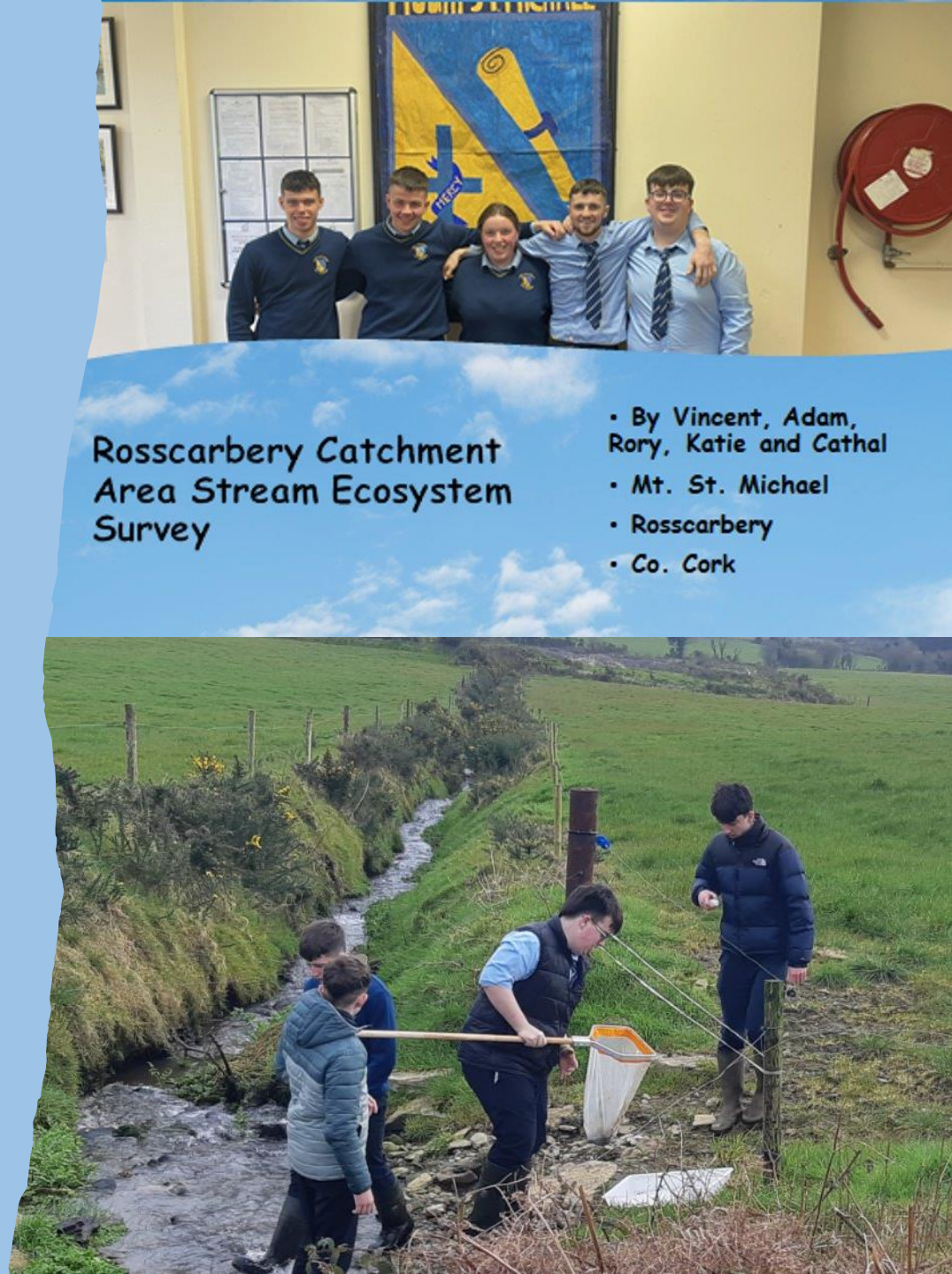


Introduction

- We started our project on a very cold day in January 2024.
- We took water samples every month in 2024.

Rosscarbery Catchment Area Stream Ecosystem Survey

- By Vincent, Adam, Rory, Katie and Cathal
- Mt. St. Michael
- Rosscarbery
- Co. Cork





Mt. St. Michael

Lagoon

Salt Marsh Bird sanctuary

Warren Beach

BACKGROUND

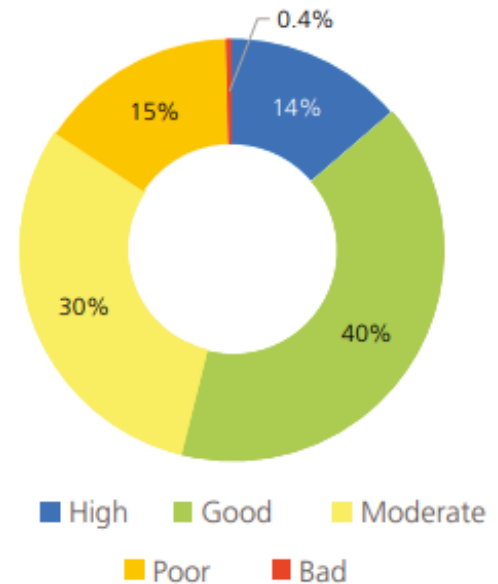
Ireland has over 84000km of river channels. Three quarters of these are very small streams. This makes monitoring difficult.

Currently, 2401(75%) of 3192 river bodies are assessed by the Environmental Protection agency (EPA) as part of the European Union Water Framework Directive (WFD).

As **citizen scientists** we can help monitor the other 25%, by gathering data in a scientific way. Globe protocols allow us to do this and so fill in the gaps for the EPA.

WaterFramework Directive - Ireland

In Ireland, 46% of our surface waters are 'LESS THAN GOOD'.



Proportion of all surface water bodies in each ecological status class 2016-2021

www.epa.ie

Local Biodiversity

Rosscarbery Estuary is one of the most important sites in Europe for migratory birds.

- Curlews, Brent Geese, Godwit, Green-winged Teal, lesser yellowlegs, green shank....

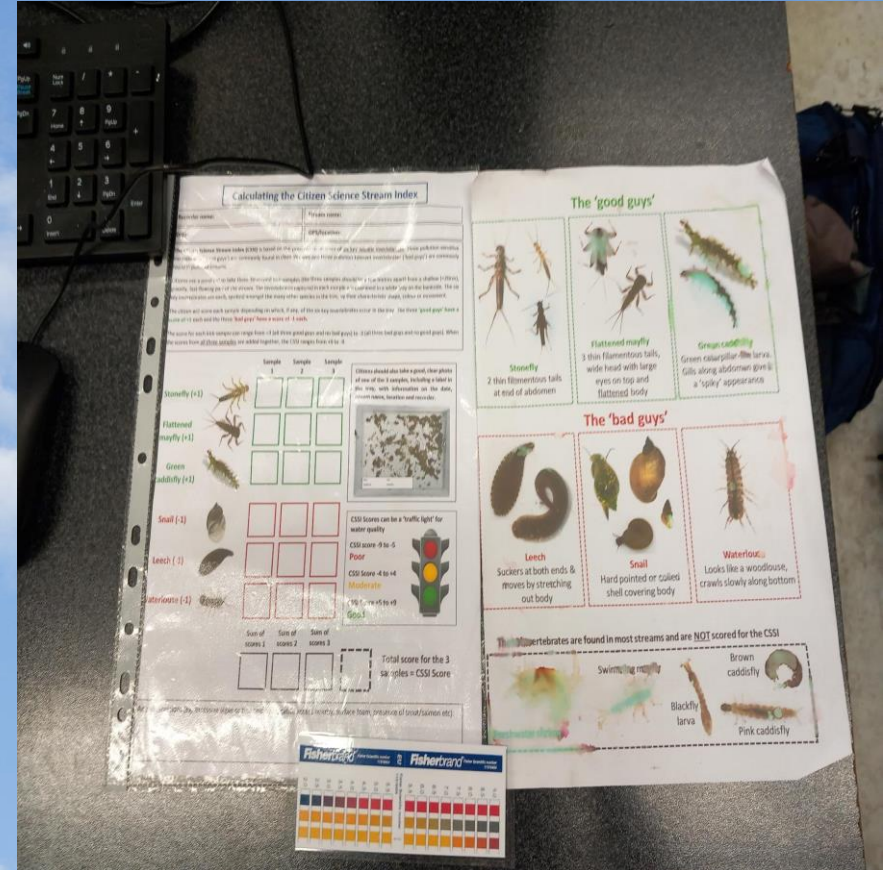
It is also home to many species of native birds. *We are passionate about its protection*



Hypothesis and Aim

- In 2022 and again in 2024, the Rosscabery Blue Flag beach was closed due to e-coli in the water. This had a major impact on our tourism economy.
- Our hypothesis is that the e-coli was carried into the bay by farmland runoff into one of the four streams draining into the estuary.
- Our aim was to monitor these streams on a monthly basis, and alert the authorities if there was a change in the water quality

EQUIPMENT USED



MAP OF OUR WATER SAMPLE LOCATIONS

monthly sampling for 1 year



Ecological Assessment

We performed 2 minute Kick Samples to identify indicator species.

We counted ecoli.

We followed Globe protocols to test for Nitrates and pH using colour changes.



BIOLOGICAL ASSESSMENT

- GOOD GUYS

- Only present in clean water



- BAD GUYS







- Only present in polluted water



CSSI SCORE
+1 for good guys
-1 for Bad guys

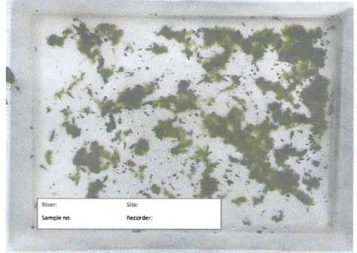
Calculating the Citizen Science Stream Index (CSSI)

Developed for
[CitizenScience -Local Authority Water Programme \(lawaters.ie\)](http://CitizenScience-LocalAuthorityWaterProgramme(lawaters.ie)) by
 UCC

		Sample 1	Sample 2	Sample 3
Stonefly (+1)		+1		+1
Flattened mayfly (+1)		+1	+1	+1
Green addisfly (+1)		+1	+1	+1
Snail (-1)				
Leech (-1)				
Waterlouse (-1)		-1	-1	-1
	Sum of scores 1	+2	+1	+2
	Sum of scores 2			
	Sum of scores 3			
				+5

Total score for the 3 samples = CSSI Score

Citizens should also take a good, clear photo of one of the 3 samples, including a label in the tray, with information on the date, stream name, location and recorder.




CSSI Scores can be a 'traffic light' for water quality

CSSI score -9 to -5
Poor

CSSI Score -4 to +4
Moderate

CSSI Score +5 to +9
Good

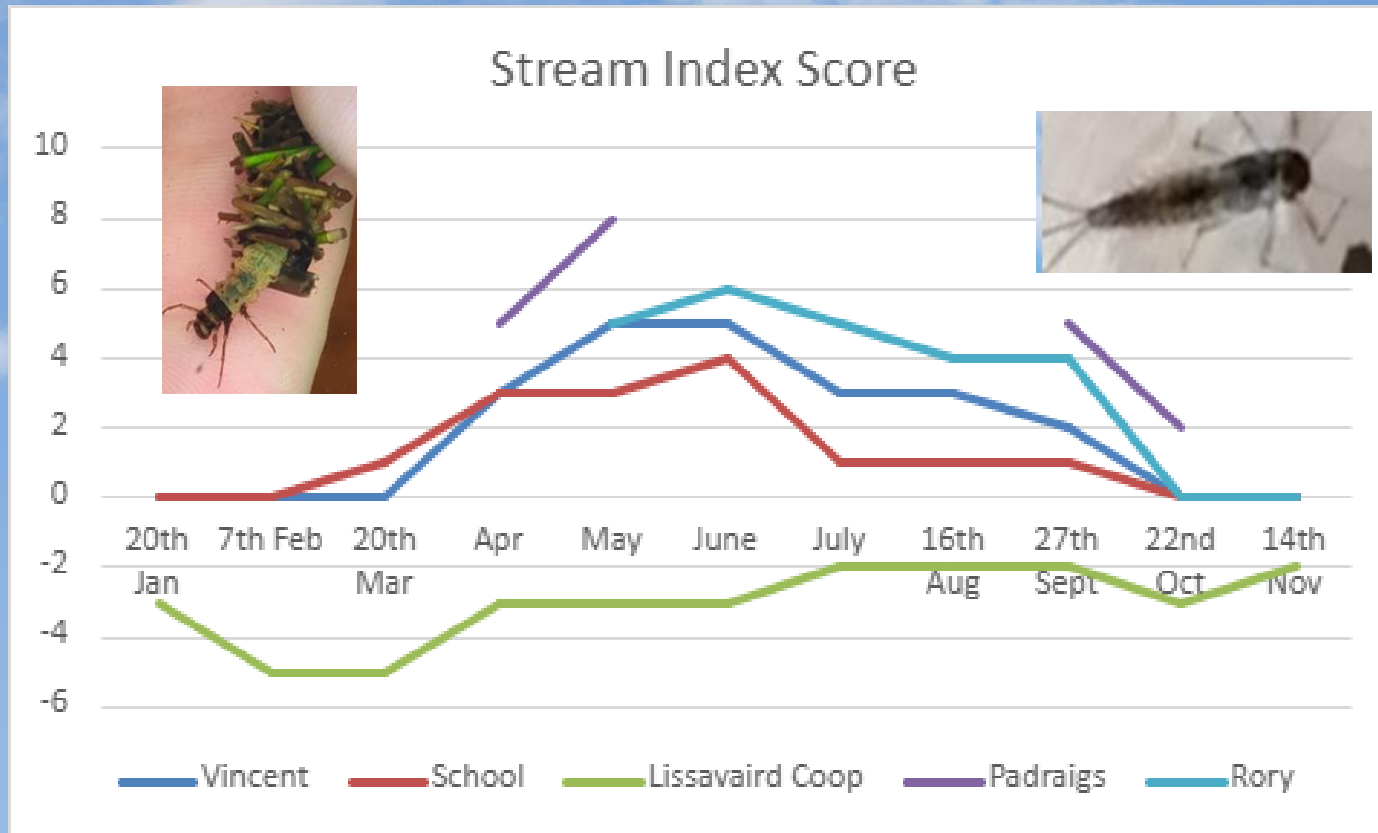


any observations (eg. excessive algae or fine sediment, cattle access nearby, surface foam, presence of trout/salmon etc):

CSSI RESULTS

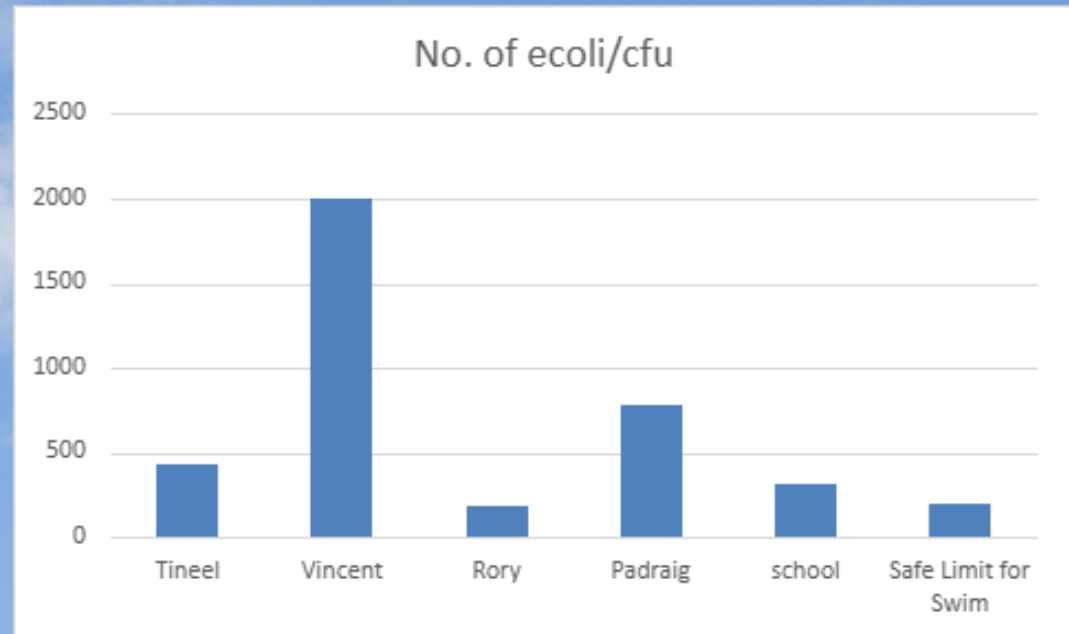
All but one sample points had a positive CSSI score. We found Mayfly and Stonefly nymphs and Caddis fly larvae from Feb to September.

The lowerTineel river had a negative score every month. We found leeches and waterlice.



E COLI COUNT

Safe Bathing Water
Limit is <200cfu



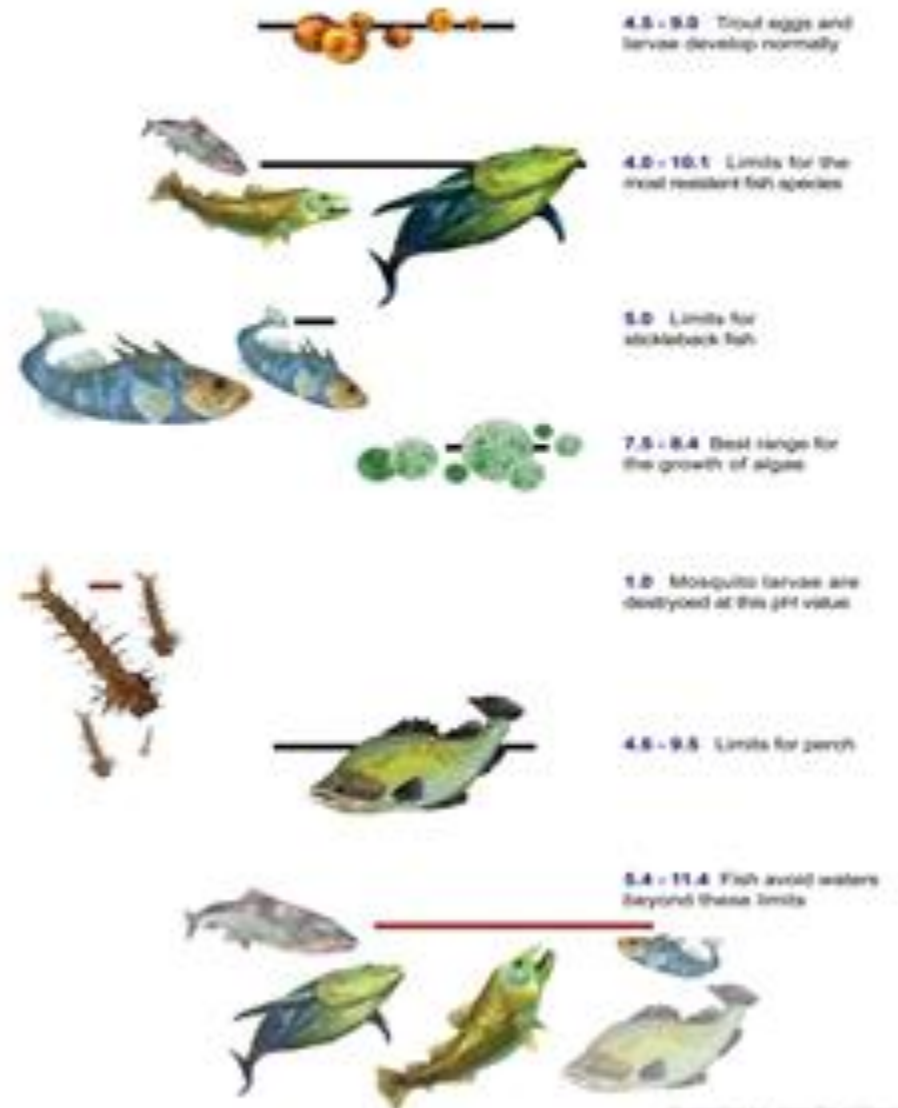
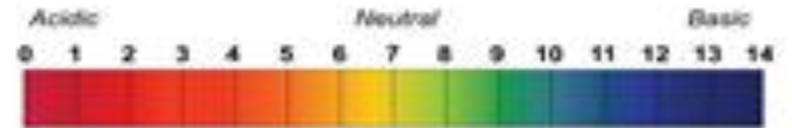
Human Error ? The flow in Vincents stream was very low. We disturbed the river bed which we think contaminated the sample.

Is pH important?

PH affects the species that can inhabit a stream or river.

PH 4.5 to 9.0 are the limits

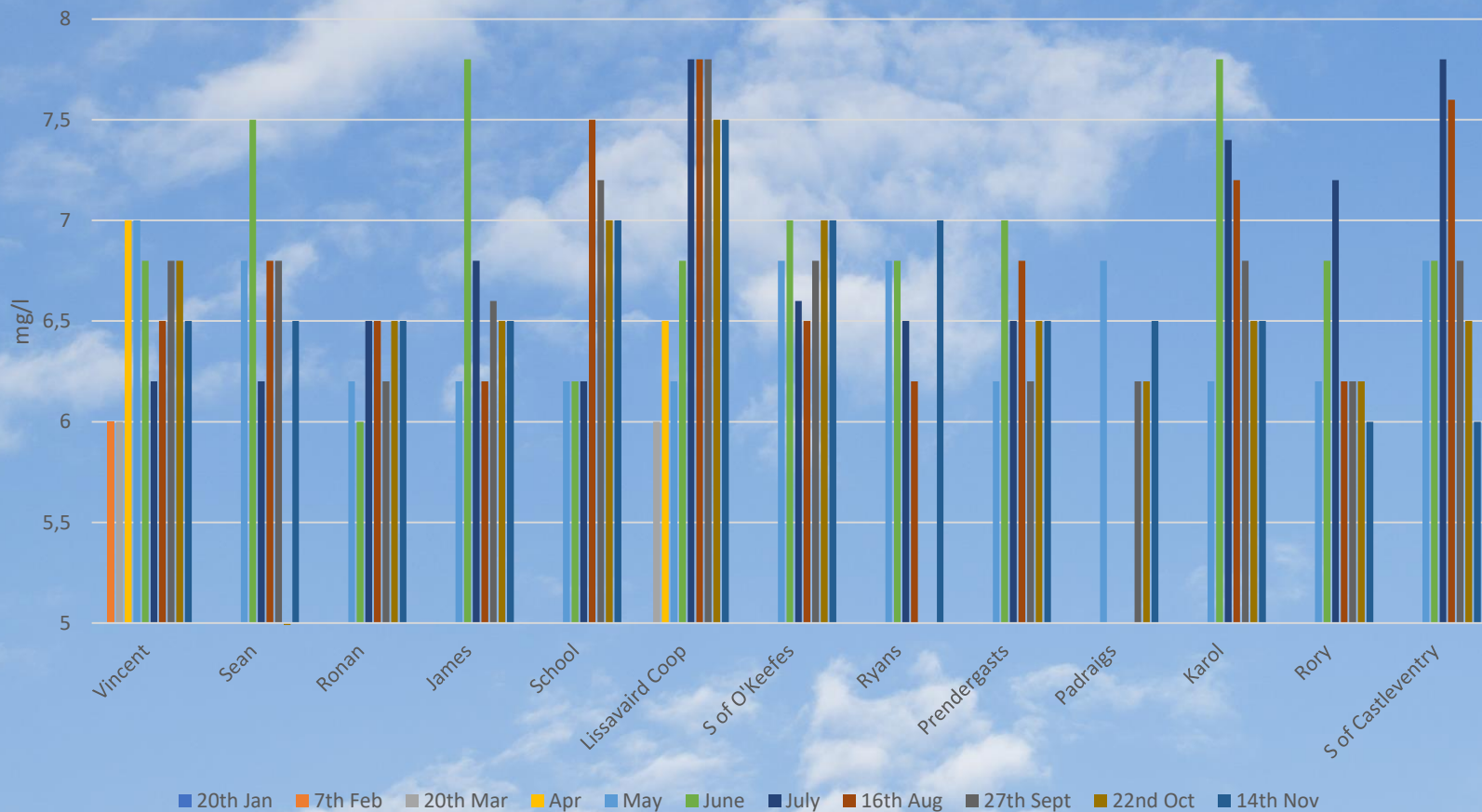
Importance of pH to Aquatic Life



PH Results

There was considerable variation in pH.
Readings were all within safe limits though.

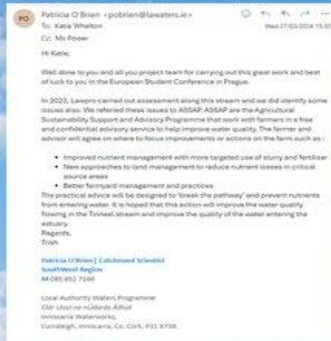
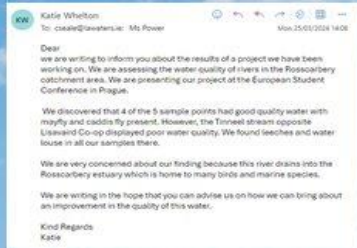
pH Variation Throughout the Year



Actions

RAISING AWARENESS with AUTHORITIES

Katie emailed LAWPRO to alert them to our findings in the Tineel. They replied promptly and were helpful.



Raising Awareness with Politician

LAWPRO asked us to load photos and results onto their app.

WE designed a poster for the school corridor.

We spoke to a first year class. They were really interested and asked loads of questions.

Christopher O'Sullivan was invited to talk to us. We asked him about future proofing our coasts, poverty, birdwatching and housing crisis.

We have written a report of our 2 years of work on Globe projects for Tidy Towns to apply for grants. They will include our school in spending the money.



Raising Awareness in Europe

We are very proud to be part of the Irish contingent presenting our work at the Globe Student Conference in Prague. This is us with the Soil project Group In School Assembly.



Awareness in our Community Talking to Farmers



Rosscarbery IFA discuss Farming for Water

ROSSCARBERY IFA held a recent meeting in the Celtic Ross Hotel on the topic of Farming for Water, an AGR-E Environmental Programme designed to improve water quality and supported by the European Innovation Programme.

The meeting on Monday, January 30th heard a detailed presentation from Liam Ó Súilleabháin from Carbery on the Farming for Water programme. He outlined the measures farmers can take to safeguard water quality

and surface water from farms and the supports available to farmers.

John Brodwinor, environmental representative from the West Cork Executive of IFA said consultations are being held at national level with the EPA and county councils on the topic of farmer commitment to water quality. He said inadequate treatment plants for urban development was an issue he foresaw.

The meeting also welcomed students from Mount St Michael

Secondary School who presented their projects from the RT Young Scientist competition. The students were accompanied by their teachers, Bernie Power and Alan O'Rourke.

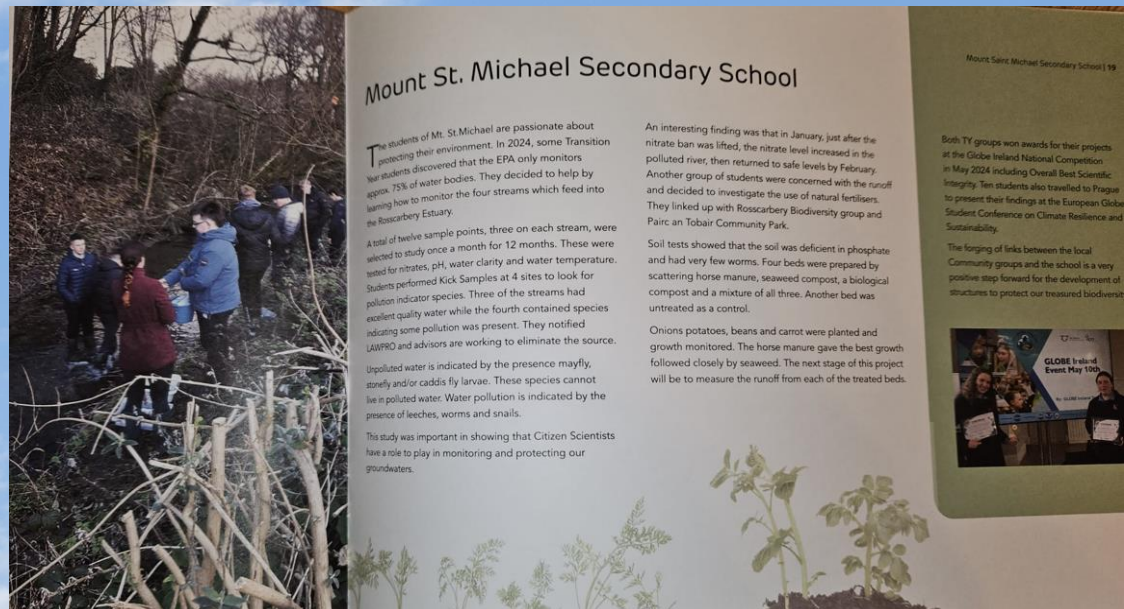
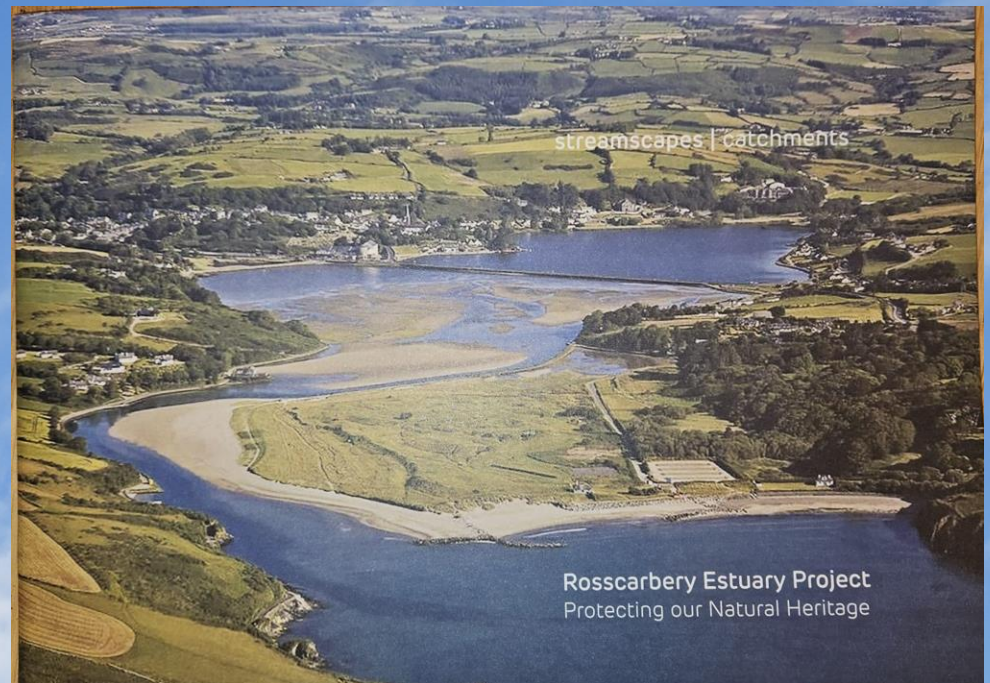
Adam Baker and Vincent Daly presented their project on 'Fingerprinting Water and Determining its Age to Help Improve the Quality of Our Rivers', which was an award in the senior category. Meanwhile Anna Brinkman and Orla

McCarthy gave insight on their project 'Tidal Contamination: The Effects of Tidal Estuaries on Water Quality of Local Beaches'.

The organisers, branch chairman, Fergal Harne and Secretary, Tim Hurley were very pleased with the attendance which also included West Cork Executive officers, secretary Catherine O'Sullivan, PRO Ronald Shorten and incoming environmental representative Michael Looey.

Community Impact

We worked with the Rosscarbery Biodiversity Group and Tidy Towns Committee to produce a booklet.



BT Young Scientist Competition 2025

3rd place in Biological and Ecological Category

Our Stand and poster



Sharing our project with the leader of our government Mr. Micheal Martin



Receiving our prize

3rd place Senior Group Biological and Ecological Sciences Category

Conclusion

- The Tineel Stream had a negative CSSI score, higher nitrate levels and tended to have higher temperature and pH so it has signs of pollution. The other three streams were clean.
- Most of the rivers had higher ecoli than would be safe in the sea but not concerning for river water.
- We spoke to a water expert. He said that these results show that the beach closures were not caused by runoff to the rivers.