



The LIFE WADER project

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LIFE WADER is a five-year, €6.8m project running from 2021 to 2026, aimed at improving the condition of the river, intertidal and marine habitats of the Northumberland coast and Tweed catchment for the species that depend on them. The project is led by Natural England in collaboration with the Environment Agency, Tweed Forum and Newcastle University, and is co-funded by the European Union through the EU LIFE Programme.

Project overview

LIFE WADER is a large and ambitious project with a diverse range of work programmes and aims. The project focuses on four Special Areas of Conservation (SACs) and two Special Protection Areas (SPAs), spanning 70,242 ha from south-east Scotland along the Northumbrian coast and including the Tweed catchment in the Scottish Borders and Lindisfarne National Nature Reserve to the east. By tackling issues affecting site condition, targeting 10 Annex I habitats, three Annex II species and associated SPA bird interests, LIFE WADER aims to help these sites become more resilient to climate change.

The project has taken a catchment-to-coast approach to nature recovery, looking at the bigger picture through a landscape-scale lens. It set out to tackle four major issues prevalent in the area: declining water quality affecting freshwater, coastal and marine habitats; excessive algal growth in the intertidal zone; the increasing spread of invasive species in riparian, coastal and marine habitats; and growing recreational and visitor pressure on wildlife habitats, particularly at the coast. Practical nature recovery interventions have been aimed at addressing these challenges through the trial of innovative solutions, as well as demonstration of established practice. In tackling these issues, the project also set out to raise levels of awareness about the importance of, and interconnectivity between, the river, coastal and marine habitats of this special area.

FIGURE 1

LIFE WADER project area, Northumberland coast and Tweed catchment.



Restoration measures

Delivering river restoration on the River Till/Breamish — completed a re-meander of the river involving 600 m of new river channel excavated, removal of approximately 150 m of flood bank, construction of approximately 390 m of new swale, two large woody dams and six new floodplain scrapes, installation of approximately 3,400 m of new fencing, resulting in approximately 5 ha assumed wetted area at the downstream end of the site, and planting of 800 willow plants and stakes.



FIGURE 2 River Breamish before restoration. Credits: Tommy Wilkinson.



FIGURE 3 River Breamish after restoration. Credits: Tommy Wilkinson.

Creating new wetlands — constructed 15 reed beds and sediment ponds.



FIGURE 4 Construction works at the sediment ponds at Warren Mill. Credits: LIFE WADER.



FIGURE 5 A newly constructed sediment pond at Warren Mill. Credits: LIFE WADER.



FIGURE 6 Newly constructed sediment ponds at Kiln Point. Credits: LIFE WADER.

Riparian planting — planted 95,000 trees, creating 64 ha of native riparian woodland and buffering up to 8 km of watercourse. Carried out demonstrations of different biodegradable tree guard materials and solar water troughs for livestock.



FIGURE 7 *Riparian woodland planting at East Deloraine. Credits: Tweed Forum.*

Farm advice and demonstration projects — provided soil health advice to 17 farms and carried out on-farm demonstration projects on cover crops over three years and farmyard manure over two years. Demonstrated fenceless grazing and ran workshops on dung beetles for soil and nutrient management. Delivered training in effective water quality monitoring for citizen scientists.



FIGURE 8 *Water quality monitoring with citizen scientists. Credits: Environment Agency.*

Modelling — a reconstructed catchment-scale model is being developed to understand the nutrient and sediment dynamics of the riparian system and identify where and when they are a problem. Modelled scenarios will allow assessment of the effect of the project interventions, including woodland creation, wetlands and improved management of farmland. To assess across spatial scales, sub-models appropriate to the scale of the project interventions are being used. Once validated with data collected across the project, models will be used to simulate scenarios across the catchments, such as land-use or policy changes, to understand what scale of interventions might be needed to mitigate nutrient loading, including nitrates and phosphates, in problem areas.

Opportunistic macroalgae — carried out research and modelling to understand macroalgae growth and function, and created a model of Budle Bay to estimate the relative contribution of different nitrogenous sources to algal growth. The model will be validated with monitoring data and can then be used to assess interventions and simulate different nutrient-level scenarios. Successfully removed 2.5 tonnes of algae using a specially adapted boat to remove it sensitively, and explored ways in which the removed material can be used. Carried out a demonstration of ROV technology to take nutrient measurements across the bay.



FIGURE 9 *Aerial view of macroalgae in Budle Bay. Credits: Matt Carr.*



FIGURE 10 *Removal of opportunistic macroalgae in Budle Bay. Credits: LIFE WADER.*

Improved non-chemical control of invasive species — carried out successful mechanical removal of priority invasive dune species across large areas and demonstrated the value of fencing to protect foreshore dune habitat. Established rust fungus biocontrol for Himalayan balsam and successfully removed giant hogweed, American skunk cabbage and Japanese knotweed from large stretches of the River Tweed. Carried out a demonstration of new *RootWave Pro* technology, which uses electricity to target and destroy plants at the root. Developed a toolkit for detection of marine invasive species using eDNA. Ran a demonstration workshop on the use of online apps to collect management and identification information.



FIGURE 11 *Works at the dunes by River Tweed to manage invasive plant species. Credits: LIFE WADER.*

Reducing wildlife disturbance — created approximately 100 ha of seasonal wildlife refuges for breeding shorebirds and seals. Delivered a protection and engagement programme to identify pressure points and enhance visitor management through an increased presence of wildlife rangers and improved signage and information materials, including a new wildlife ID guide and mobile exhibition trailer.

Longer-term impacts

With such a large-scale project, it is hoped there will be many positive impacts. These would include improved water quality; a reduction in the amount of algae growing at the coast over the summer; more riparian woodland along the banks of the River Tweed and its tributaries; more small-scale sediment ponds and reed beds on farms throughout the catchment; and fewer invasive species in the water and on land. Across priority sites, we would like to see dogs on leads on beaches with nesting birds, less disturbance from human activities such as low-flying drones, and increased populations of visiting winter and summer bird species.

Reversing the decline of freshwater, coastal, and marine habitats and species

Interventions delivered by the LIFE WADER project have begun to reverse some of the negative trends, allowing nature to recover and become more resilient.

Through modelling, the project has shown that small-scale improvements achieved at local level, when scaled up to catchment scale, can bring enormous benefits to habitats, wildlife and people, delivering financial gains, improving and protecting ecosystems, and enhancing visitor experiences.

To truly achieve change at the catchment scale, to deliver the ambition of the project and to achieve long-term change at scale, the project interventions need to be replicated many times over throughout the catchment.

Demonstrating best practice to businesses, policy makers and land managers

A key impact of the project has been demonstrating how relatively easily these interventions can be implemented. To date, the project has delivered 12 training and demonstration workshops and site visits, and 30 webinars and presentations at meetings, conferences, industry and public events.

Approaches to the delivery of the LIFE WADER project have also been captured in two short films describing the river restoration project ([Harehope Restoration Project – Tweed Forum](#)) and the macroalgae removal work ([Film Captures Restoration Work in Budle Bay – Life Wader](#)).

Outputs from the project will include the production of best practice guides for established approaches and peer reviewed papers for the more novel elements. Publications to date include the [Tweed Catchment Biosecurity Plan 2026–2031](#), a [protocol](#) for molecular monitoring of biofouling communities using settlement panels and diagnostic assays, and an [Education Pack](#) for outdoor learning.

Increased awareness of the importance and vulnerability of the SAC/SPA sites

Together these have, and will continue to, encourage replication of the various interventions either as one-off interventions or ideally built into business-as-usual delivery for partners. A second adjoining upstream stretch of the river Breamish will be restored later this year with two further downstream sections under consideration for the future. Landowners will be further encouraged through existing funding schemes to undertake riparian planting, pond construction and other soil management initiatives. Project staff have also facilitated replication of the wildlife refuge approach at three additional sites outside the project delivery area.

Lessons learned

The LIFE WADER project will formally complete in December 2026 but there is more that can be done to maintain momentum and maximise impact at the catchment scale. Delivering at scale is difficult and the LIFE WADER project delivery partners are keen to do more in this space, bringing together a wider partnership.

Interventions don't need to be large or commercially designed to have an impact.

Landowner engagement early on is crucial to a smooth and timely delivery.

Data availability can be problematic as long-term standardised monitoring datasets, needed for modelling, are often lacking. Collation of historic data that has been collected for smaller, short-term projects takes time to locate, share and collate. An advantage of partnership working is the availability of data from multiple sources, although this is often not standardised. We'd advocate for Open repositories of for environmental data across all partners.

A good working partnership is crucial. While individual components of the project were led by individual partners, most were delivered in partnership. Through demonstrating how well the LIFE WADER partnership has worked and the benefits this has brought, it is hoped this encourages more engagement from a wider group to become involved and to contribute to activities moving forward.