2023 UK River Prize Finalist

'Restoring the Rotal Burn'

Rottal Burn (Angus)

Project partners: River South Esk Catchment Partnership, Esk Rivers & Fisheries Trust, Abertay University

Project summary

The Rottal Burn is a tributary of the River South Esk SAC in Glen Clova, Eastern Scotland, with headwaters in Cairngorms National Park. The lower burn was straightened around the 1830s for agricultural reasons and was subjected to regular dredging. While salmon and trout continued to spawn in the straightened section of river, survival of juvenile fish was poor, and salmonid redds were frequently washed-out during winter floods.

To restore the Rottal Burn, a new channel was created in 2012, replacing 650m of straightened, embankment-lined channel with an open, meandering channel extended to 1200m in length, with a new confluence to the River South Esk and re-connected to its floodplain.

Project partners

The River South Esk Catchment Partnership is one of only four voluntary, multistakeholder Catchment Partnerships in Scotland, formed in 2005.The Esk Rivers and Fisheries Trust and Abertay University have been integral to project delivery and ongoing monitoring of the Rottal Burn Restoration. A positive relationship exists with landowner Rottal Estate enabling the projects delivery on the working estate and welcoming access for monitoring and educational opportunities.

Project construction

The construction works were designed to create the restored channel without any import or export of material. The existing gravel embankments were used to provide material for the bed of the new channel and excavated material was used in landscaping and infill of the diverted channel. Sections of the restoration included large woody debris in the form of trees with rootballs sourced from wind-blown Scots Pine from the local estate.

The restoration aimed to restore natural river processes and in-stream and riparian habitat, particularly for the Atlantic salmon, trout, and freshwater pearl mussel. The unconfined restoration did not 'lock' the channel in place, it was expected that it would remain active and change naturally over time. The freedom to evolve has resulted in improvements in terrestrial habitats such as wetlands, riverbank habitat and shingle islands. Native broadleaf and pine trees were planted in 2012 along much of the new channel. The riparian zone has not been grazed, and there has been significant natural regeneration, mainly alder.

Monitoring restoration and change

Abertay University began monitoring the site after delivery and have done so for over 10 years. Student projects have ranged in topic, and consistent, structured monitoring of channel migration has been carried out several times per year. Research topics have included including: geomorphological change; River Habitat Surveys; Ecosystem Service assessment; Natural Flood

Management appraisals; Stakeholder Perception interviews. Abertay University held a conference in 2017 to celebrate five years of post-delivery monitoring, including a summary of student papers.

The ERFT carry out ongoing instream monitoring for salmonid species and invertebrates, adding to the evidence base of ecological restoration at the site. The botanical interest of the site has increased greatly, and invertebrate/pollinators are anecdotally greater in number. The project continues to evolve, and ecological monitoring of terrestrial species is planned.

Linking action and Strategy

The Rottal Burn Restoration delivers multiple benefits contributing to important issues from a global to local scale. The project has delivered:

- Habitat restoration, enhancing connectivity and ecological coherence;
- Freshwater & species restoration, including significant hydrological change;
- Natural flood management benefits by connecting rivers with flood plains and by reducing flow variability;
- Enhanced local nature networks through multihabitat restoration;
- Increased carbon storage through flood plan restoration and riparian woodland expansion

The ambitious project forges a strong link between river restoration, multi-habitat nature restoration and wider policy development and delivery.

The project contributes to many local and national biodiversity strategy and action plan objectives, delivering against multiple actions in the Tayside Local Biodiversity Action Plan 2016-26.

Community Impact

A decade from inception, the Rottal Burn Restoration continues to inspire action and provides lessons in good practice and capacity building through links to wider strategy. River restoration specialists and a varied stakeholder network visit the site and witness river restoration as it evolves.

Not only has the project restored nature and contributes to local and global outcomes, it aids climate change adaptation and resilience, increased carbon storage, and provides natural flood management benefits for downstream communities and landowners.

Community engagement and awareness raising has been widely invested in. The partnership is involved in local community climate forums, has hosted school groups, art-science collaborations, town sustainability projects and in we have taken our river restoration good practice overseas via EU LEADER projects in Norway, Finland and Belgium.