



SPECIAL EU PROGRAMMES BODY

Project Case Study: CatchmentCARE Project Investigating Water Quality in Upper and Lower Lough MacNean

THEME:

Environment

FUNDING (ERDF+MATCH):

€13,792,435.55

MATCH FUNDING:

Department of Agriculture,
Environment and Rural
Affairs;
The Department of
Housing, Planning and
Local Government, Ireland

LEAD PARTNER:

Donegal County Council

PROJECT PARTNERS:

Agri-Food & Biosciences
Institute, Armagh,
Banbridge and Craigavon
Borough Council, British
Geological Survey,
Geological Survey of
Ireland, Inland Fisheries
Ireland, Ulster University
Loughs Agency

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Water quality is declining in many lakes around Ireland due to nutrient enrichment. To investigate the causes of this, Ulster University and AFBI are undertaking research on Upper and Lower Lough Macnean (found in Counties Fermanagh, Cavan and Leitrim), in the Arney Catchment.

These two lakes are large and shallow which means that, in stormy conditions, the sediment which contains nutrients and chemicals introduced into the lake are remixed throughout the lake, leading to a reduction of clarity of the water.

The research involved placing a sediment trap into the lake during storm conditions. The sediment from the trap is then dried and weighed and wind data used to measure the relationship between the amount of sediment collected and the wind direction and speed. The sediment is also analysed to see how much phosphorus it contains, as this nutrient is one of the main causes of nutrient enrichment in lake water bodies.

It is not only storm activity that can impact on lake water quality. Internal chemical cycling, particularly of phosphorus, from undisturbed sediments, can also continue to cause eutrophication in lakes during warm and cold weather cycles. Even when external catchment inputs from agriculture, wastewater treatment works etc. are excluded, evidence shows that lakes can remain enriched for extended periods.

To address this, two 1m cores were taken from each lake and the Catchment-CARE team hope to find out how long the phosphorus in the lake sediment will continue to recycle back into the lake water.

The core slices were sent for dating analysis, which provides the team with insight into the recent, and longer term, history of the lakes. Significant world events, such as the Chernobyl disaster in 1986, are even identifiable as faint signals in the chemical record of the sediment and, in fact, are used as key dating tools in the analysis.

From this work the team hope to be able to quantify the impact of storm events on the lakes, and also, derive a timescale for improvement in lake status.