

## Water Institute

# WaterBlitz

Summary Report September 2019



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#### Thank You and Congratulations.

The WaterBlitz would not have been possible without the help of so many volunteers who took part in this year's project. It is our first year running the WaterBlitz in Ireland and as citizen scientists you have turned heads nationally and internationally with your involvement, enthusiasm, and interest in your surrounding environment.

We hope you enjoyed collecting your water quality data. This Irish participant report has been compiled based on our initial findings, collecting hundreds of results from Leinster and a handful from as far afield as Cork and Sligo.

Thanks to you, we have some fantastic data on the waterbodies in the greater Dublin area. The Liffey, Dodder and Tolka were well represented with more than 50% of the samples being taken from rivers. The Grand Canal and Royal Canal were covered with 15% of the samples taken on canals.





#### Why Are We Doing It?

We need to understand where water quality is at risk and where ecosystems are flourishing. With the help of citizens, the ability to monitor such a large number of waterbodies in such a short period of time is incredible. An entire team of environmental scientists wouldn't be able to such cover an area SO thoroughly in just four days, but as a network of citizen scientists you've made it possible.

We will build on this work next year so that we can compare how water quality has changed, allowing us to build a detailed picture of fresh water quality on the island of Ireland. We appreciate all of the feedback you've given us from your experience, and we aim to develop the project further for next year.

#### What Are We Measuring?

We are measuring nitrate and phosphate levels in water. The data that is being measured is used to identify clean waterbodies that we need to protect and to identify potential areas where action needs to be taken. We also asked you to measure features such as litter presence and land use.

Water pollution may arise from multiple sources, but the most frequent causes include domestic sewage inputs (phosphates) and runoff from fertilised farmlands (nitrates). Our water infrastructure is coping with an increasing population and our aquatic ecosystems are dealing with the outputs of urban sprawl. Clean fresh water sites are becoming increasingly precious around the world.

#### What Have We Seen from Your Monitoring Work?

Luckily, during the 4 days of the WaterBlitz, we were able to observe samples before and after a large rainfall event. We could see from the results how this affected the levels of nitrates and phosphates. We found that the rain caused an increase in the levels of nutrients (particularly nitrates) in some locations.

It is possible that the heavy rain caused run-off which led to increased nitrates in the waterbodies. Rainfall on hard surfaces can also wash pollutants into a stormwater network and to the nearest wastewater treatment plant.

Finally, it may be the case that the increased runoff from rain may flush out pollutants in the network, especially if there are issues such as misconnected sewage pipes or 'fatbergs' from household flushing and pouring of inappropriate items.



Graph: Overall nutrient status of river samples compared to the rainfall recorded (Dublin Airport) that day. Red indicates high nitrates <u>and</u> phosphates. Orange indicates high nitrates <u>or</u> phosphates. Yellow indicates moderate nitrates <u>and</u> phosphates. Green indicates moderate nitrates <u>or</u> phosphates. Blue indicates low nitrates <u>and</u> phosphates.

#### Litter Map.

Unfortunately, litter was observed at more than a third of the sample locations. This even included non-urban areas such as Glendalough Upper Lake and a Holy Well.

The presence of plastic in our ecosystems is damning, especially with the recent realisation that microplastics are commonplace nearly everywhere in the world – small fragments of plastic are carried by wind in the air.

Litter in our streams and rivers ultimately enters the ocean, enters the water cycle, and enters the food chain – we eat roughly a credit cards worth of plastic every week.



#### Comparisons to Other EU Cities.

The sites measured in Dublin had a higher proportion of low nutrients than other EU cities. Notably, higher proportions of floating algae were observed, indicating that our freshwater ecosystems may be naturally more sensitive to excess nutrients than other cities. Finally, Dublin sites recorded very high percentages of litter, with only Paris having a slightly higher amount.

#### Looking Forward.

The massive impact you have made on this project and how grateful we are for your enthusiasm cannot be understated. Everyone has a role to play in protecting our resources and ecosystems. Because of your interest and assistance, we can build up a picture of water quality nationally.

We hope that you will participate in future events. Going forward, we can start to identify areas of higher risk and help inform how these bodies of water can be protected.

#### Our Thanks.

Many thanks to EarthWatch for facilitating our involvement in this project and running it not only in Dublin but also in Paris, Luxembourg and London. Thanks to RBC who sponsor the project in coordination with EarthWatch.









Map: Levels of all nitrate measurements recorded during the WaterBlitz.



Map: Levels of all phosphate measurements recorded during the WaterBlitz.

### Impacts

Using citizen science, it is possible to generate really useful robust data about our water quality in a very short timeframe.

The blitz highlighted that the nutrient status of freshwater in Dublin was better than in other European cities, however, higher levels of algae were observed.

The results showed us that freshwater bodies in Dublin are sensitive to weather events, with nutrient levels increasing following heavy rainfall.

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