

Pix Piece
#03
June 2024

ResilienTogether is a Defra-funded project that aims to build a Smart Catchment to enhance flood resilience. Our Pix Pieces capture and share what we have learned about the Pix Brook catchment and its community.

Pix Brook Water Quality: Dissolved Oxygen

Sampling for Dissolved Oxygen (DO) in the Pix Brook, where does it come from and why is it important?

Figure 1 & 2 (Right) Water Quality Sampling in the Pix Brook



ResilienTogether

ResilienTogether is creating a Smart Catchment, using innovative technologies and techniques to reduce flood risk, enhance the water environment and improve community resilience in the Pix Brook catchment.

ResilienTogether undertook water quality sampling for a nine month period at eight sites along the Pix Brook. Pix Piece #01 provides information on how we undertook our water quality sampling. This provided a baseline water quality for a range of parameters across a long stretch of the watercourse, which allowed us to build up a picture of where different determinants may be an issue and why. This Pix Piece focuses on the dissolved oxygen (DO) level in the Pix Brook, what DO is and why DO levels are important.

What is Dissolved Oxygen?

Dissolved oxygen is a measure of the amount of oxygen that is dissolved in water. Oxygen gets into water through photosynthesis of aquatic plants and algae which take up carbon dioxide dissolved in the water and release oxygen. Oxygen can also enter water directly from the air as movement and mixing of water helps to increase the amount of oxygen able to dissolve.

The amount of DO in a watercourse is affected by flow rates, temperature, salinity, time of day, water pollution and depth.

Why is DO important?

Clean watercourses have enough DO to sustain a variety of aquatic life, including, plants, animals and fish. Aquatic organisms need to respire and to do this they use the oxygen dissolved in a watercourse. Fish take in DO for respiration through their gills, and plant life respire when there is no light for photosynthesis. If oxygen levels in water drop suddenly or are too low, fish and other animals may suffocate and die.



Micro-organisms such as bacteria also require DO. A healthy river system needs a natural balance of bacteria and DO. Bacteria consume organic matter (dead plants and animals) in water. The more organic matter that is present in a watercourse, the greater the number of bacteria there are respiring and using up the DO, reducing the amount available for fish and other aquatic animals. This can lead to their suffocation.

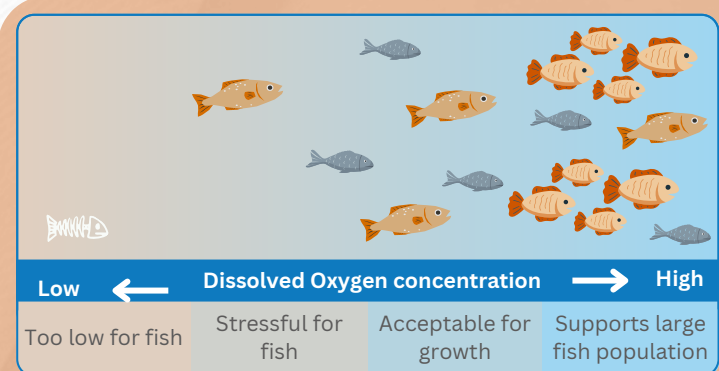


Figure 3. Map of Pix Brook water sampling locations

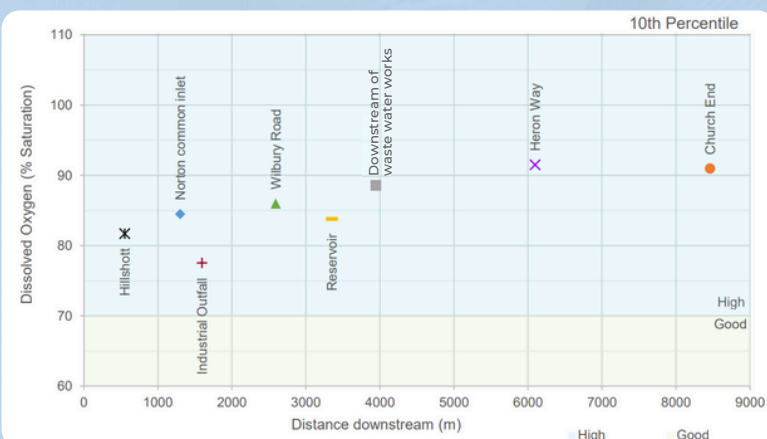


Figure 4. Scatter graph showing the dissolved oxygen (% saturation) at each site, compared to their location downstream

DO in the Pix Brook

Figure 4 shows for the DO level in the Pix Brook is within the "high" classification which means there is a high percentage of dissolved oxygen at all sample sites and it is good at supporting fish populations.

If you are interested in the water quality of the Pix, you can join our River Warden programme to monitor and sample a section of the Pix Brook.

If you want to hear more, please contact ResilienTogether.project@Centralbedfordshire.gov.uk or visit our website <https://resilientogether.org.uk/>