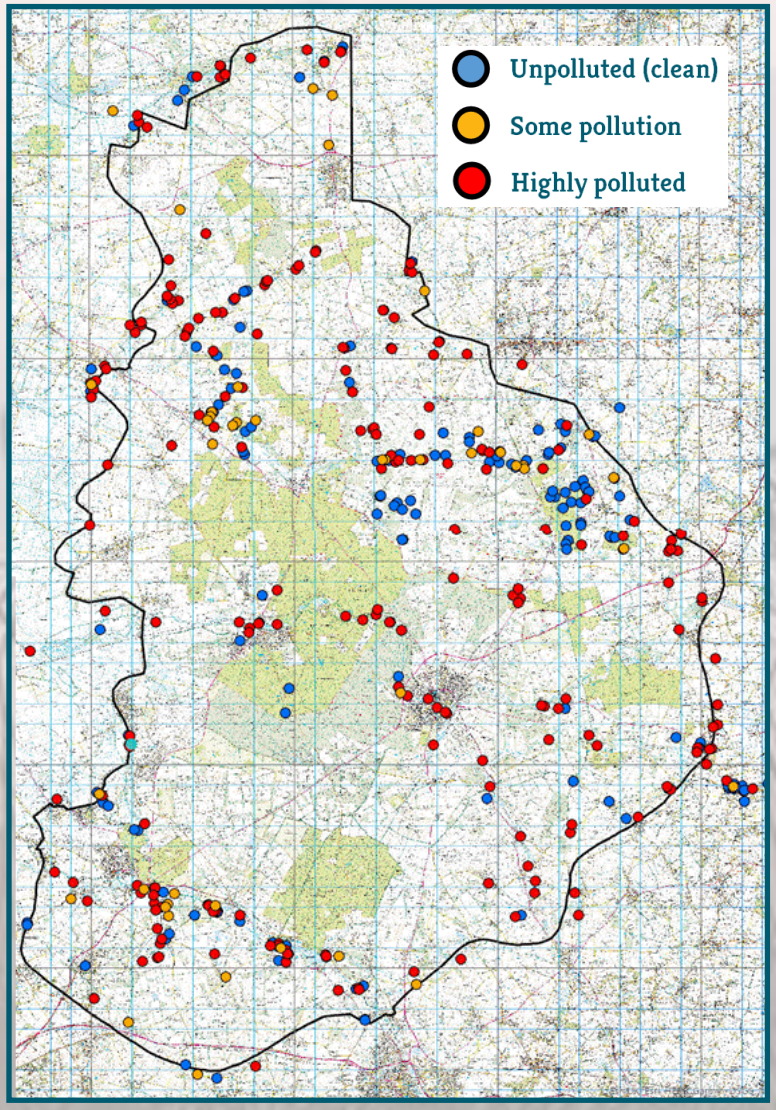
Citizen Science: Testing the Water

REPORT October 2021

Our Aims

The aim of 'Testing the Water' is to raise awareness of habitat loss, pollution and rare species, involving people in practical activities to get new information about the project area through citizen science surveys. For 'Testing the Water' we are gathering results from all kinds of freshwaters including ponds, lakes, rivers, streams and ditches, all of which are important for freshwater wildlife. The survey uses 'quick kits' to assess the level of nitrate and phosphate pollution; two nutrients which can pose a major risk to wildlife if they are above natural levels. This will enable us to map the extent of clean unpolluted water, provide a baseline for long term monitoring of water quality and guide future landscape conservation activities in the Scheme Area. The results in this report, relate to the first round of water testing, with more sampling to follow.



The Survey Area

The Brecks spans an area of 1019 sq. kilometres across Norfolk and Suffolk, in the heart of East Anglia. Although The Brecks are drier than the surrounding landscapes (e.g. The Fens, the Norfolk Broads), the quality and diversity of its wetlands means that the area supports exceptional freshwater biodiversity. The Brecks is particularly known for its pingos, natural ponds that were formed by freezing and thawing of upwelling groundwater during the last glacial period, and for the fluctuating meres, its valley fens and for chalk rivers and streams. The pingos in particular are amongst the most species rich freshwater environments in Western Europe.

Fig 1: Map indicating areas of clean and polluted water in the Brecks area.

Citizen Science: Testing the Water is part of the Lottery funded Brecks Fen Edge and Rivers LP Scheme (BFER LPS). For more information please visit www.brecks.org
This report is by Freshwater Habitats Trust https://bit.ly/BFERTestingTheWater

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The Results

In total 483 water samples were collected over a four month period across the Brecks landscape. The sampling took place between 2nd March and 7th July 2021. In total samples from 158 ponds (33%), 27 lakes (6%), 83 rivers (17%), 68 streams (14%), 114 ditches (24%), 9 cut-off channels (2%), 17 fens (3%) and 7 other waterbodies, including springs and one well (1%) were collected by 66 individual volunteers (Fig 2). 40% of sites sampled showed no evidence of nutrient pollution (Fig 3). Of these unpolluted sites, 45% were ponds, 33% ditches and 7% lakes. Only 6% of the steams and 1% of river and cut-off channels were unpolluted (Fig 4).

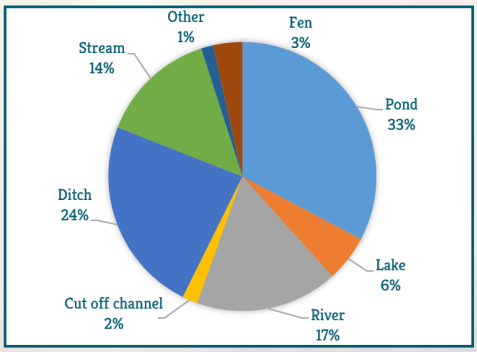

Fig 2: % of waterbodies sampled

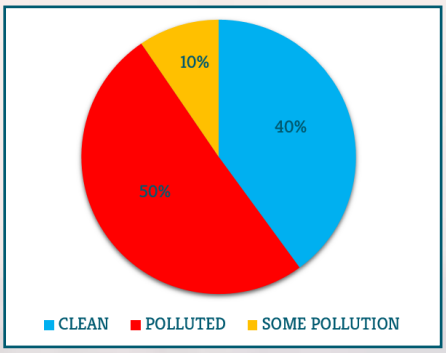

Fig 3: % nutrient pollution

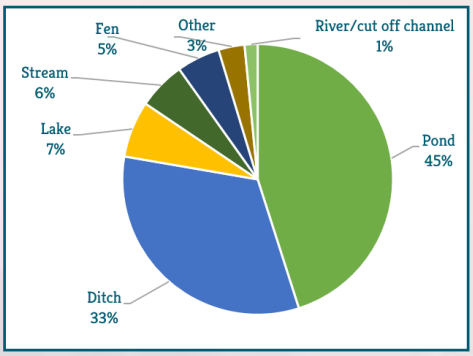

Fig 4: Where is the clean water?

Overall, 56% of the clean water was found in standing waterbodies and 72% of polluted water was found in running waters (Fig 5). Of the 'other' waterbodies tested (including fens) 67% came out as clean. The rivers had the highest proportion of polluted sites, followed closely by cut-off channels and streams (Fig 6).

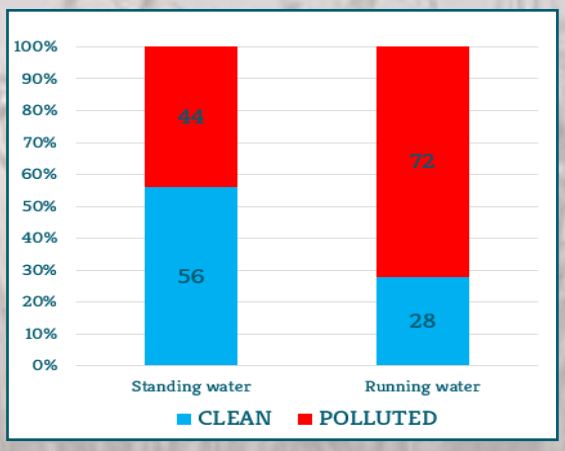

Fig 5: % of nutrient pollution in standing/running water

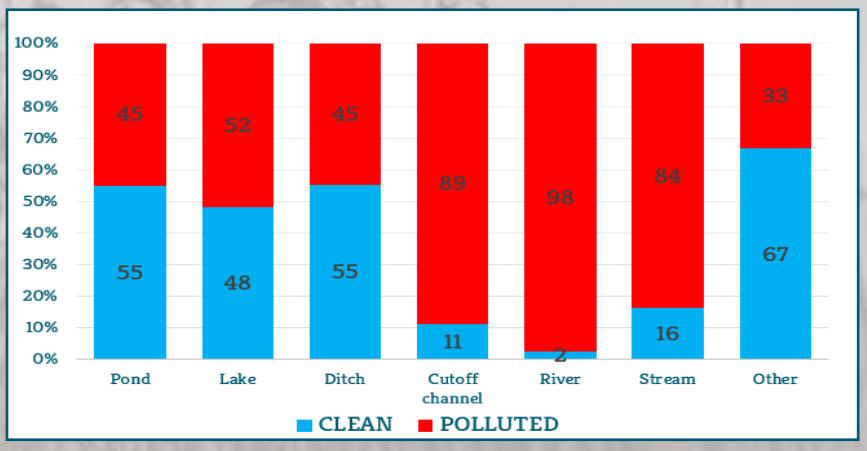

Fig 6: % of nutrient pollution in each waterbody type

N.B. This report relates to the first round of water testing, with more sampling to follow.

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Understanding the Results

Although nutrient pollution was found in all the freshwater habitat types tested, standing waterbodies, including ponds, lakes and fens, were overall the cleanest freshwater habitats found in the Brecks. Like most of lowland Britain, rivers and some ditches and streams in the area were found to be polluted by nutrients. Rivers and streams drain large areas of land and are exposed to multiple sources of pollution from urban and agricultural areas. Ponds and lakes are also affected by the surrounding land use, but they naturally drain smaller areas of land. If the surrounding habitat is free from nutrient pollution, the ponds and lakes are likely to have clean water. Clean water is vital for freshwater biodiversity and these unpolluted sites can support rich and valuable wildlife communities. In the Brecks the cleanest pockets of water were found within the Stanford Training Area (STANTA) and around Thompson Common (Fig.1), both of which contain a mosaic of semi-natural habitats including areas of Breckland grassland and heath, as well as standing water, wetlands and many springs and streams, which are largely unaffected by drainage, pollution, eutrophication or water abstraction. Many of the clean water ditches were also found in these areas. Smaller pockets of clean water habitats were also found in other areas of semi-natural habitats including Thetford Forest and smaller woodlands and nature reserves, away from the wider agricultural landscape.

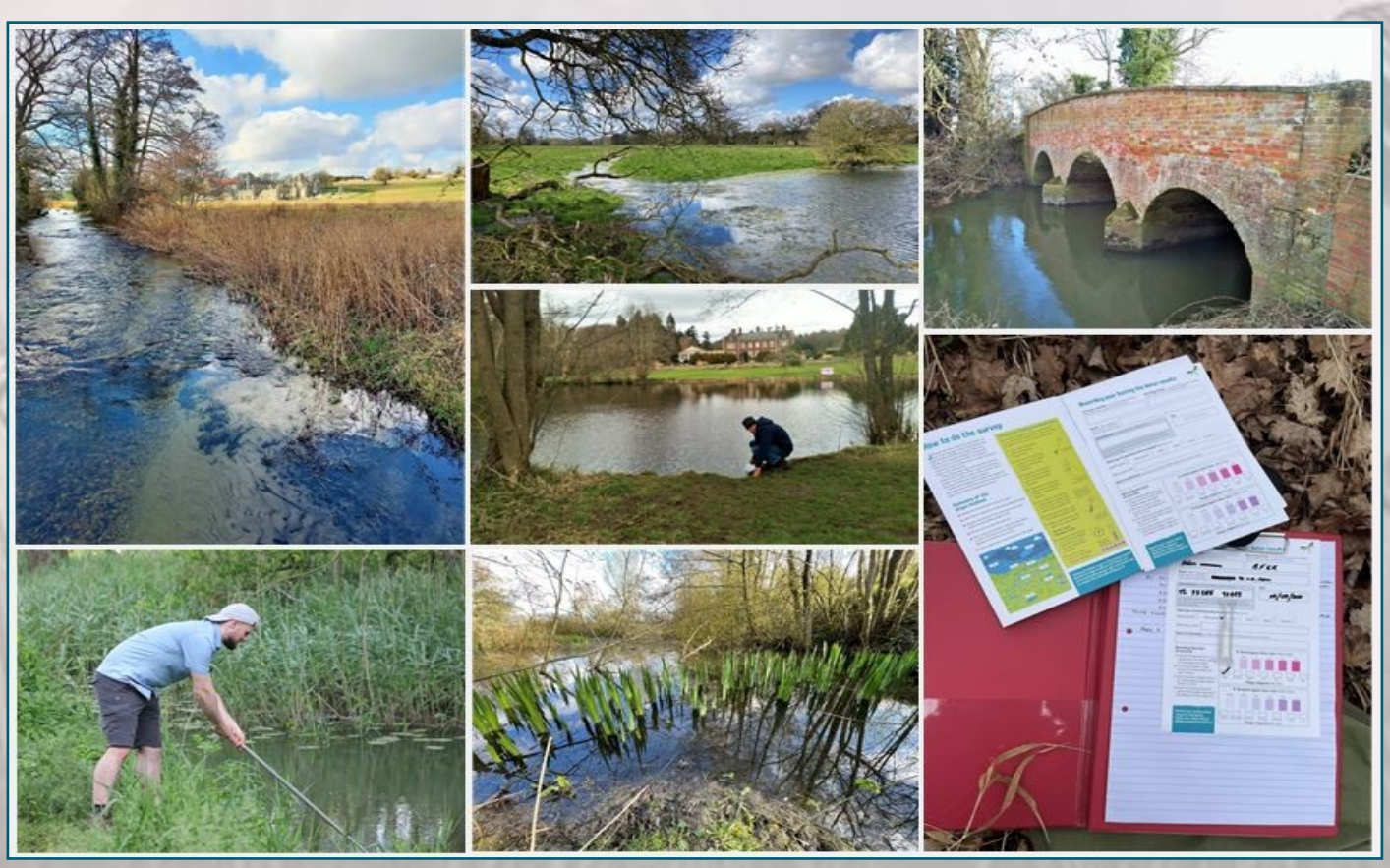

Fig 7: Testing the Water in the Brecks (credit: P.Lloyd, J. Clayton, J.Grover, S, Neale, H.Maxwell, K. Mumford)

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