A Reset for Freshwaters

our call to the new government

The UK's freshwaters are failing. We need an urgent policy reset to drive critical improvements across the whole freshwater environment.

Everyone now understands the sewage problems in our rivers, but tackling river sewage in isolation will make very little difference. The biodiversity of our freshwaters depends on a much wider network of habitats, including large numbers of small waterbodies like headwater streams, ponds, springs, flushes, ditches and small fens. These habitats have often been ignored in the past, but we now know that they are vital for freshwater life, making up a large part of the water environment[1] and supporting more species than larger waters[2].

We particularly need to protect our smaller waters because they are still declining[3]. But we can also use them to deliver rapid and effective change, harnessing their unique power to bring clean water back to the landscape and help threatened freshwater plants and animals to recover[5].

To achieve a reset for Britain's freshwaters, it is important to focus on the things that really make a difference. We can make the quickest progress for freshwater life by putting small waters at the heart of water management.

1. **Start with the smallest.** Small waters are the most cost-effective part of the water environment to manage. We need to start at the top of stream catchments and work down. Using new ponds, we can create networks of high quality freshwater habitats[5]. If designed and sited well, these will be quickly colonised by aquatic plants and animals. Starting with the smallest will bring rapid benefits at a time when change is urgent.

   Policy:
   - Account for the disproportionate contribution of small waterbodies to biodiversity goals by creating numerical targets for small waters (kilometres of streams improved, number of ponds created) alongside existing area-based nature recovery targets (e.g. 30 by 30, Biodiversity Net Gain).
   - Initiate a national pond creation programme to reverse historic pond losses, aiming to strategically create and restore 400,000 clean water ponds by 2050.
   - Create a national plan for restoring Britain's historic floodplains.

2. **Bring back clean water.** Tackling pollution in our larger rivers and lakes is vital, but this will take time. Because of their small catchments, small freshwaters can be protected from pollution, even in otherwise urban or intensively managed landscapes[4]. By restoring and creating small waterbodies in pockets of land protected from pollution, we can bring clean water back to our towns and countryside.

   Policy:
   - Fund the restoration of headwater streams, including prioritising upgrades to small 'descriptive' wastewater treatment plants.
   - Revise Water Environment Regulations to properly integrate small waters, still and flowing, into River Basin Management Plans.
   - Use large scale pond and Floodplain Wetland Mosaic creation projects to bring back clean water to the landscape quickly.

3. **Protect the best.** Britain still has some amazing lakes, ponds, rivers and wetlands, but their wildlife is isolated and increasingly under threat[3]. It is essential to stop the decline of our best sites, protecting their rare plants and animals as the sources for recovery across the rest of the landscape. The UK has traditionally placed most emphasis on cleaning up pollution first, and protecting what is in good condition has often come second. This approach is failing. Instead, by protecting and then building out from our most important freshwater habitats, we can create connected networks of freshwaters large and small, allowing species to spread to new sites and respond to climate change.

   Policy:
   - Adopt a Freshwater Network approach nationally (within the Land Use Framework) and regionally (in Local Nature Recovery Strategies) to identify freshwater biodiversity hotspots and build wilder, wetter, better and more connected freshwater landscapes.
   - Adopt concepts, pioneered by US regulators, that freshwaters exist in a mosaic of small and large interconnected habitats[4]. Map and manage these habitats as a whole network in reframed Catchment Management Plans.

The Evidence

1. Small waters make up a large part of the water environment

Globally, about 60-70% of running water network by length is made up of small streams. Ponds typically outnumber lakes 100:1. In the UK, small waters typically make up about 40% of the surface water area, with the remaining 60% comprising lakes and rivers.

Biggs et al. (2017) 'The importance of small waterbodies for biodiversity and ecosystem services: implications for policy makers'. *Hydrobiologia* 793, pp. 3-39

Biggs and Munday (2024) 'Policy and social factors underpinning the current regulatory framework for smaller waters and Descriptive wastewater treatment plants'. A report for Anglian Water and the CaSTCo programme. Freshwater Habitats Trust, Oxford.

Brown et al. (2006) 'Morphological and physicochemical properties of British aquatic habitats potentially exposed to pesticides'. *Agriculture, Ecosystems and the Environment* 113, pp. 307-319

Downing et al. (2006) 'The global abundance and size distribution of lakes, ponds and impoundments'. *Limnology and Oceanography* 51 (5) pp. 2388-2397

Downing et al. (2012) 'Global abundance and size distribution of streams and rivers'. *Inland Waters* 2, pp. 229-236.

Feeley and Kelly-Quinn (2012) 'An evaluation of local and regional diversity of benthic macroinvertebrate communities in two small regions of Ireland and their potential as localised refugia for certain taxonomic groups'. *Biology and Environment: Proceedings of the Royal Irish Academy* 112B (1), pp. 43-54

2. Small waters are the richest part of the water environment

At a landscape-scale, ponds support more species of macroinvertebrates and plants than lakes or rivers, including rare and sensitive species. As much as 30% of a river's macroinvertebrate diversity can be restricted to its headwaters.

Davies et al. (2008) 'Comparative biodiversity of aquatic habitats in the European agricultural landscape'. *Agriculture, Ecosystems and the Environment* 125, pp.1-8

Williams et al. (2004) 'Comparative biodiversity of rivers, streams, ditches and ponds in an agricultural landscape'. *Biological Conservation* 115, pp. 329-341

3. Freshwater habitats are in decline

Internationally, freshwater biodiversity is declining faster than marine or terrestrial biodiversity. In the UK, half of all ponds (approximately 400,000) have been lost since 1900. There is ongoing whole-landscape loss of freshwater biodiversity from remaining waters. Nutrient-sensitive species are declining fastest.

Reid et al. (2019) 'Emerging threats and persistent conservation challenges for freshwater biodiversity' *Biological Reviews* 94, pp. 849-873.

Wood et al. (2003). Pond biodiversity and habitat loss in the UK'. *Area* 35 (2), pp. 206-216

Williams, P. (2019). *What's happening to the quality of our best ponds? A re-survey of National Pond Survey sites after 24 years*. Freshwater Habitats Trust, Oxford.

Williams et al. (2020). Nature based measures increase freshwater biodiversity in agricultural catchments'. *Biological Conservation* 244, p. 108515.

4. Freshwater habitats function as an interconnected network, and must be protected with this in mind

Freshwater habitats are linked by flows of nutrients, water and biota, irrespective of their position in the landscape. Waterbodies which are not directly hydrologically connected to river networks act as refuges from stressors affecting the rest of the water environment, and increase the resilience of freshwater ecosystems as a whole.

Cohen et al. (2016). Do geographically isolated wetlands influence landscape functions?' *Proceedings of the National Academy of Sciences (PNAS)* 113 (8), pp. 1978-1986

Schofield et al. (2018) 'Biota connect aquatic habitats throughout freshwater ecosystem mosaics'. *Journal of the North American Water Resources Association* 54 (2), pp. 372-399

United States Environmental Protection Agency (2015). *Connectivity of streams and wetlands to downstream waters: a review and synthesis of the scientific evidence*. Washington D.C., USA.

5. It's not all bad news: we can bring about recovery

Analysis of Water Framework Directive monitoring data has revealed strong recovery of river macroinvertebrates over the last 30 years, linked to reductions in gross sewage pollution driven by implementation of the Urban Wastewater Treatment Directive.

In a typical agricultural catchment in Leicestershire, adding 20 clean water ponds increased whole-catchment aquatic plant richness by 26%, and rare plant richness by 181%.

Pharoah et al. (2023). Evidence of biological recovery from gross pollution in English and Welsh rivers over three decades'. *Science of The Total Environment* 878, p. 163107

Qu et al. (2023). Significant improvement in freshwater invertebrate biodiversity in all types of English rivers over the past 30 years'. *Science of The Total Environment* 905, p. 167144

Williams et al. (2020). Nature based measures increase freshwater biodiversity in agricultural catchments'. *Biological Conservation* 244, p. 108515.