

PAPER 14**Lough Melvin – a participatory approach to protecting a unique habitat: a case study for agri-environmental partnership**

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Lough Melvin is a cross-border lake on the Leitrim-Fermanagh border, with catchment area of 26,500 ha. The lake is ecologically unique as it hosts arctic char, salmon and three subspecies of trout, and has not (yet) been invaded by the zebra mussel. As a result, angling and tourism are central to the local economy. In recent years, concerns have arisen re the ecological stability of the lake ecosystem: with phosphorus (P) levels at 0.036 mg l⁻¹ in 2001, the lake is now classified as mesotrophic – potentially eutrophic. Potential sources of P include domestic sources, agriculture and forestry operations.

The Lough Melvin Nutrient Reduction Programme is a cross-border, multi-institute project (funded by INTERREG IIIa) with the objective to develop and cost a cross-sectorial catchment management plan (CMP), specifically for the Lough Melvin Catchment. Within this project, our aim was to develop a suite of targeted and cost-effective agri-environmental measures to minimise P-loss to water, that would be practical and acceptable to the farming community.

Fifty farms were selected for risk assessment of P-loss, which included farmer interviews, farm management services, application of the P-ranking scheme, and soil sampling in excess of 400 fields. The risk assessment showed that agriculture in the Lough Melvin catchment mainly involves suckler cows and sheep enterprises, with a low average stocking rate of 0.5 LU's ha⁻¹. However, three key risks were identified: 1. Lack of support structures for the implementation of nutrient advice / nutrient management plans, resulting in locally excessive soil test P (STP) levels (Index 4) and total P inputs; 2. very high physical connectivity between agricultural nutrient applications and water quality; 3. limited availability of suitable spreadlands and spreading windows, resulting in repeated applications of slurry on the same fields. As a result, 31% of the agricultural area was identified as high risk, 30% as medium risk, and 39% as low risk.

Following the identification of the key risks, potential measures were developed from the literature and farmer interviews. These potential measures were then evaluated for cost-effectiveness, total costs, total impact and popularity, again by farmer interviews, stakeholder workshops, and economic analyses. The five measures that were most cost-effective and popular included 1. feeding of low-P concentrates; 2. withholding a P on Index 4 silage areas; 3. implementing support structures for nutrient management planning; 4. provision of compensation for reductions in sheep numbers and 5. Installing sediment traps in drainage ditches. Together, these five measures were estimated to account for 50% of potential P-reduction, at 5% of maximum costs.

Based on these results, we recommend that the CMP for Lough Melvin includes 1. long-term measures such as support structures for nutrient management planning and soil testing; 2. short-term measures aimed at reducing P-transport, e.g. sediment barriers in drainage ditches and 3. a review of regulatory loopholes.

In conclusion, the Lough Melvin project successfully identified measures that are cost-effective, high impact, and targeted at risk areas. Most importantly, the participatory approach ensured that the measures selected would, in addition, be practical and acceptable to the farming community, hence increasing the likelihood and success of implementation.