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DEVELOPING UNDERSTANDING OF THE HYDROLOGICAL IMPACTS OF BEAVER REINTRODUCTION IN GREAT BRITAIN

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Abstract

Hydrological extremes such as floods and droughts pose a significant environmental and societal risk globally. Across Europe this threat is exacerbated by the intensive management of our anthropogenic landscapes and is expected to increase with climate change. In the face of these hydrological extremes the value of landscape restoration to create more resilient environments and provide a host of nature-based solutions for people and nature is increasingly being recognised. Beavers are considered ecosystem engineers and can profoundly alter ecosystem structure and hydrological function through their engineering activity, which particularly via the building of dams, ponds and canals can create complex wetland environments. The creation of wetlands as beavers return to our landscapes could have major impacts upon flow regimes and related water resource management issues. Results will be presented from hydrological monitoring across a range of sites in Great Britain where the Eurasian beaver (*Castor fiber*) has been reintroduced. Analysis will seek to develop our understanding of the hydrological impacts of beavers and determine whether beaver engineering results in flow attenuation across the multiple scales and land uses monitored. Together these monitoring projects aim to form an evidence base for understanding the potential role that beavers could play in multiple benefit, natural process based, water resource management strategies. To inform beaver reintroduction strategies in Great Britain it is also beneficial to understand where beaver damming and wetland creation could occur across our landscapes. A suite of modelling tools will be presented for determining beaver habitat suitability, dam capacity and mapping associated opportunities, which in conjunction with empirical monitoring aims to provide understanding at management and policy relevant scales.

Keywords: beaver wetland creation, flow attenuation, hydrological functioning, water resource management.

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