

The Effects of Run-of-River Hydroelectric Power Schemes on Fish and Invertebrate Community Composition in Temperate Streams and Rivers

Author:

Gary Bilotta (g.s.bilotta@brighton.ac.uk), University of Brighton

Coauthor:

Niall Burnside

Matthew Turley

Jeremy Gray

Harriet Orr

Run-of-river (ROR) hydroelectric power schemes are often presumed to be less environmentally-damaging than large-scale storage schemes. However, there are currently only a limited number of peer-reviewed studies on their physical and ecological impact. This presentation will summarise the findings from a policy secondment, funded by the UK's Natural Environment Research Council and the Environment Agency of England, which investigated the impacts of ROR hydroelectric power schemes on fish and invertebrate communities in temperate streams and rivers, using Before-After, Control-Impact (BACI) study designs. The study made use of routine environmental surveillance data collected as part of long-term national and international monitoring programmes at systematically-selected ROR hydroelectric power schemes and systematically-selected paired control sites. Five metrics of invertebrate community composition and six area-normalised metrics of fish community composition were analysed using linear mixed effects models. The results are discussed with respect to impacts from other sources of power, and recommendations are made for best-practice study design for future freshwater community impact studies.