

## **Final Report for: Increasing Knowledge for Addressing Acidification**

### Back ground to project

The project idea was developed following discussions between a number of organisations involved in restoring waters which have been acidified.

The main organisations involved in the project were Galloway Fisheries Trust (GFT), Tyne Rivers Trust and the Wye and Usk Foundation. All three are environmental charities which have experience in addressing acidification. The Galloway Glens Landscape Partnership Project (GGLPP) were also involved in the field visits.

The original project aims were:

- Encourage closely liaison between organisations working to address acidification of surface waters from Scotland, England, Wales and Sweden
- Learn from the experiences of others and share our experiences from Galloway
- Consider possible future collaborative working between organisations to address acidification issues
- Improve water quality in the uplands of Galloway and fish stocks living in these areas
- Minimise negative water quality issues sometimes associated with commercial conifer forestry
- Learn how different stakeholders have worked together in different areas to address acidification and consider if suitable for Galloway
- Improve the planned 'Black Water of Dee Restoration Project' (funded by Galloway Glens) to potentially trial ideas from other areas to ensure long term improvements are achieved.
- Improve the long term sustainability of local fish stocks
- Help to improve the resilience of local salmon stocks against predicted climate change related acidification impacts

The proposed budget was £5,000, which was all to be provided by LEADER.

### The project experience

The project ran from 27<sup>th</sup> October 2019 to 30<sup>th</sup> September 2020.

In November 2019, Jamie Ribbens (GFT) and Nick Chisholm (GGLPP) visited the Tyne Rivers Trust (TRT). The upper River Tyne has experienced water quality problems associated with forestry practice in Kielder Forest. These problems and the general environment is very similar to what has occurred in much of the uplands of Galloway. Following a very informative indoor discussions between experiences from Galloway and the Tyne and how both organisations could work closer together in the future on joint project, a range of field sites were undertaken. The field visits were all associated with the TRT 'Forest Streams' project which ran between 2011 – 2015. This project involved identifying priority watercourses for work, working with foresters to address forestry related pressures on water quality, changes to ground preparation, management of drainage, drain blocking and undertaking natural flood management. GFT aim to use the outputs

of this project to improve forestry management in Galloway and to explore the possibility of undertaking a similar project in Galloway

In February 2020, Jamie and Nick undertook their second visit which was to the Wye and Usk Foundation (WUF) in Wales. The Wye suffered from acidification in its upper reaches which had wiped out its fish populations. The WUF have undertaken liming programmes to raise pH, both using powered lime and limestone sand addition. We visited the sites, discussed the practical issues associated with liming and were given copies of their biological monitoring to help see the improvements that have occurred.

A site visit was also undertaken to the River Elan. A hydro dam on this river was built in 1904 to supply drinking water to the West Midlands. The dam stopped natural movements of gravels ever since which means that only large boulders are present in the river bed for nearly 7km. Few invertebrates were present and no fish as they could not spawn. Between 2016 – 2018 nearly 3350 tonnes of gravel has been introduced back to the river below the dam with spectacular results regarding fish numbers and invertebrates. Similar problems occur in Galloway at the Clatteringshaws Dam on the Black Water of Dee – GFT are planning to add gravel below this dam as part of a GGLPP funded project. GFT were provided by WUF with detailed reports of the work completed, how it was done, problems that occurred and monitoring methodologies and results. This information is very useful for the proposed work in Galloway which is presently at the planning stage.

Due to travel restrictions following the Covid-19 outbreak, it was necessary to cancel the visit to Sweden. It was not possible to even organize anything remotely due to offices closing in both countries. Once things eased enough to have potentially explored whether remote meetings / tours were a possibility the Swede who was to be involved had gone on paternity leave. To ensure the overall objectives were still met i.e. learn from experiences in Sweden, it was agreed that GFT staff would instead complete a literature review titled 'a review of Swedish lakes and rivers from acidification and the resulting effect on fish stocks August 2020'. In addition the purchase of a number of books was funded to assist in acidification and river restoration in Galloway especially through improved forest management, peatland restoration and liming. During the trip to Wales we also learnt that the addition of gravel to rivers was more complicated than initially thought especially regarding adequate and suitable monitoring programmes. Thus it was agreed to also undertake a literature review of gravel addition projects previously completed in the UK.

The project fits into the Dumfries and Galloway Local Development Strategy under 'Fisheries, Coastal and Marine Initiatives'.

The project has been delivered by GFT. GFT organized both field trips and had the initial contact with the Swedish Agencies. When it became apparent that the trip to Sweden could not take place then the alternative deliverables were organized and undertaken by GFT.

The project was publicised by both GFT and GGLPP on their various social media networks to the general public. Due to Covid-19 restrictions it has not been possible to meet with other organisations to discuss the knowledge and experience gained from the field visits. The trips have been discussed with the remote steering group meeting of the 'Prioritised Salmon Habitat

Restoration Project' which includes membership from Forestry and Land Scotland, Scottish Environment Protection Agency and Crichton Carbon Centre. The gravel addition literature review and knowledge from the site visit has already fed into the planning for the Black Water of Dee restoration project in Galloway and will shortly be shared with the wider steering group for that project.

With regard to the final budget, it had to be reduced once it was clear that a visit to Sweden would not take place due to Covid-19 restrictions. A change request was agreed to allow some of the funding to be reallocated to completion of two literature reviews and purchase of relevant books. The final costs which were covered by LEADER were:

- Field visits to Tyne Rivers Trust and Wye and Usk Foundation = £1,123.28
- Literature reviews and book purchases = £2,320.54

This project has achieved the target 'Number of Projects that: enhance these environments – Support the sustainable use of these environments – Demonstrate the value of these environments to the lives of the people of Dumfries and Galloway' through improved delivery of the Galloway Glens supported 'Black Water of Dee restoration project' which GFT is delivering through improving forestry management practices and inputting 500 tonnes of gravel below Clatteringshaws Dam. This project involves a number of volunteer and education delivery days.

The experience and knowledge gained from this project will help GFT and other organisations to improve forestry management, water quality and riverine habitats across Galloway.

Also a possible partnership project between GFT and forestry interests will be considered after viewing and discussing a similar project completed by the Tyne Rivers Trust. The trip to Wales showed the long term benefits that can be achieved from liming addition to address acidification and also highlighted that a lot more planning was required when adding gravel to a sediment starved river to ensure the success of such work than had been appreciated by GFT / GGLPP.

The outputs of this project will be mainstreamed to assist in the planning and delivery of a range of environmental improvement works and projects in future years.