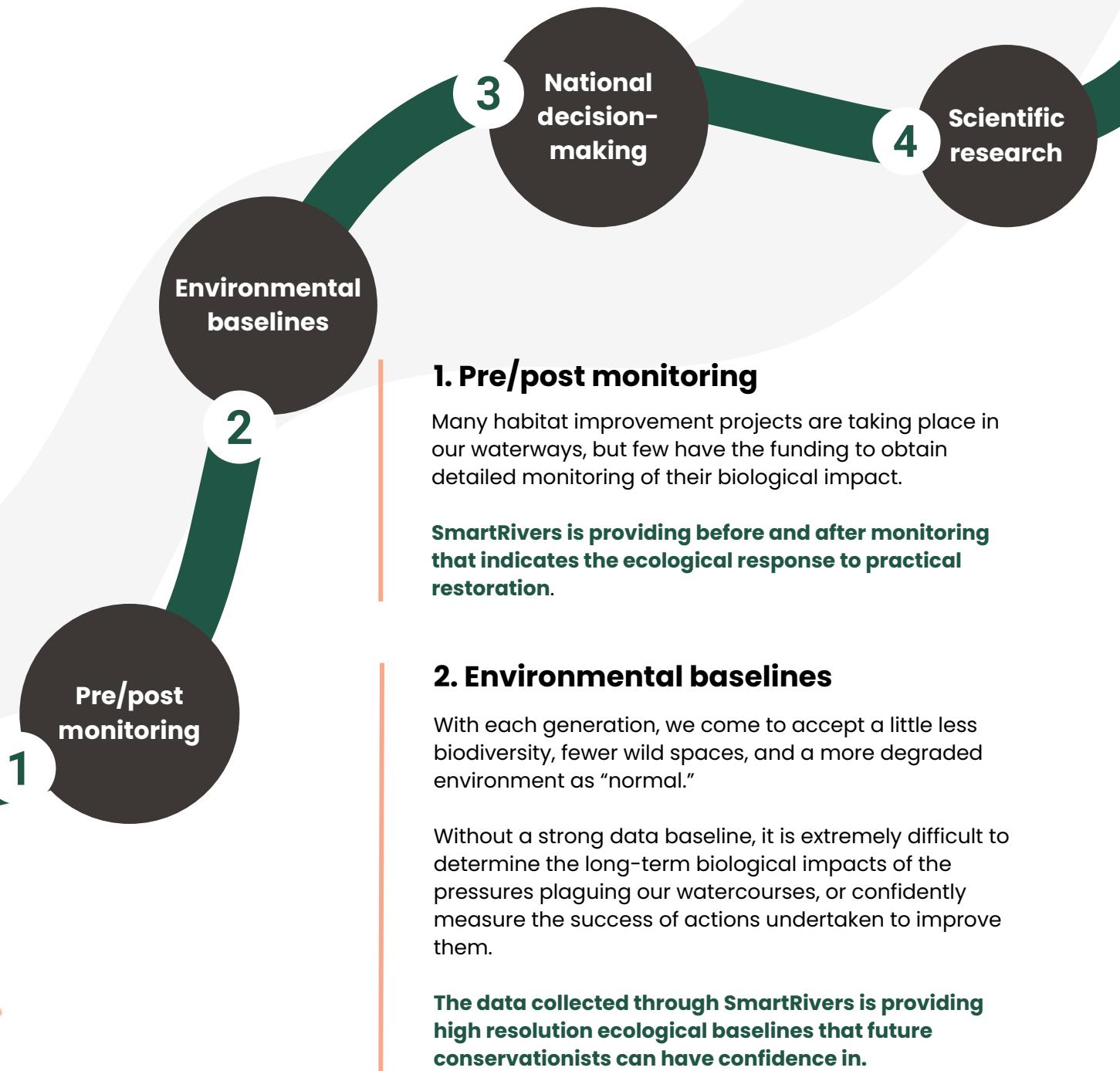
- Are we closer to answering the key questions?
- Should we zoom in on a particular issue?
- Is it time to expand monitoring to additional areas of the catchment to fill data gaps?

Continuous re-evaluation and personalised guidance are just some of the ways we work with SmartRivers groups to drive meaningful impact.

Our impact

Adding direct value where it's needed to help fill monitoring gaps.

How is SmartRivers data used?



3. National decision making

Transparency around the use of pesticides

Chemical pressure frequently shows up as a major stress on aquatic invertebrate populations in our SmartRivers data.

In February 2024, we requested copies of farmer's pesticide use records from the Health and Safety Executive (HSE) for a small sub-catchment of the Welsh Dee to try and determine what was causing the significant chemical pressure detected by SmartRivers volunteers.

The HSE refused, saying they did not routinely request or hold these records, so our request was unreasonable. We disagreed and so did the Information Commissioner. Most recently the HSE have appealed the Information commissioner's decision on this case and another similar case in Carmarthenshire. Both cases will be heard together in 2026 – date to be confirmed.

If we are successful, this will set a national precedent that we have a right to know about what is happening in our rivers.

52% of the 2019 Water Framework Directive invertebrate classifications were recycled from past data and not newly assessed. Inclusion of SmartRivers data would reduce this.

Stronger protection for chalk streams

Chalk streams are as globally rare and ecologically important as a coral reef or a rain forest, and over 85% are found in England.

This year we published our report, [**A Decade of Decline on the River Avon**](#). We revealed significant declines in invertebrate communities, particularly riverflies, which are sensitive sentinel species, and a dramatic drop in invertebrate abundance. Yet, according to the Water Framework Directive, the sites we monitored still got a 'high' score, and did not reflect the clear downwards trend we observed in river health.

We are using this as evidence to lobby that current regulatory targets are not set high enough to protect our chalk streams from decline.

Reducing the use of outdated data in classifications

The accuracy of Water Framework Directive classifications hinges on robust, up-to-date monitoring. In England, this is currently collected exclusively by the Environment Agency.

Following a Freedom of Information request, we discovered that **52% of the 2019 invertebrate classifications were recycled from past data and not newly assessed**.

This lack of monitoring is the result of declining resources for regulators, which has left them unable to deliver their core functions.

We are in discussions with the Environment Agency on how our citizen science monitoring data can help supplement regulatory datasets.

From 2025 data analysed so far, SmartRivers has generated 11,860 aquatic invertebrate records.

4. Scientific research

Biological recording

High quality biological records inform conservation strategies. Identifying rare species is important because they often play unique and irreplaceable roles in maintaining healthy ecosystems.

Many invertebrate species are considered underrecorded due to their immense diversity, small size, and identification difficulties.

SmartRivers helps to fill this gap for aquatic invertebrates.

Interesting finds:

The South East Wales Rivers Trust Cynon SmartRivers group officially recorded the sculptured moss beetle (*Ochthebius exsculptus*), a **nationally scarce** species last recorded in South Wales in 1912 – 113 years ago!



The **nationally scarce** burrowing mayfly *Ephemera lineata* has been found in samples from the Great Stour SmartRivers group.

Only 322 records have been made across the whole of the UK and the species is listed as vulnerable.

Since establishing SmartRivers in 2018 as part of the Watercress & Winterournes project, volunteers monitoring the Test & Itchen headwaters have identified (as of November 2025):

Four nationally scarce species

- Hill Soldier (*Oxycera pardalina*): 434 records in the UK.
- Long-horned Soldier (*Vanoyia tenuicornis*): 789 records in the UK.
- Scarce Purple Dun (*Paraleptophlebia wernerii*): 156 records in the UK.
- White-barred Soldier (*Oxycera morrisii*): 543 records in the UK.

Two nationally rare species

- Large-mouthed Valve Snail (*Valvata macrostoma*): 666 records in the UK. Red List: Vulnerable.
- Twin-spotted Major (*Oxycera leonina*): 41 records in the UK. Red List: Vulnerable.

Research projects

The open-access nature of SmartRivers data makes it a valuable resource for researchers and students.

Robinson (2025) used Test & Itchen data and deployed passive chemical samplers at some of the sites.

Johnson et al. (2024) compared bio-energy associated with macro-invertebrate communities with the fluvial energy in the host river. Our data was cross-referenced with data from the National River Flow Archive.

Our groups are also embarking on their own research projects. Ian Diver, from the Upper Itchen SmartRivers group, shares their research journey:



The Upper Itchen Restoration Community Interest Company volunteers, who collected samples for the plastics project.

Upper Itchen plastics

In 2024, whilst analysing our SmartRivers samples, we began to notice tiny particles and fibres under the microscope. These appeared to be pieces of plastic and synthetic or natural fibres, which ought not to be present in what should be pristine chalk streams.



Mayfly (Baetid) larvae and micro-plastic particles.

We know plastic pollution is widespread in our oceans, but there has been little exploration in freshwater and none that we could find on a chalk stream.

To investigate, the Upper Itchen Restoration Community Interest Company teamed up with scientists at the University of Brighton.

Laboratory analysis of samples from the Itchen headwaters confirmed the presence of micro-particulates. Micro-fibres invisible to the naked eye (0.2–1.3 mm in length, mostly black, blue, and purple) dominated the samples. Other micro-particles found were tyre wear particles, polyethylene fragments and fibreglass shards.

As these particles are so small, they can be taken up by the plankton at the base of the food chain and be transferred to higher trophic levels. Larger particles can be ingested by filter feeding invertebrates such as *Hydropsychidae* and foragers such as *Baetis* and *Gammarus*.

We are now seeking to identify sources of this contamination. Likely sources include rainfall and off-mains drainage such as septic tanks in our rural area of central Hampshire.

We've also been getting the word out, with appearances on BBC South and ITV Meridian news, as well as local awareness-raising of how we can all avoid releasing micro-fibres in our domestic waste water.



Our community

SmartRivers Group of the Year

Volunteers are the lifeblood of SmartRivers.

To recognise their dedication and hard work, we launched the SmartRivers Group of the Year Award in 2025.

This award was created in honour of the dedicated conservationist Anne Voss-Bark, who worked tirelessly to protect wild fish and their habitats. The winners of this award are decided by an independent panel.

2025 Winner:

Barnes Common, Beverley Brook

With **over 900 volunteer hours** dedicated in 2025 and an impressive aptitude for self identification, the Barnes Common group have blown us away with their commitment and attention to detail.

Group lead Will Dartnell tells their story:



We came across SmartRivers monitoring while exploring opportunities for habitat creation and restoration along the Beverley Brook. To ensure robust scientific evidence both before and after restoration, we identified SmartRivers as the ideal programme to support our monitoring needs.

2026 will mark three years since the completion of our restoration works, and SmartRivers monitoring will form a major component of the BACI (Before-After-Control-Impact) assessment we have designed for this stretch of the Brook. We aim to write this up in a report and continue the monitoring with the next write up at year 5.

SmartRivers has provided invaluable evidence to highlight the issues affecting the brook. The programme's reports and annual summaries clearly show the scale of the problem.

Rachel Walker (SmartRivers volunteer) has combined SmartRivers data with our wider survey work to produce a short report, which we share with local MPs and councillors and Richmond Council. As a result, political awareness of the pressures on the Beverley Brook is increasing.

We also share findings through the Catchment Partnership to encourage wider participation in monitoring and build stronger evidence-based understanding of the river.

'It's a brilliant way for anyone involved to hugely increase their knowledge of a local river and improve their ID skills of aquatic invertebrates.'

Special mention:

Severn Rivers Trust, Rea Brook catchment

This group have taken self identification by storm. Their passion is inspiring and their accuracy is incredible.

Group lead Cecilia Young tells their story:



Whilst the Environment Agency does some macroinvertebrate monitoring in the catchment, it is irregular, and SmartRivers allowed us to start establishing our own baseline of monitoring river pressures. We're trying to build up a robust data set of our own to improve our understanding of the catchment, help to target measures and support other projects working in the area.

We now understand the pressures much better and have been asked for our data twice by the Environment Agency. Earlier in 2025 we provided our full data set for one tributary and the downstream main river to support a pollution incident investigation they were carrying out as they had no suitable data.

The Environment Agency are also working on a project investigating river pollution from historical metal mining on one tributary, but their monitoring was mainly in the upper reaches. They were very pleased to find we were monitoring further downstream and on the main watercourse. They have also identified another area for their project to investigate for possible mine pollution, largely based on the presence and absence of Gammarus at all 5 of our monitoring locations.

We share our results with the Rea Brook Community Wildlife group, and a small group who are looking to try and target some spot water quality monitoring on one tributary. We have run activities at a number of community engagement events across the catchment, sharing our data, bringing preserved samples and microscopes, and collecting live samples for people to look at.

'For us the quality control system means that whilst we are no experts, we feel our data is robust and can be used for real things.'

Special mention:

Wiltshire Fisheries Association, Avon catchment

With an impressive monitoring network, our longest standing group deserves recognition for their commitment to the SmartRivers project.

Group lead David Holroyd tells their story:



The Wiltshire Fisheries Association represents the interests of the fly-fishing clubs and landowners in the upper catchment above Salisbury.

For several years, a steep decline in invertebrates was evident. SmartRivers, with its scientific rigour and its analysis of all river invertebrates, was seen as the tool that we could use to raise the awareness of the decline to the regulators – Environment Agency, Natural England and the water company, Wessex Water.

We have used SmartRivers to highlight the decline of the water quality, which has reduced the number of individual species and numbers of invertebrates overall. As well as plotting the overall decline it has also highlighted 'hot spots', areas requiring particular focus and early action.

Over the last five years we have been using SmartRivers and the professional support of Wildfish to drive major capital funding and investment into habitat improvement programmes. In one case, we used the data to support legal action on a site operation outside of its discharge licence.

'SmartRivers has been a 'game changer' in terms of providing scientific data and reporting that regulators and polluters find hard to discredit or deny.'

Our evolution

Providing the highest standard of support and resources for our volunteer community.

2025 was a pivotal year for SmartRivers, from internal expansion to support the project, to development of new processes to strengthen volunteer engagement.

New volunteer learning opportunities

- Online taxonomy training sessions.
- New in-person training day to hand-hold groups through their first independent round of sample sorting and ID.
- Bespoke quality control taxonomy resource development and feedback delivered to groups over Zoom.

Expanding the toolkit

We have been actively piloting other techniques to expand the monitoring tools available to SmartRivers groups.

SmartRivers already stands out for its methodological rigour, but these pilots could result in some exciting pioneering science for our network to get involved with.

Developing SmartRivers for Winterbournes

Many of our SmartRivers groups have monitoring sites on temporary streams (winterbournes). Currently there is no standardised monitoring approach for these – we want to address this.

With experts from Nottingham Trent University and the Environment Agency, we are initiating a project with two main objectives

- 1) Help standardise monitoring advice for citizen scientists sampling winterbournes- including timing recommendations in order to get the most representative sample.
- 2) Better understand what the data means- e.g. how do we know what is natural colonisation dynamics and what is influenced by impacts?

We are hoping the project will start in February, with reporting by the end of the year.

129

rivers

covered by SmartRivers
monitoring to date

6,299

hours

of training undertaken by
volunteers so far*

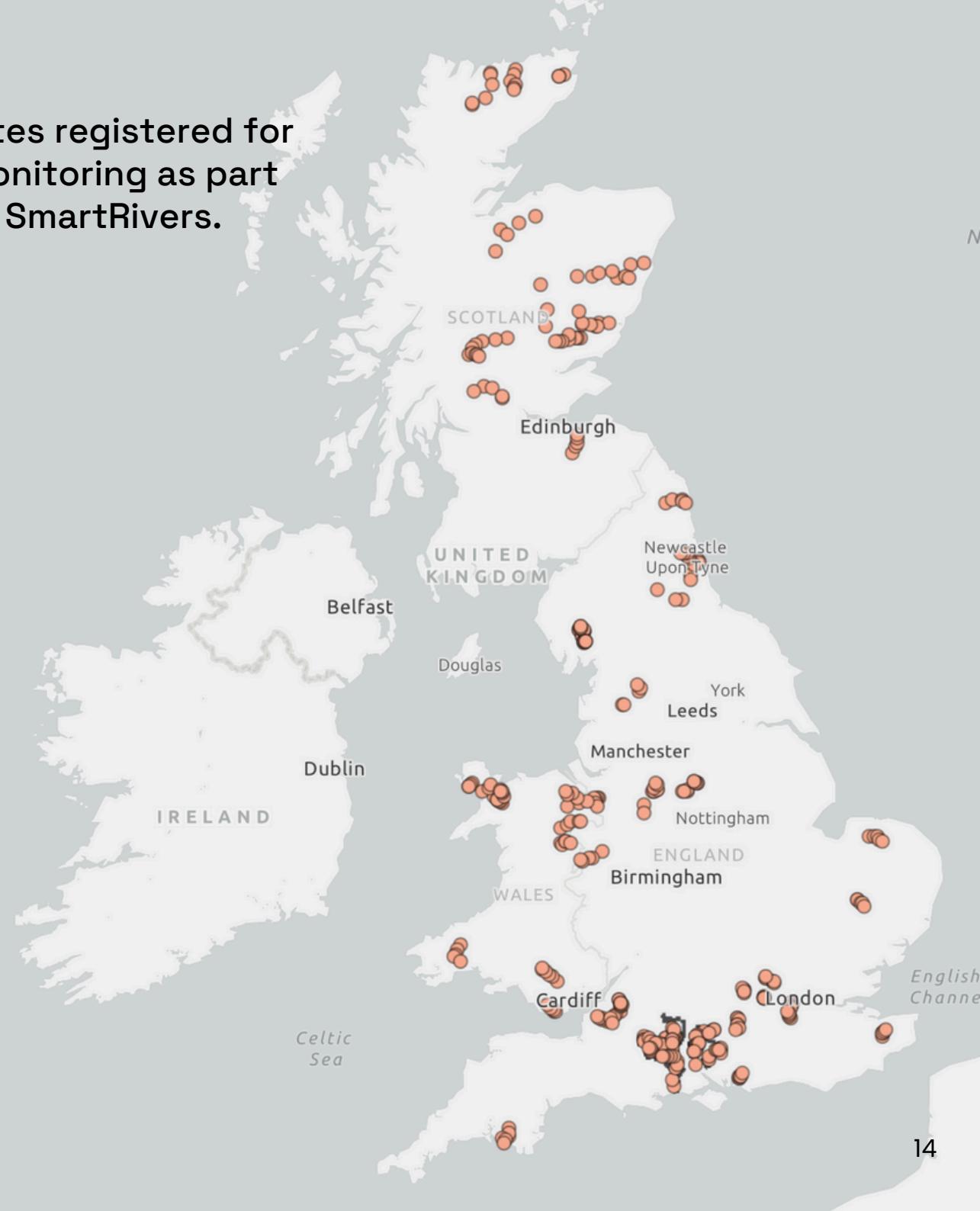
*assuming every volunteer does both days of training and eight hours per day.

245

sites

were monitored through
SmartRivers in 2025

Sites registered for
monitoring as part
of SmartRivers.



Our ambitions

Our long term ambition is for every river to be a SmartRiver where there are local communities that want to be involved.

We're aiming to:

Trial new tools to help groups better understand their rivers.

Challenge ourselves to ensure SmartRivers is inclusive and supports all communities, abilities and needs.

Launch new collaborative research projects to fill critical knowledge gaps identified through SmartRivers.

Remain focused on exploring, with regulators, how our data can help supplement their datasets.

Thank you.

SmartRivers is possible thanks to the tireless dedication of our volunteers, host organisations, trainers and analysts. It is because of them that we can provide scientifically robust data to inform river restoration and drive recovery.

SmartRivers is supported by:



Get in touch:

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