

The impact of cattle access and exclusion from watercourses on freshwater geochemical and microbial parameters

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Cattle access to watercourses can result in surface water contamination with nutrients, sediments and faecal pathogens. Although there have been limited studies regarding the impacts of cattle access on water quality in an Irish or European context, measures to exclude cattle from watercourses (e.g. fencing) have been included in all Irish agri-environment schemes, including the current Green Low Carbon Agri-environment Scheme.

The current study is part of the project *Cattle exclusion from watercourses: environmental and socio-economic implications* (COSAIN) (EPA funded under the Research Programme 2014-2020), and is focused on the impacts of cattle access on nutrient loading, sediment loading, and indicators of faecal contamination. Cattle access points were sampled in five catchments. Sediments will be characterised upstream and downstream of and at access sites. Sediment incubations will provide information on nutrient exchange with waters. High resolution sampling for nutrients, cameras to monitor cattle activity, and nephelometers will be used to quantify the contribution of cattle in-stream activity to nutrient and sediment concentrations. Sampling of sites after stream fencing will allow a “before-after” comparison. Collected data will be used in a dynamic catchment model to estimate nutrient, bacterial and sediment loadings at the catchment scale and allow for scenario testing.