



River Restoration Centre (RRC) hosts Scientific Advances in River Restoration (SARR) Conference; a global perspective

Freshwater habitats occupy less than 1% of the earth's surface, yet they are home to 10% of all known species. Population trend data show an 84% decline across freshwater species since 1970, and one third of freshwater fish are now threatened with extinction. One of the main causes of decline is morphological alteration, due to human activity such as dredging, reinforcement, reshaping and rerouting of rivers for navigation, flood protection, drainage and agriculture. River restoration seeks to **repair our rivers**, to reverse morphological damage and promote ecological recovery.

The inaugural Scientific Advances in River Restoration (SARR) Conference was held by the UK River Restoration Centre (RRC), at the University of Liverpool 6-8th September 2023. A total of 150 scientists and practitioners, from over 30 countries, came together for three days to share research and perspectives on river restoration.

Global collaboration between scientists is particularly important at a time when the world is seeing catastrophic events, directly linked to the impacts of both climate change (e.g. floods and droughts), and man-made river modifications (e.g. dam failure and mud flows).

During the conference, we addressed a series of fundamental questions such as:

- How do we adapt to climate change?
- How do we interact with nature?
- How do we communicate the need for restoration?
- What technology, tools and techniques can help?

The greater urgency now, is effectively **communicating** the problems associated with human modifications to rivers – modifications that date back thousands of years.

Restoration has been ongoing in rivers in some countries for over 40 years, however, the **legacy of human impact** is far reaching - leading to **shifting baselines**. We are out of touch with the true reference condition we should be striving towards. Is this the reason we are shocked by headlines about rivers 'bursting their banks' when river channels have been occupying their floodplains intermittently for millennia?

The community seemed clear and united: biology drives river form and function. Rivers have flow, sediment, and wood regimes – all three must be restored. Messy rivers are healthy rivers. When we speak of rivers, we should be using the term 'river corridor' or 'riverscape' instead, to dispel the myth that a river is only as wide as its channel and as deep as its bed.

With **climate change** and ever-increasing human population numbers, there is growing urgency to act. A recurring theme highlighted from the River Restoration Centre's scientific conference was the global need to speed up our delivery of sustainable and functioning river systems and protect our freshwater supply.

Scientists now agree that the entire length of a river must be considered in any restoration project – this is what we call a catchment-scale approach. The effects of **nature-friendly farming methods** on ecology and hydrology are becoming better understood. Soil health is an important part of the jigsaw and landowner support is vital for catchment-scale restoration.

Our socio-political outlook is also fundamental. Key discussions focussed on different models of interaction between people and the environment – '**Nature for humans**', versus '**Nature and humans**' where the river is respected and treated as having rights of its own illustrated by the concept '*a te reo*' Māori, '*I am the river, the river is me*'.



Big and pertinent questions arose from the conversations that flowed between global experts this week. What *should* our reference condition look like in an ever-changing world? In the face of changing climate can we just choose an arbitrary historical date to restore rivers back to? How do we decide which date to choose? Can we use science to assess the *ecological potential* for the recovery instead?

When new policy documentation is released and contains different wording of aims, how much should science be guided by policy - should restoration concentrate on saving individual species, or individual habitats, or looking at biodiversity overall as the marker of successful recovery?

Should restoration focus more of its resource on protecting (conserving) rivers that are still in relatively good condition, or does society have a responsibility to improve the condition of those rivers we have damaged the most?

Perhaps the most central question of all: How can we show the true **societal values** of river restoration – that restored rivers matter and degraded rivers represent real societal costs? How do we achieve this while simultaneously avoiding the monetisation of our rivers?

It was felt that, it is not the science holding back change, but policy and public perception. A key takeaway was **education** needs to be prioritised and messaging needs to be clearer. As a river restoration community, we need to show policymakers and society what healthy rivers look like, and prepare an ‘elevator pitch’ of key points about rivers that any listener can understand quickly.

Our joint vision should also be communicated using pictures and graphics. It is our responsibility to send a positive message, not to be scaremongers; we must show an alternative and achievable future, that the wider public can believe in - a better life if we work with our rivers.

Research presented at the Scientific Advances in River Restoration Conference will be submitted for publication in a **Special Issue** of the international river science journal *River Research and Applications*.

Further information:

Conference Declaration from the River Restoration Centre’s Annual Network Conference: “An action strategy for river restoration”, 19-20th April 2023. The Conference Declaration represents the consensus view from 400 UK based river experts. <https://www.therrc.co.uk/river-restoration-conference-declaration>

We urgently need the policy, funds and capacity to restore healthy rivers.

We need to increase the scale and rate of implementation of restoration actions.

We must plan at the catchment scale to restore natural processes and connectivity in rivers and floodplains.

We need physical habitat and natural processes to be recognised as being equally important as water quality and quantity for healthy rivers.

We must communicate better the importance of physical habitat and natural processes for the health of our rivers.

We need physical habitat and natural processes to feature more highly in national campaigns.

We need better-defined national targets for river morphology and habitat quality.

We need science, research and monitoring to understand and measure success.



The next RRC Annual Conference will be 24-25th April 2024, Llandudno, North Wales.

<https://www.therrc.co.uk/rrc-annual-conference-2024>

The next RRC Scientific Advances in River Restoration Conference is likely to be planned for September 2026 (TBC).



