

Water  
Institute

# WaterBlitz 2021 Report





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## Supported by:





## 2021 WaterBlitz Highlights

- Citizen Science transforms how water quality is assessed in Ireland as almost 800 people take part in water monitoring for the first time ever.
- 583 samples were collected over 4 days across Ireland.
- 33 of the 46 river catchments nationwide were sampled, an impossible feat without citizen science.
- 38% of streams and 20% of rivers tested for nitrates had lower quality water.
- 26% of streams and 30% of rivers tested for phosphates had lower quality water.
- 17% of nitrate tests and 30% of phosphate tests at agricultural locations had lower quality water
- Established river trusts and catchment groups were a large part of this year's WaterBlitz, saying "recruiting people to do the testing was a very easy sell, they were delighted to be asked."
- Tidy Towns and community groups led the way in 17 locations while involving their local communities and schools in water sampling.
- With 10 primary and post-primary schools involved, water quality is safe in the hands of budding scientists and environmentalists.

Dear Citizen Scientists,

Thank you so much for your wonderful participation in the 2021 WaterBlitz! In this our second time hosting the event we have surpassed all our expectations for participant numbers and the breadth of sampling nationwide, with data collected from all corners of Ireland. Your contribution has helped us create a snapshot in time of the condition of our waterbodies and will help inform how to protect these precious assets.

## The Facts:



**33 River  
catchments  
sampled**



**790 Participants  
over  
4 days**



**583 Water  
samples  
taken**

## Who Participated?



**4 Angling  
Groups**



**23 River &  
Environmental  
Groups**



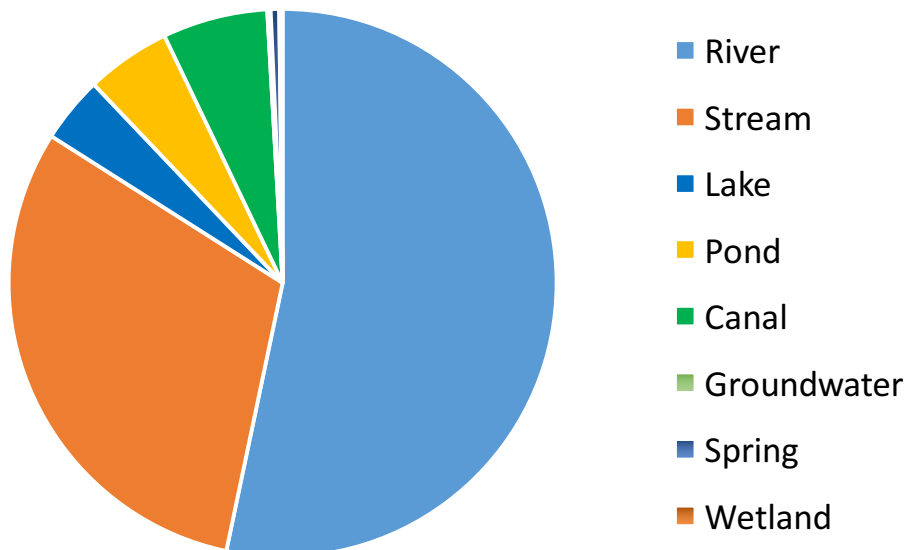
**17 Tidy  
Towns  
& Community  
Groups**



**10 Schools  
5 Primary  
5 Secondary**

.....as well as many individuals and families too!

## What Types of Waterbodies Were Sampled?



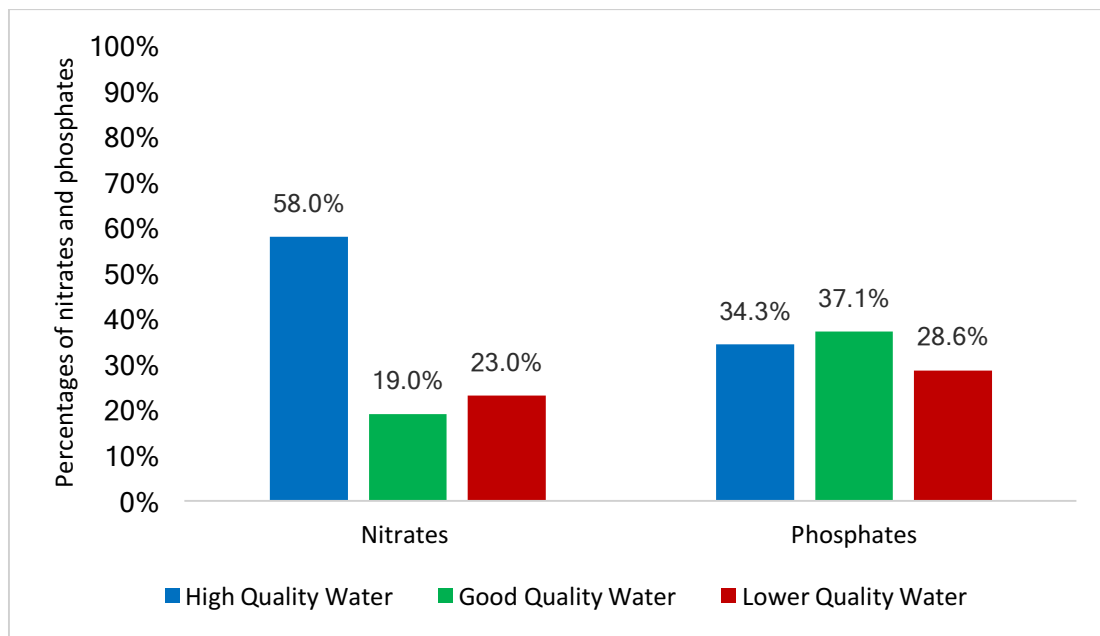
**Figure 1. A pie chart illustrating the variety and predominance of waterbody types sampled during the 2021 WaterBlitz.**

## What did we measure and why?

Nitrate and phosphate levels were measured in water to determine which waterbodies may be impacted by the presence of these nutrients. Water pollution from nitrates and phosphates can come from several sources but mostly from domestic sewage inputs (phosphates) and runoff from fertilised farmlands (nitrates). Where nutrients are present in large amounts, 'eutrophication' can occur leading to an increase in the presence of algae and a reduction in the amount of oxygen in the water available for aquatic species.

While monitoring water quality, participants also noted the land use in the vicinity of the sampling site. Land use can have a direct effect on local waterbodies; for example if there is increased urbanisation,

agricultural activity, or diverse habitats along a river bank which can filter nutrients.



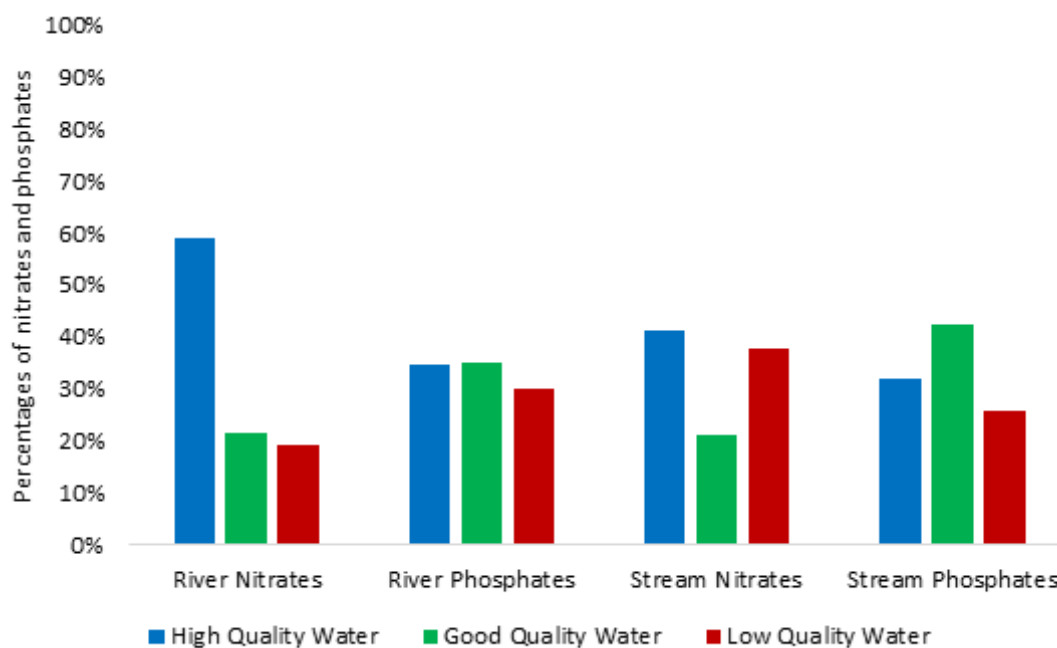
**Figure 2. Levels of nitrates and phosphates recorded during the 2021 WaterBlitz**

The categories used for high, good and lower quality water are based on EPA criteria. For nitrates (expressed as nitrate-nitrogen) high quality is  $<0.9$  mg/l  $\text{NO}_3\text{-N}$ , good quality is  $<1.8$  mg/l  $\text{NO}_3\text{-N}$ , and lower quality is  $>1.8$  mg/l  $\text{NO}_3\text{-N}$ . For phosphates (expressed as phosphate-phosphorous) high quality is  $<0.025$  mg/l  $\text{PO}_4\text{-P}$ , good quality is  $<0.035$  mg/l  $\text{PO}_4\text{-P}$ , and lower quality is  $>0.035$  mg/l  $\text{PO}_4\text{-P}$ .

From the data you gathered it was found that **77% of all waterbodies had high or good water quality when tested for nitrates**. In 2019 this figure for testing carried out on a different set of waterbodies was 90%. This difference may be attributable to the prevalence of waterbody type. Canals which have typically lower levels of nutrients due to their sealed nature and lower level of tributaries consisted 15% of waterbodies in 2019 whereas in 2021 they were

just 6% of the total. Streams, however increased from 20% to 31% of the total waterbodies.

We also found that **71% of all waterbodies had high or good water quality when tested for phosphates**; in 2019 this figure for testing carried out on a different set of waterbodies was 76%.



**Figure 3. Levels of nitrates and phosphates recorded in rivers and streams in the 2021 WaterBlitz.**

At waterbody level, almost **20% of river samples tested for nitrates and 30% tested for phosphates had lower quality water**, while 80% of river samples tested for nitrates and 70% tested for phosphates had high or good quality water.

Meanwhile, **38% of streams tested for nitrates, and 26% tested for phosphates also had lower quality water**, while 62% of stream samples tested for nitrates and 74% of tested for phosphates had high or good quality water.





River Ow, Aughrim,  
Co Wicklow

Source: Helen Higgins 2021



Sampling at Shanowenadrimina  
Stream, Bridebridge,  
Co. Cork

Source: The Bride Project 2021

Camoge River, Greybridge,  
Co. Limerick

Source: Maigue Rivers  
Trust 2021





Boys of Sacred Heart  
National School,  
Ballygall, Dublin 11.



Camlin River, Cloondara,  
Co. Longford

Source: Peggy Baxter 2021



## What Type Of Land Use Did You See?

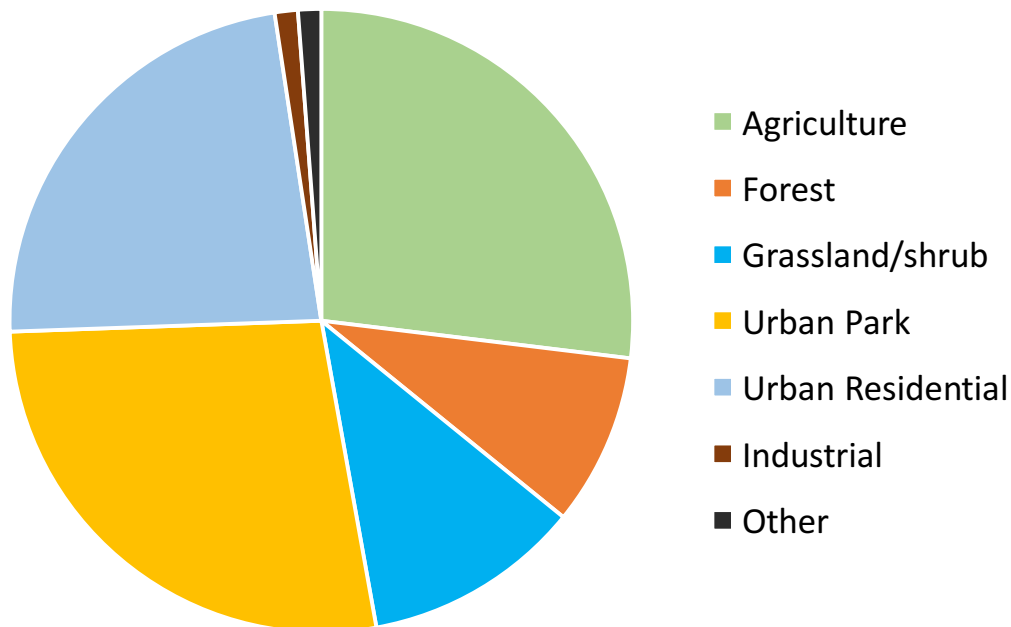


Figure 4. A pie chart illustrating the land use recorded at sample locations during the Water Blitz.

Land use may influence nutrient levels. It was found that **66% of waterbodies in agricultural locations had high quality water when tested for nitrates**, with 17% lower quality. **Phosphate tests indicated just under 40% of agricultural locations had high quality water**, while 30% of tests showed lower water quality.

**Urban parks and urban residential sampling points comprised 50% of all WaterBlitz records.** Nitrate tests at these locations showed that 55% had high quality water while 23% had lower quality. Testing for phosphates indicated that just 30% had high quality water while 30% also had lower quality water.

## River Catchment Map

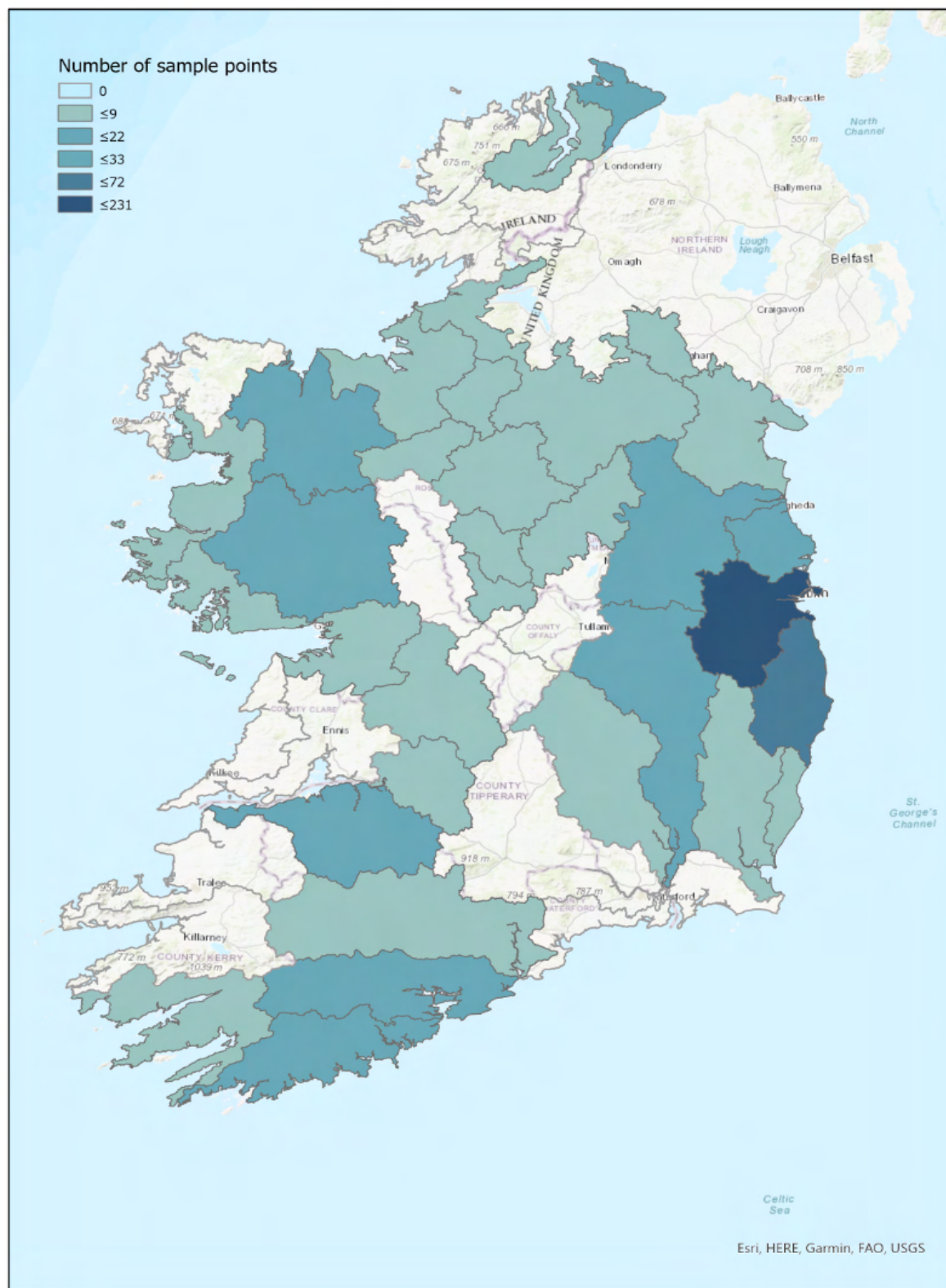


Figure 5. Map depicting frequency of sampling at river catchment level nationwide



## Nitrates Map

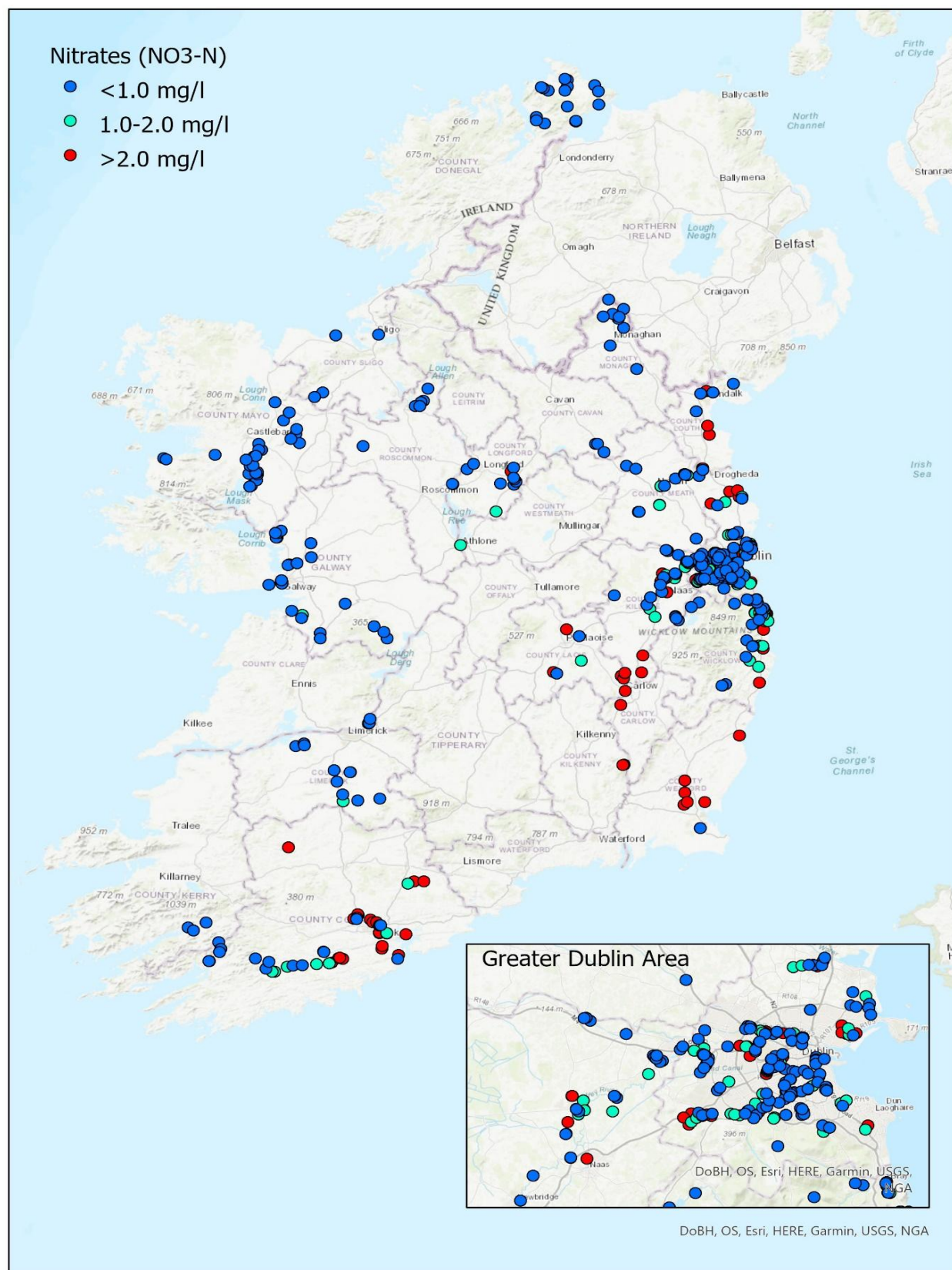


Figure 6. Map of nitrate measurements recorded with Greater Dublin Area inset

## Phosphates Map

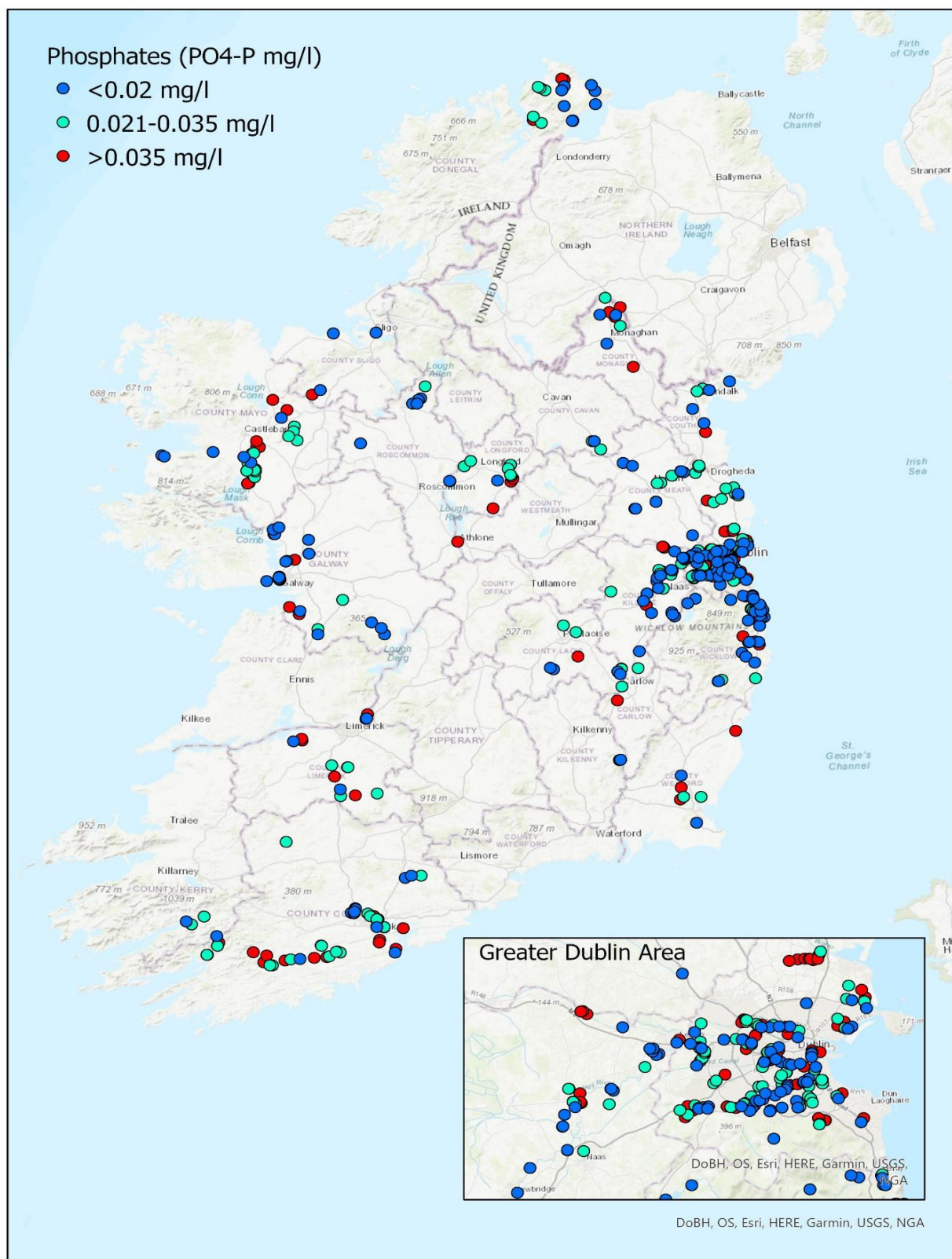


Figure 7. Map of phosphate measurements recorded with Greater Dublin Area

inset

## Countrywide Results

In evaluating the spread of data gathered around the country and realising that sites are selected for a variety of reasons; some interesting observations can be made.

The **north** and **west** regions have the following results (23.2% of nationwide samples):

- **Nitrate - high quality water: 96.3%; good quality: 2.2%; lower quality: 1.5%**
- **Phosphate – high quality water: 43%; good quality: 32.6%; lower quality: 24.4%**

The **south** and **east** have the following results (76.8% of nationwide samples):

- **Nitrate – high quality water: 46.3%; good quality: 24.2%; lower quality: 29.6%**
- **Phosphates – high quality water: 31.7%; good quality: 38.4%; lower quality: 29.9%**

In the **greater Dublin area** (approximately 40% of all samples) 49% of nitrate tests and 24% of phosphate tests had high quality water. Across the **rest of the country** (approximately 60% of all samples) 64% of nitrate tests and 41% of phosphate tests had high quality water

**Litter** was present at **26%** of sample locations and **floating algae** at **10%** of locations.



## Participants Group Map



Figure 8. Map of some of the many groups located around the country who took part in the 2021 WaterBlitz.



## Thank you!

This year we were astounded at the number of samples taken right across the country, and we thank you for your interest. Every participant has made a massive impact on this project and has played a role in building up a picture of water quality nationally, while protecting our resources and ecosystems. Going forward, we can identify areas of higher risk and help inform how these bodies of water can be protected.

We are very grateful for your enthusiasm and hope that you will participate in future events.

Sincerest thanks to Dublin City University for supporting the Citizen Science activities of the Water Institute and the teams behind the scenes who work so hard to deliver our message. Thanks also to Earthwatch Europe and FreshWater Watch for facilitating our involvement in this project and to the Royal Bank of Canada, who sponsor the project in coordination with Earthwatch Europe.

The last word goes to you, the participants who responded to our survey, saying 80% of you would now feel encouraged to spend more time at your local waterbody.....

"I wanted to learn about the condition of my local river."

"I like participating in local campaigns that feed into projects like this – to feel part of something meaningful."

"I wanted to learn more about water quality citizen science."

"I liked the ability to take part with younger family members."



Owenboy River, Carrigaline, Co. Cork  
(Cork Environmental Forum 2021)

"It was great fun getting to work on a little citizen science project with my kids!"



"There was a sense of contributing to a great endeavour."



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**Douglas River, Grange,  
Co Laois**

**Source: John Daly 2021**