RS15 – Presentation

THE ECOLOGICAL IMPACTS OF CATTLE ACCESS ON FRESHWATER ECOSYSTEMS

Matthew O'Sullivan *(matthew.o-sullivan.1@ucdconnect.ie)*[1]
Daire Ó hUallacháin[2], Patrícia Oliveira Antunes[3], Eleanor Jennings[3], Suzanne Linnane[3], Sarah Murnaghan[3], Fiona Regan[4], Mary Kelly-Quinn[1]

[1] *School of Biology and Environmental Science, Freshwater Ecology Research Group, University College Dublin, Dublin, Ireland.*
[2] *Teagasc, Johnstown Castle Research Centre, Wexford, Ireland.*
[3] *Centre for Freshwaters and Environmental Studies, Dundalk Institute of Technology, Dublin Road, Dundalk, Co. Louth, Ireland*
[4] *MESTECH, Dublin City University, Glasnevin, Dublin, Ireland.*

Pollution related to agriculture poses a serious threat to freshwater ecosystems and drinking water quality. In Ireland, agricultural activities make up 65% of total land use with cattle related activities dominating the landscape. Where cattle have access to freshwater bodies, water quality deterioration via stream bank degradation, habitat homogenisation and nutrient enrichment can occur. Empirical evidence is largely of US and Australasian origin although research in the context of Western Europe is growing. In Ireland, seasonal effects of cattle access on high order, lowland rivers have been detected. However, little evidence exists in relation to low order streams. These small streams form 77% of the river network in Ireland and are highly vulnerable to pollution impacts due to their high connectivity with agricultural land and low dilution capacity. In 2016 a national, multi-institute study on the potential impacts of cattle access on stream water quality was initiated. It also involves an assessment of the environmental, ecological and socio-economic impact of existing and potential measures that prevent cattle access to watercourses. This paper reports on a component of this study which has assessed the potential impacts of cattle access on first and second order streams through investigations of macroinvertebrate and floral communities as well as the levels of sedimentation upstream and downstream of the access points. Macroinvertebrate communities have been sampled in spring and autumn. Analysis of the spring data has revealed statistically significant impacts at certain cattle access points largely due to reductions in abundances of certain ephemeropteran species and increases in sediment tolerant Oligochaeta and Chironomidae. Significant increases in deposited sediment mass were also recorded at a number of cattle access points during the autumn sampling season.