



WESTCOUNTRY RIVERS TRUST CITIZEN SCIENCE

MONITORING OF THE PAR RIVER AND ITS TRIBUTARIES

MAY 2022



Joan Farmer and Dave Burrell doing CSI tests at Luxulyan allotments

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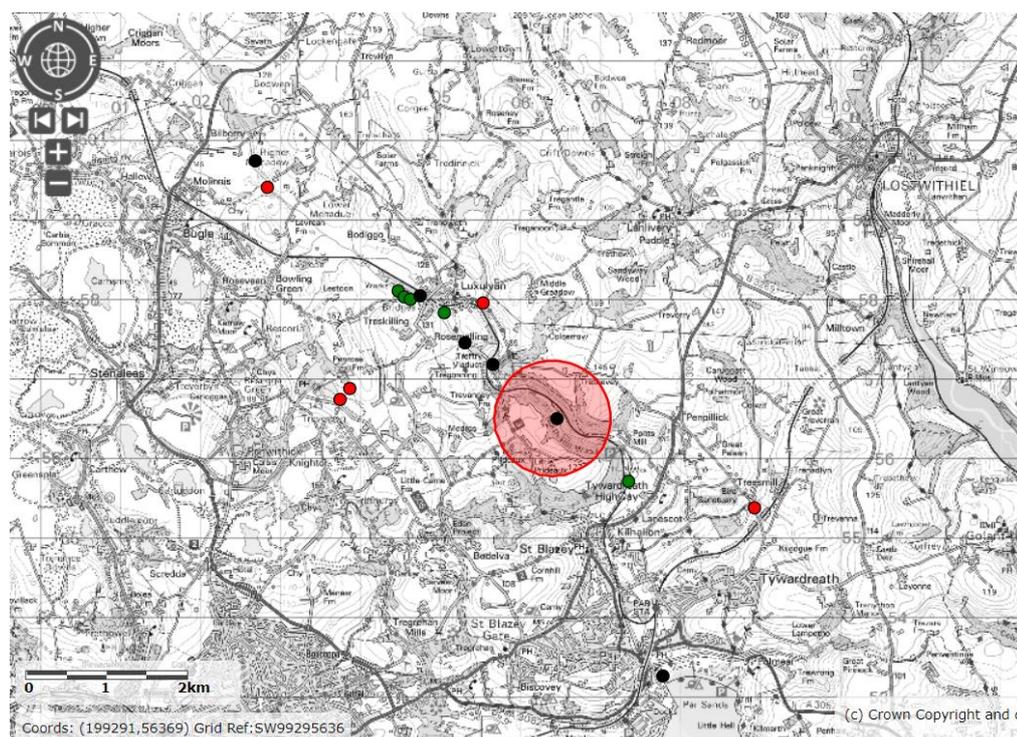
A. KEY POINTS FROM WRT CSI MONITORING IN MAY 2022

1. Levels of E.coli and Total Coliforms recorded in samples taken from the Par River at Lady Rashleigh Mine and near Minorca Lane are alarming, if correct.
2. Levels of phosphate deemed 'Too High' by Westcountry Rivers Trust were recorded in the river between Luxulyan allotments and the sea.
3. The Carbis Stream was running almost clear for the first time in months with no obvious signs of china clay.
4. There were various wildlife sightings, including solitary fish in the Upper and Lower Par. Otter evidence was less than usual. The riverfly trigger level was reached but numbers were down and some species were absent.

B. OUR GROUP

Monitoring is part of the Citizen Science programme run by the West Country Rivers Trust (WCRT) and is carried out monthly by volunteers from the Friends of Luxulyan Valley. The team comprises: Dave Burrell; Joan Farmer; Veronica Jones; Sue Perry; Roger Smith. They have received training from Lydia Deacon, Junior Evidence and Engagement Officer of the West Country Rivers Trust (<https://wrt.org.uk/project/become-a-citizen-scientist/>). Results are logged on the Cartographer website. The support and advice given by Ross Tonkin, David Edwards, Claire and Gary Phillips, Jenny Heskett, Nick Taylor, Jeremy Roberts, Mat Bateman, Colin Pringle, Matt Healey, Simon Browning and Lydia Deacon is greatly appreciated. The interest and encouragement offered by Environment Agency officers, especially Lisa Best, has been invaluable.

C. MAY 2022 MONITORING POINTS



This month we monitored at 11 locations. Monitoring points along the main Par River are shown in **black**. Those in **red** are on tributaries. Those in **green** where show where there were visual checks. The red circle highlights Lady Rashleigh Mine, where riverfly and bacteria monitoring also took place.

Source: <https://magic.defra.gov.uk/MagicMap.aspx>

LOCATION	TYPE OF CHECK	MONITORED BY
Criggan Moors, Par River, SX 01882 61133	Visual. Not on Cartographer.	Roger Smith
South of Minorca Lane, Par River, SX 02657 59788	CSI sampling	Roger Smith
Carbis Stream SX 02834 59401	CSI sampling	Roger Smith
Treverbyn Stream, East of Innis Fishery (Point B) SX 03770 56781*	CSI sampling Not covered in this report.	Roger Smith
Treverbyn Stream, East of Innis Fishery (Point C) SX 03857 56884*	CSI sampling Not covered in this report.	Roger Smith
Luxulyan sewage treatment works, Par River, (SX 0455 58114 before Nov 2021)	Visual check Bacteria sampling upstream and downstream of STW.	Dave Burrell, Joan Farmer, Roger Smith
Treverbyn Stream, SX 04532 58033	Visual check	Dave Burrell, Joan Farmer, Roger Smith
Rosemullion, Tregarrick Stream, SX 04623 57990	Visual check	Dave Burrell, Joan Farmer, Roger Smith
Luxulyan allotments, Par River, SX 04732 58045	CSI sampling	Dave Burrell, Joan Farmer, Roger Smith
Luxulyan SWW pumping station, Par River, SX 05033 57849	Visual check	Dave Burrell, Roger Smith
Cam Bridges, Par River, SX 05292 57454	CSI sampling	Dave Burrell, Roger Smith
Gatty's Bridge, Bokiddick Stream SX 05531 57953	CSI sampling	Dave Burrell, Roger Smith
Treffry Viaduct, Par River, SX 05650 57179	CSI sampling	Dave Burrell, Roger Smith
Lady Rashleigh Mine, Par River, SX 06451 56509	CSI sampling, Riverfly, E.coli, Total Coliform	Joan Farmer, Veronica Jones, Roger Smith,
Ponts Mill, Par River, SX 07354 55875	Visual check	Roger Smith
Treesmill, Tywardreath Stream, SX 08873 55385	CSI sampling	Veronica Jones
Par Beach slipway, SX 0776 53261	CSI sampling	Veronica Jones

*By special request. No untoward results at either location so no further comment is made in this report but the results are on Cartographer.

Surveys conducted on these dates, each of which is colour-coded:

7th May 2022

8th May 2022

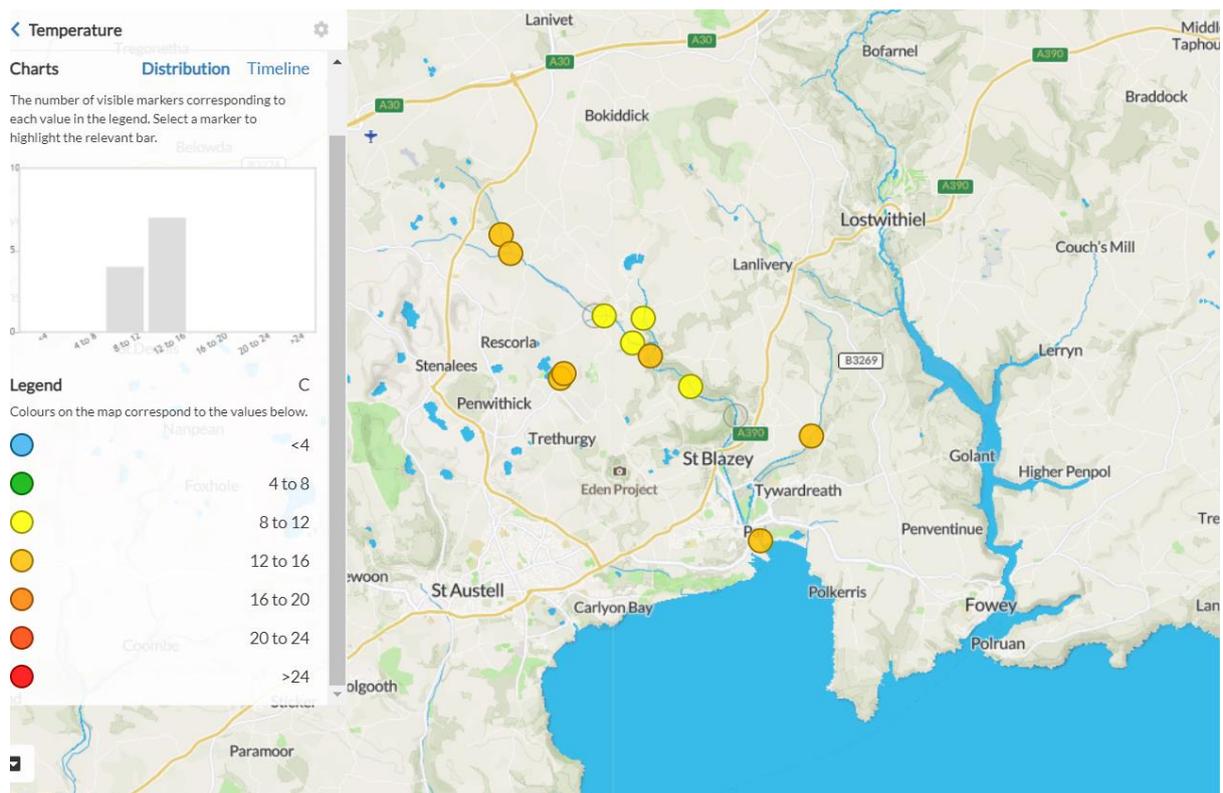
9th May 2022

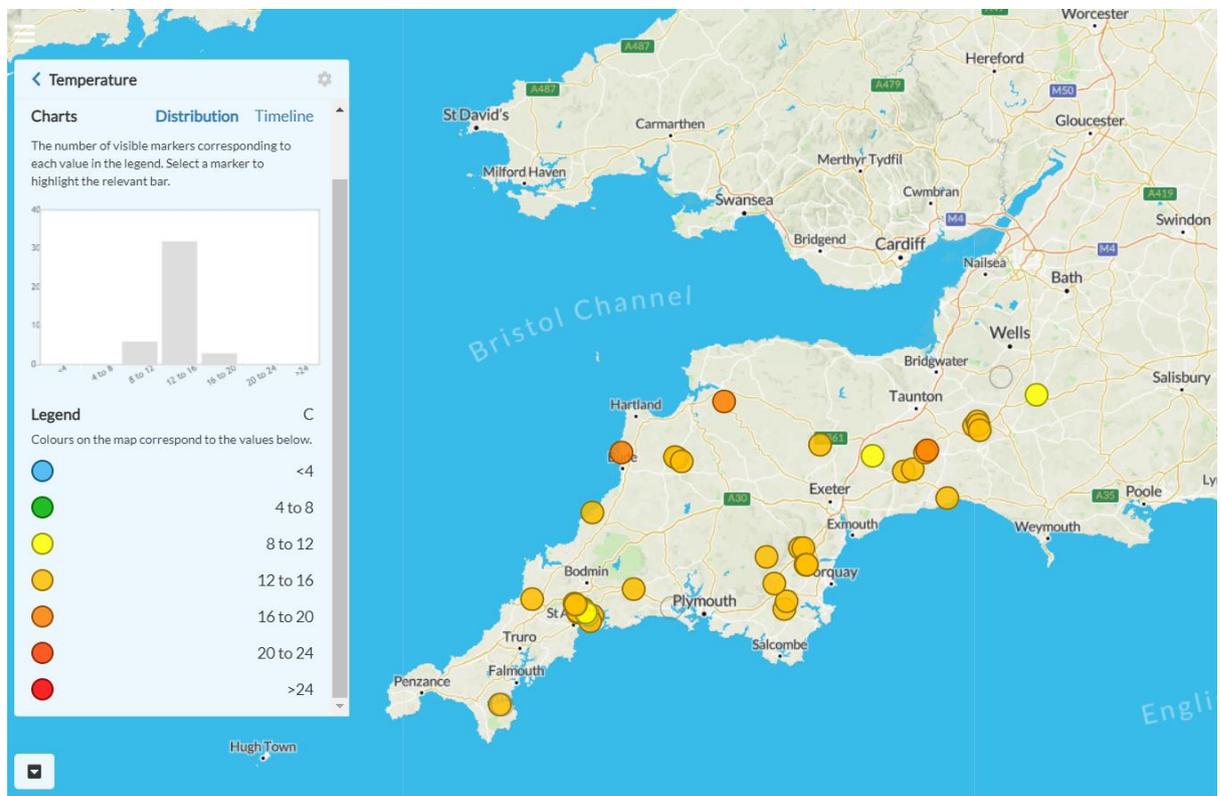
D. TEMPERATURE

1. This is the WRT's explanation of why this is monitored:

Temperature is a vital parameter within the river ecosystem. It controls many of the aquatic species life cycles. Temperature fluctuates with the seasons; however, you do get variation within that, particularly in small rivers and streams. Another important reason to measure temperature is to track the impact of our warming climate on our waterbodies.

2. **Geographical comparison.** Source: Cartographer.





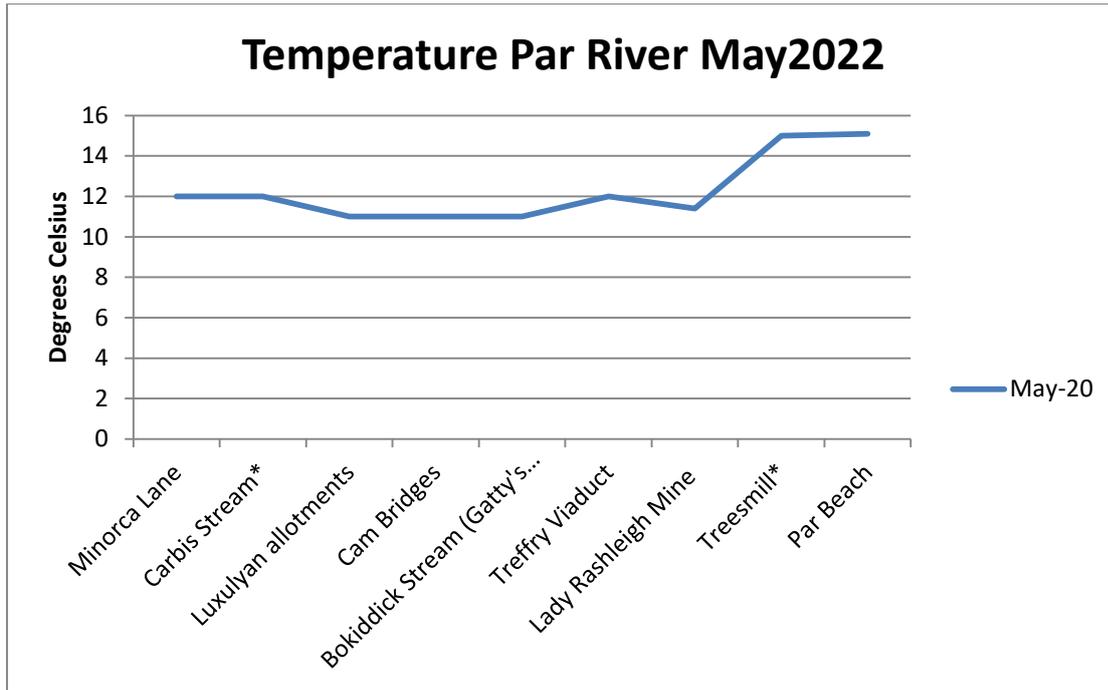
PAR RIVER/TRIBUTARY	LOCATION	Temperature °Celsius
Par	South of Minorca Lane, Par River, SX 02657 59788	12
Tributary	Carbis Stream SX 02834 59401	12
Par	Luxulyan allotments, Par River, SX 04732 58045	11
Par	Cam Bridges, Par River, SX 05292 57454	11
Tributary	Gatty's Bridge, Bokiddick Stream SX 05531 57953	11
Par	Treffry Viaduct, Par River, SX 05650 57179	12
Par	Lady Rashleigh Mine, Par River, SX 06451 56509	11.4
Tributary	Treemill, Tywardreath Stream, SX 08873 55385	15
Par	Par Beach slipway, SX 0776 53261	15.1

CSI Surveys conducted on these dates, each of which is colour-coded:

7th May 2022

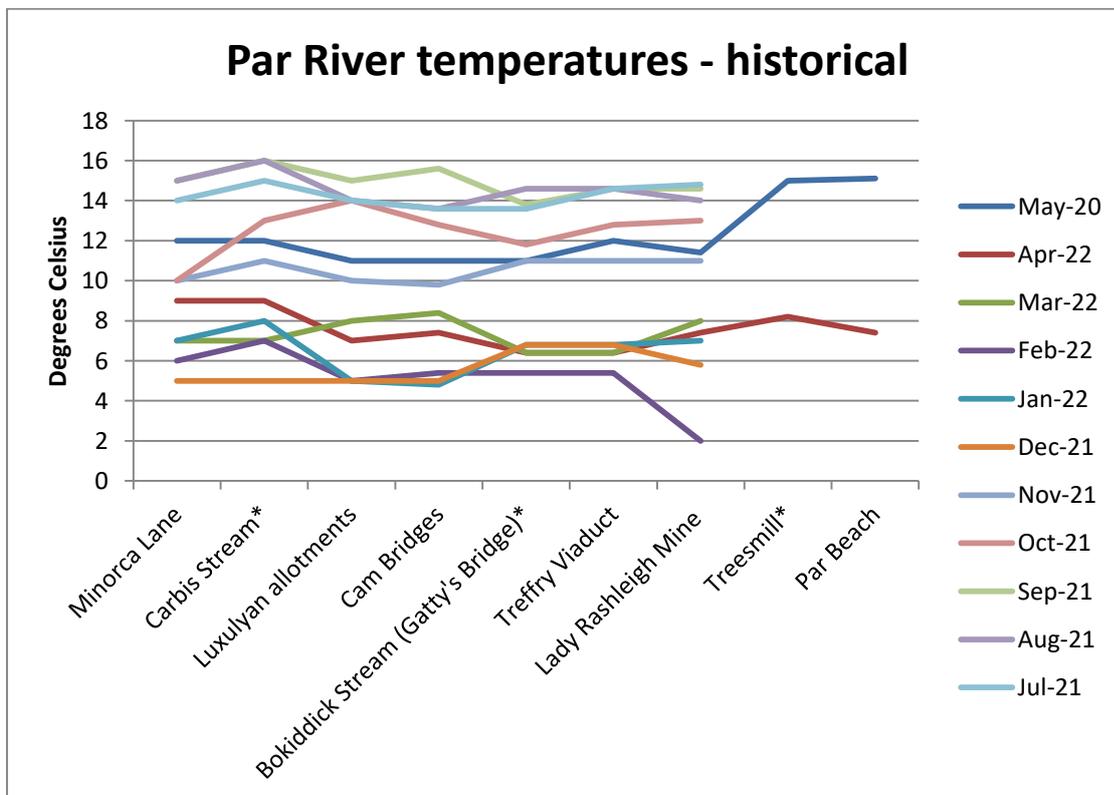
8th May 2022

9th May 2022



*indicates a tributary of the Par River.

3. **Historical data** on temperature:



New thermometers/TDS readers gave different readings to the old one, e.g. at Lady Rashleigh Mine on 9th May 2022:

Thermometer/TDS reader	TEMPERATURE	TDS
OLD	11.4	163
NEW	14.8	134

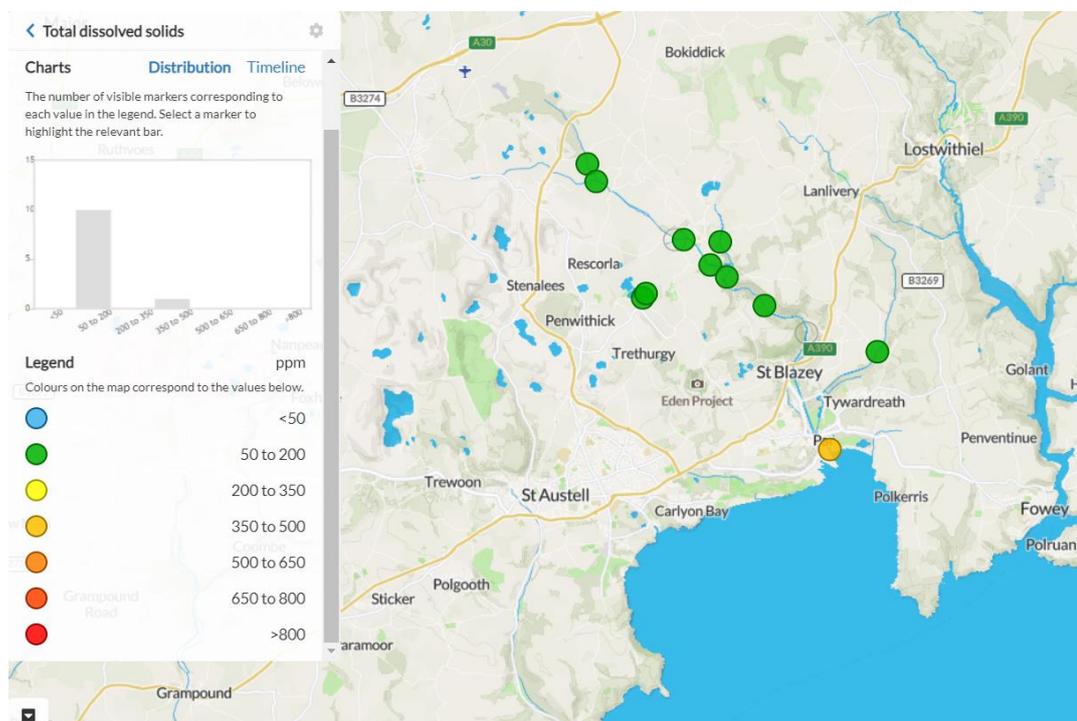
It was decided to go with the readings on the old device. The new device was also used for Total Dissolved Solids at Par Beach, giving a very high reading (see section E).

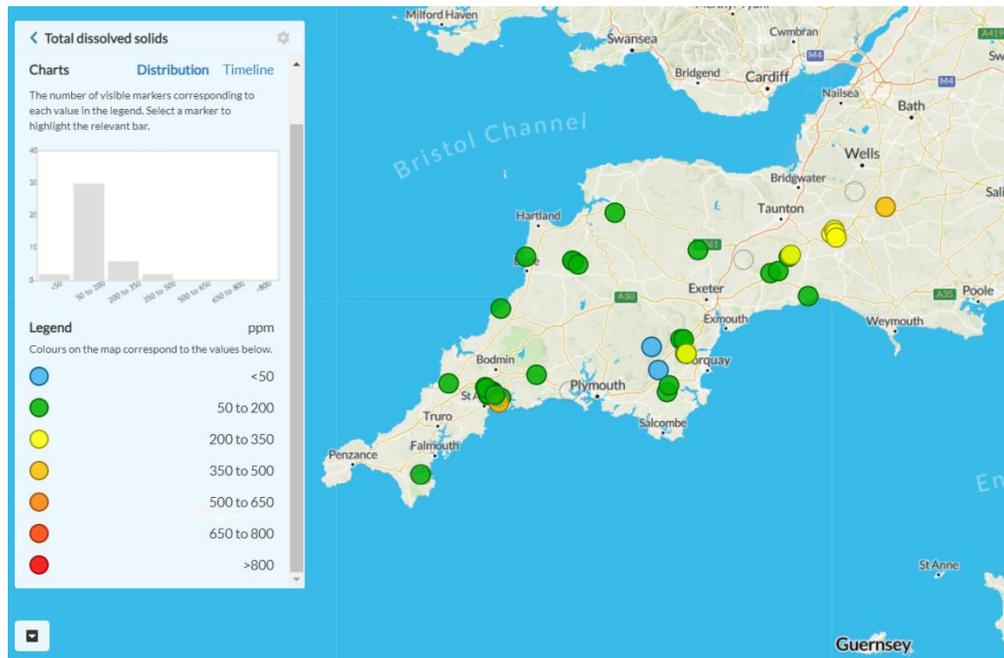
E. TOTAL DISSOLVED SOLIDS

- We measure these in ppm (parts per million). This is the WRT's explanation:

Total Dissolved Solids (TDS) is directly related to the conductivity of the water. The more minerals, salts and metals that are dissolved in the water the more conductive it gets. Low levels of dissolved solids in waters such as those on Dartmoor near to the source of the river are a result of very low levels of input from the surrounding landscape. As the river runs down to the sea it collects material from many different inputs, some natural and some man-made such as farms, sewage plants, factories and residential areas. This typically increases the amount of solids dissolved in the water leading to a higher reading. Harmful pollution from things like sewage, slurry and factory discharge will usually elevate your TDS reading. However, some pollutants such as oil can lower conductivity; therefore it should be used as a general indicator of water quality not a specific measure of toxicity. Geology will influence the normal level of conductivity in a watercourse (e.g. Areas dominated by granite generally give a lower conductivity than those with limestone). Regular monitoring will allow the detection of changes in conductivity which can indicate pollution.

- Geographical comparison.** Source: Cartographer.





PAR RIVER/TRIBUTARY	LOCATION	Total Dissolved Solids ppm
Par	South of Minorca Lane, Par River, SX 02657 59788	63
Tributary	Carbis Stream SX 02834 59401	147
Par	Luxulyan allotments, Par River, SX 04732 58045	176
Par	Cam Bridges, Par River, SX 05292 57454	176
Tributary	Gatty's Bridge, Bokiddick Stream SX 05531 57953	81
Par	Treffry Viaduct, Par River, SX 05650 57179	170
Par	Lady Rashleigh Mine, Par River, SX 06451 56509	163
Tributary	Treemill, Tywardreath Stream, SX 08873 55385	133
Par	Par Beach slipway, SX 0776 53261	455

CSI Surveys conducted on these dates, each of which is colour-coded:

7th May 2022

8th May 2022

9th May 2022

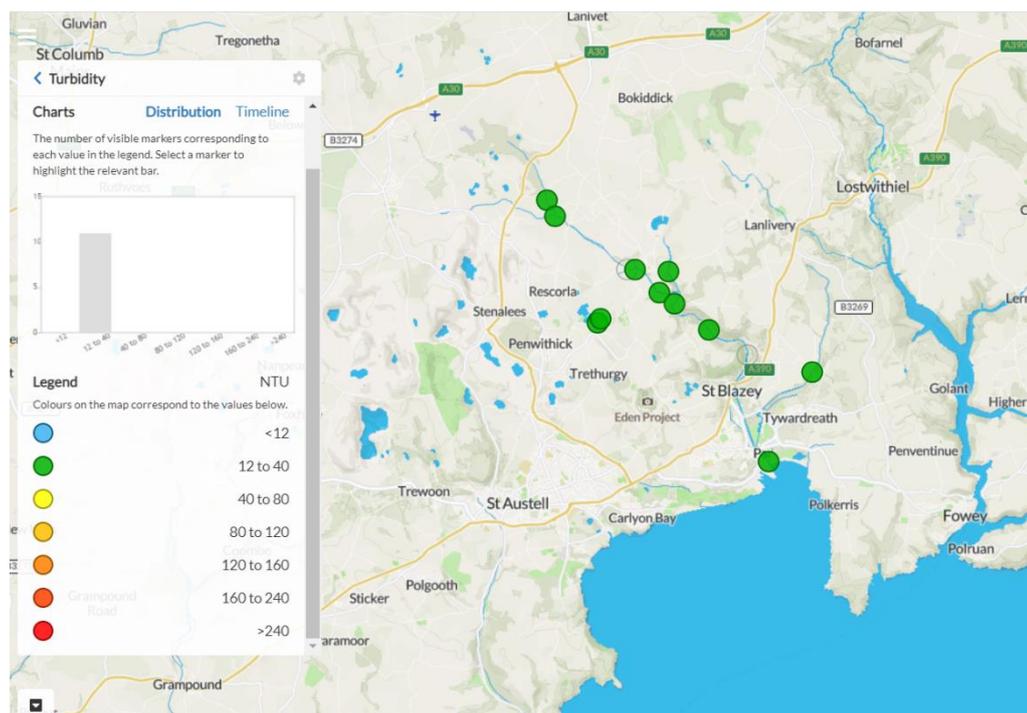
The score of 455 ppm for Total Dissolved Solids at Par Beach is the highest ever recorded by this group. It could reflect sand in suspension because of the state of the tide or a malfunction of the TDS device.

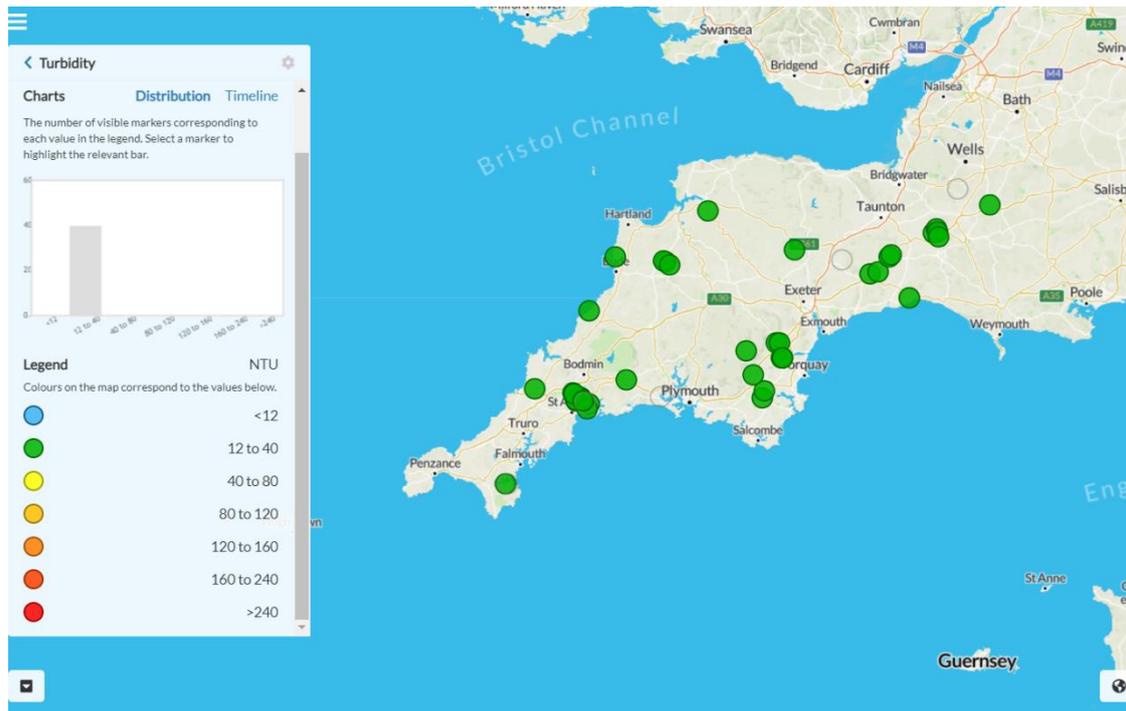
F. TURBIDITY

1. This is the WRT explanation of this measure:

Turbidity tube is a measure of the optical clarity of the water. The more suspended particles in the water the lower the clarity and the higher the turbidity. You will often find your waterbody gets more turbid after heavy rainfall due to soil running off the fields and sediment being mixed into the water column. This loss of topsoil is both a problem for farmer and river. It can often contain chemicals from the fertiliser and pesticides used on the land. An increase in sediment level on the substrate of the river can cause smothering of habitat by removing light and oxygen. Aquatic wildlife such as the less mobile invertebrates and fish eggs struggle to survive in low oxygen conditions and without light, plants are unable to grow. It is a good idea to sample your river after different weather conditions to understand how it responds to rainfall or drought.

2. **Geographical comparison.** Where scores are shown as 0, it means that the reading using the Secchi tube was <12. Source: Cartographer.





3 April data

PAR RIVER/TRIBUTARY	LOCATION	Turbidity
Par	South of Minorca Lane, Par River, SX 02657 59788	0
Tributary	Carbis Stream SX 02834 59401	0
Par	Luxulyan allotments, Par River, SX 04732 58045	0
Par	Cam Bridges, Par River, SX 05292 57454	0
Tributary	Gatty's Bridge, Bokiddick Stream SX 05531 57953	0
Par	Treffry Viaduct, Par River, SX 05650 57179	0
Par	Lady Rashleigh Mine, Par River, SX 06451 56509	0
Tributary	Treesmill, Tywardreath Stream, SX 08873 55385	0
Par	Par Beach slipway, SX 0776 53261	0

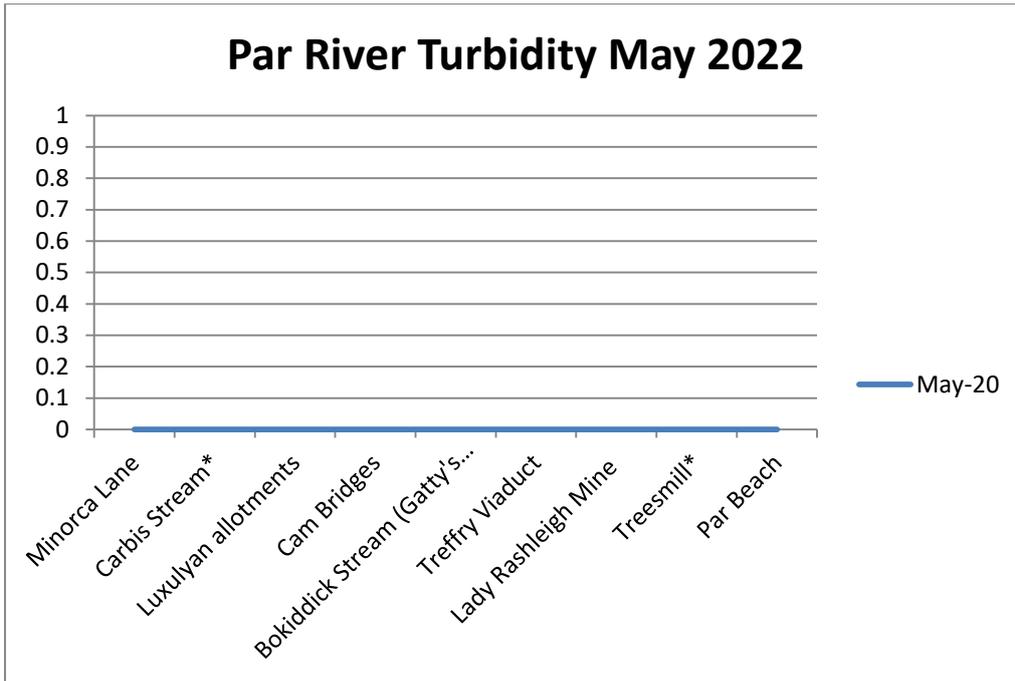
CSI Surveys conducted on these dates, each of which is colour-coded:

7th May 2022

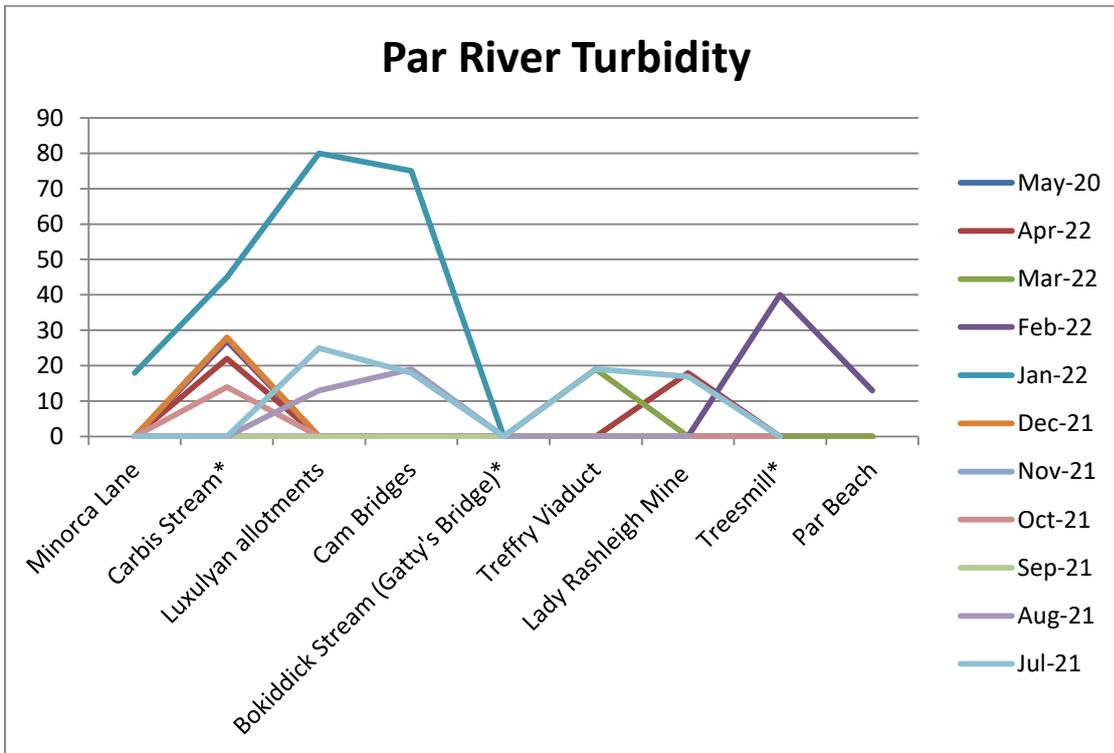
8th May 2022

9th May 2022

The low turbidity at Par Beach is surprising given the elevated reading for Total Dissolved Solids.



4. Historical data on turbidity:



G. PHOSPHATES

1. This is the WRT's explanation of this measure.

Phosphate occurs naturally within the river ecosystem, but in very low levels under 0.05 mg/l. Therefore, higher levels may indicate anthropogenic input. Phosphate is found in animal and human waste, cleaning chemicals, industrial runoff and fertiliser so this can be a good indicator of pollution. Having raised levels of phosphate can lead to increases in plant growth within the watercourse. This leads to a depletion of oxygen due to the plant's aerobic respiration during the night. Without oxygen aquatic species cannot survive and the river ecosystem collapses. (It is important to note that phosphate is taken up by plants. You may get a low reading but high plant growth, indicating eutrophication.)

Ranges on phosphate diagnostic colour chart:

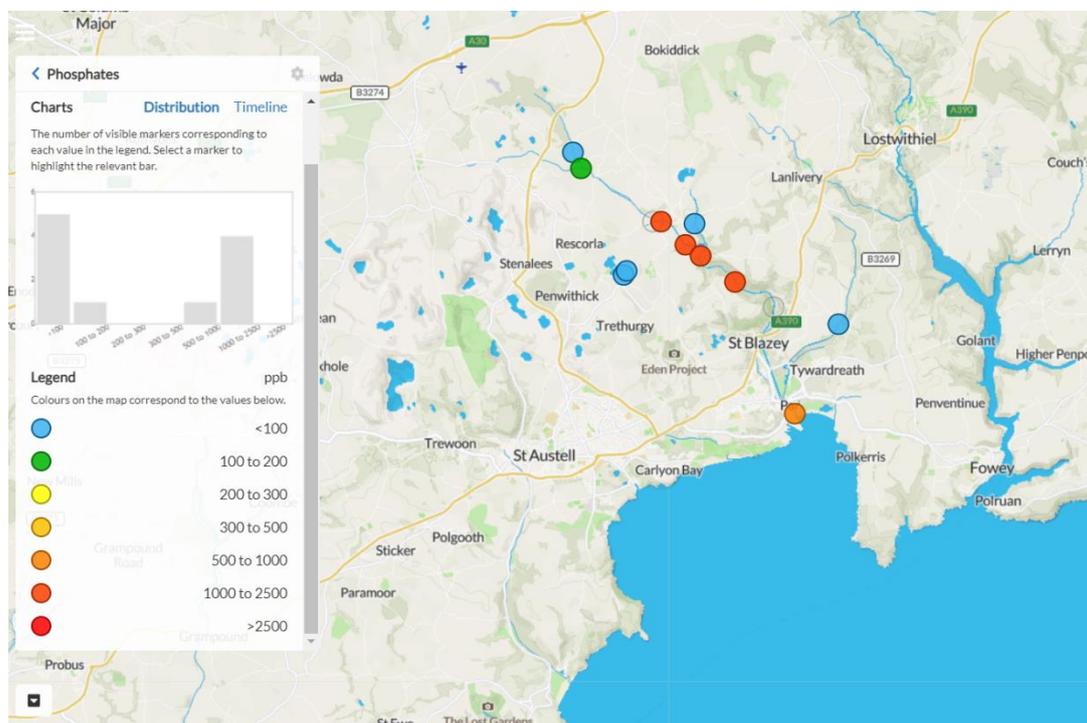
0 – 100 OK

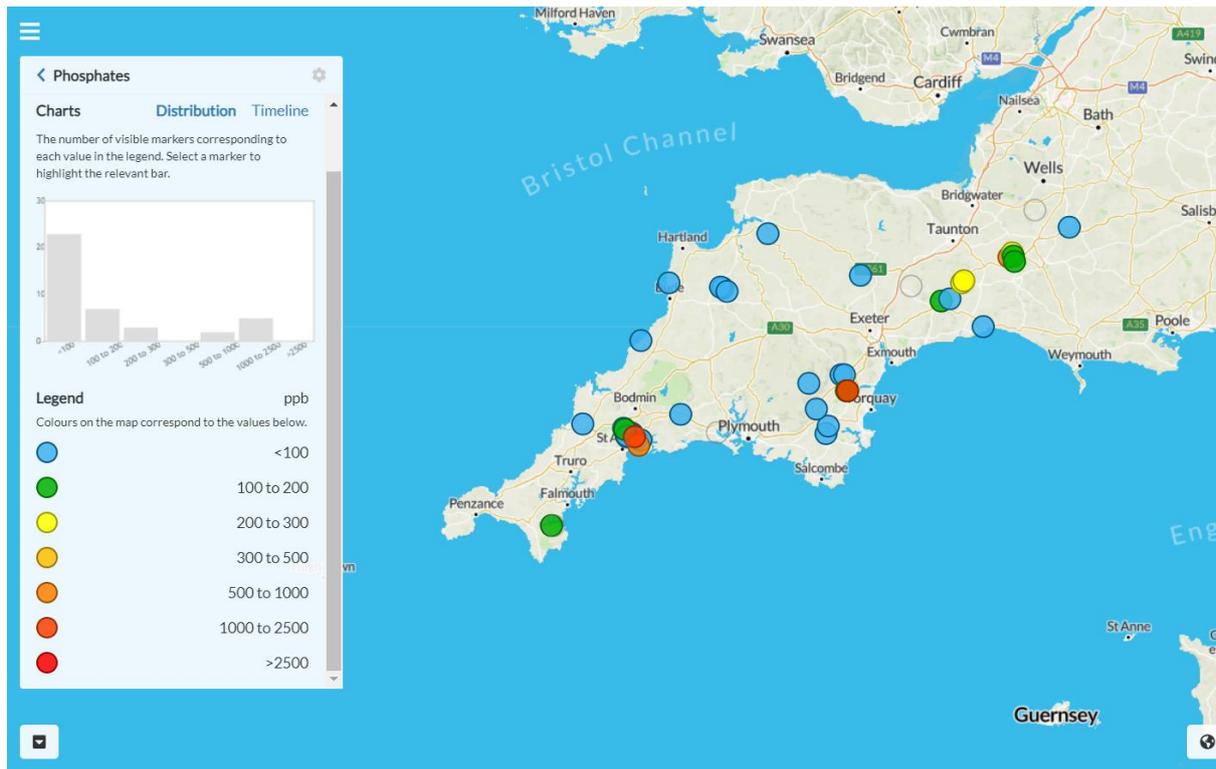
200 – 300 HIGH

500 – 2500 – TOO HIGH

Phosphate levels were relatively low for the second month running. Levels at all sites monitored were OK according to the WRT guidance. Maximum scores of 2500 PPB have been recorded at some sites but these precede the date range in the historical graphs. They have been recorded on Cartographer.

2. **Geographical comparison.** Source: Cartographer





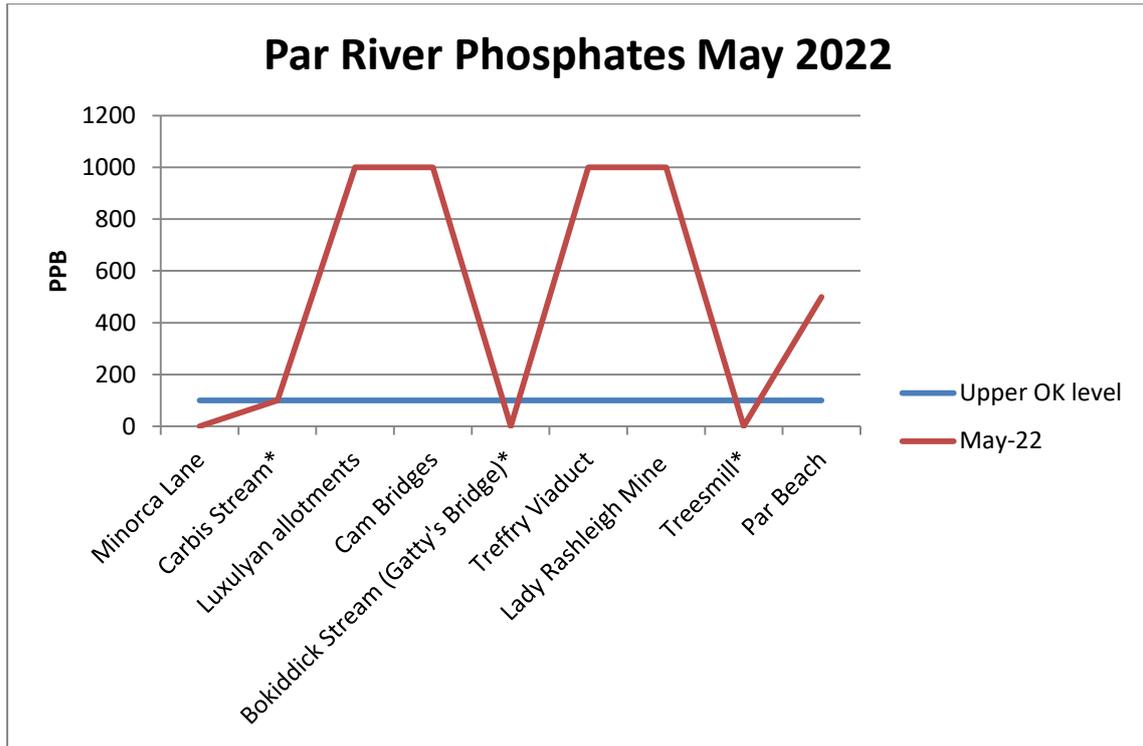
PAR RIVER/TRIBUTARY	LOCATION	Phosphates ppb
Par	South of Minorca Lane, Par River, SX 02657 59788	0
Tributary	Carbis Stream SX 02834 59401	100
Par	Luxulyan allotments, Par River, SX 04732 58045	1000
Par	Cam Bridges, Par River, SX 05292 57454	1000
Tributary	Gatty's Bridge, Bokiddick Stream SX 05531 57953	0
Par	Treffry Viaduct, Par River, SX 05650 57179	1000
Par	Lady Rashleigh Mine, Par River, SX 06451 56509	1000
Tributary	Treesmill, Tywardreath Stream, SX 08873 55385	0
Par	Par Beach slipway, SX 0776 53261	500

CSI Surveys conducted on these dates, each of which is colour-coded:

7th May 2022

8th May 2022

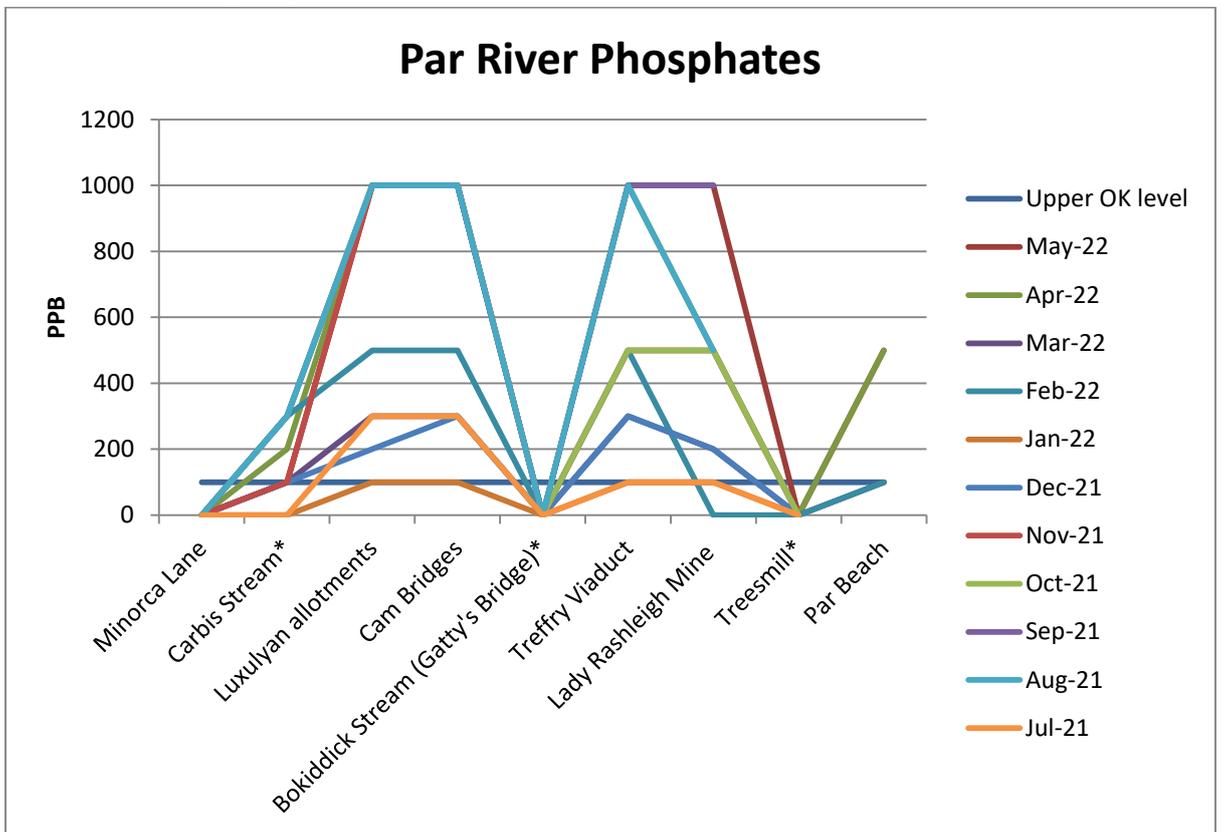
9th May 2022



*indicates a tributary of the Par River.

WRT advises that levels up to 100 ppb are OK. Only at 4 of the 9 locations was the level at 100 ppb or lower.

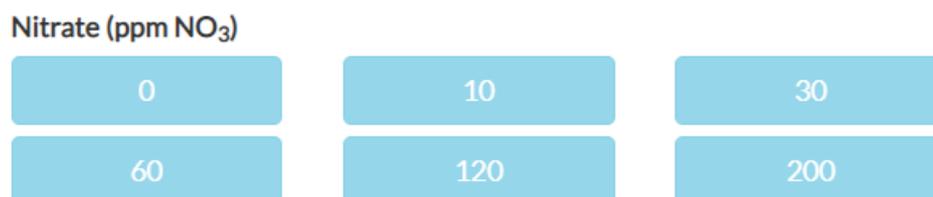
5. Historical data on phosphates:



This chart shows that since July 2021 phosphate levels in most of the 9 monitoring points have exceeded the threshold of what is acceptable ('OK') according to Westcountry Rivers Trust guidelines. Our belief is that high phosphate levels are linked to the St Austell North Sewage Treatment Works at Luxulyan.

H. NITRATES

1. The WRT kit has these ranges for nitrates:



2. We have concerns about the sensitivity of the testing strips so did not carry out any tests this month.

I. OTHER OBSERVATIONS

1. E.coli (EC) and Total Coliform(TC)

- (a) On 7th May 2022 testing took place on the Par River south of Minorca Lane, (SX 02657 59788) and on 9th May at Lady Rashleigh Mine (SX 06451 56509) using the Aquagenx CBT EC+TC MPN Kit which 'simultaneously detects and quantifies E. coli (EC) and Total Coliform (TC) bacteria in a 100 mL sample'.

- (b) Key information:

What is the difference between total coliform and E. coli?

Total coliform is a large collection of different kinds of bacteria. Faecal coliform are types of total coliform that exist in faeces. E. coli is a subgroup of faecal coliform.

<https://doh.wa.gov/sites/default/files/legacy/Documents/Pubs//331-181.pdf>

Why is E. coli in river water a concern?

The presence of E. coli **indicates faecal contamination of the drinking water** and as a result, there is an increased risk that enteric pathogens may be present.

<https://www.canada.ca/en/health-canada/programs/consultation-e-coli-drinking-water/document.html>

Particular thanks are due to Joan Farmer for allowing the use of her home for the unpleasant process of incubating the samples and also for contacting the manufacturers of the kit in North Carolina, USA, for guidance on the results. Thanks too to Ross Tonkin for sharing his professional expertise.

(c) Interpreting the results:

Aquagenx CBT EC+TC MPN Kit gives a guide to help interpret the results of the incubated samples. This is an attempt at a simple guide linked to the **United States Environmental Protection Agency Recreational Water Health Risk Category Based on Minimum Probable Number and Upper 95% Confidence Level**. However, this simplification should be used with caution until it has been checked by someone with relevant expertise.

MPN/100mL	Health Risk Category
0	Low Risk/Safe
10 - 40	Low Risk/Probably Safe
47 – 84	Low Risk/Possibly Safe
91 - 96	Intermediate Risk/Possibly Safe
136 - 171	High Risk/Probably Unsafe
326 - 483	Very High Risk/Unsafe
>1000	Very Unsafe

(d) Par River south of Minorca Lane, Par River (SX 02657 59788)

It was decided to test here in order to make a comparison with the results from tests conducted in April 2022 upriver and downriver from the 2 outfalls from St Austell North Sewage treatment Works. The easiest point upriver from the STW was approximately 1.5 miles (2.4 kilometres) upstream, near Minorca Lane, where CSI tests are carried out monthly. We expected low levels of E.coli and Total Coliforms but this was not what was found.

The report from Joan Farmer for bacteria near St Austell North STW (named as Luxulyan STW in our previous reports) on 10th April 2022 showed:

LOCATION	E.coli MPN/100 ml	Total Coliforms MPN/100 ml
Upstream of St Austell North STW SX0430 5821	34 Low Risk/Probably Safe	Between 34 MPN/100ml and >1000 MPN/100ml Low Risk/Probably Safe or Very Unsafe
Downstream of St Austell North STW SX0448 5810	136 High Risk/Probably Unsafe	Between 136MPN/100ml and >1000 MPN/100ml High Risk/Probably Unsafe or Very Unsafe

The results for Total Coliforms were inconclusive; those for E.coli were more definite. It suggested that E.coli levels in the Par River were higher downstream from St Austell North STW than upstream.

This was why it was decided to test a sample from the Par River near Minorca Lane. It was expected to have an E.coli score close to that found in April immediately upstream from St Austell North STW.

LOCATION	E.coli MPN/100 ml	Total Coliforms MPN/100 ml
Par River south of Minorca Lane, Par River (SX 02657 59788)	>1000 Very Unsafe	>1000 Very Unsafe

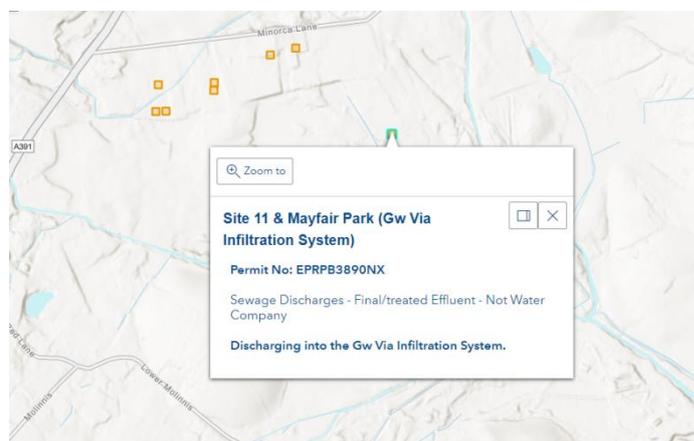
Joan Farmer reported that: 'The sample was taken on 7/5/2022. Results on 9/5/2022. The weather was sunny with only very light rain in the last 24 hours.'

These were unexpected results. While it is too soon to make statements with confidence about **any** of our bacteria sampling, which is being carried out by citizen scientists with no relevant qualifications, it is not unreasonable to identify potential factors that might need to be looked at.

In the following map (taken from The Rivers Trust's Sewage Map at <https://theriverstrust.org/key-issues/sewage-in-rivers>) the sampling point was on the river to the east of the easternmost square.



Each square indicates sewage discharges not provided by water companies. One such is shown:



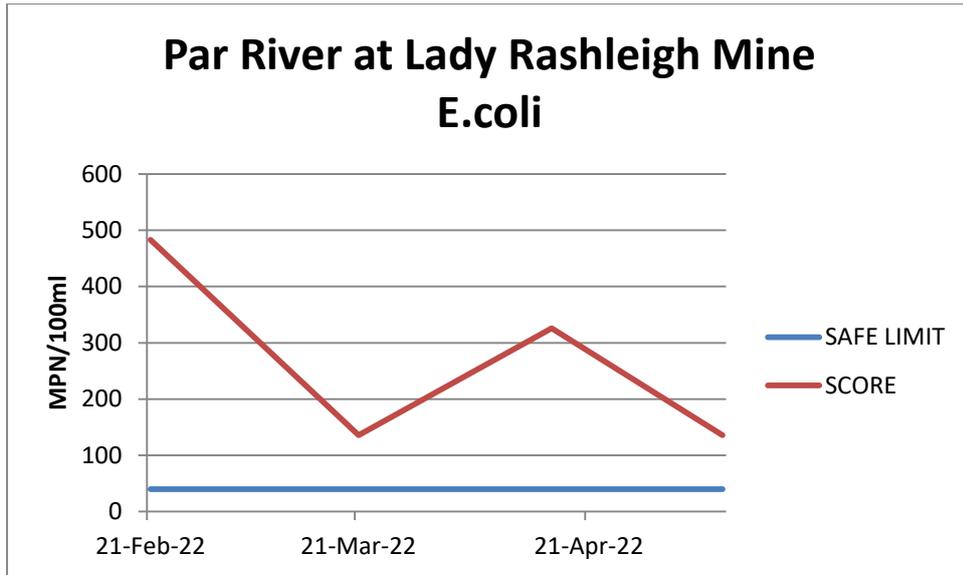
The proximity of 8 permitted sewage discharges into groundwater via an infiltration system may be unrelated to the elevated levels of bacteria. It **does not** mean that the permitted sewage discharges are having any impact on water quality in the Par River. Our group has **no evidence** to suggest that they do and **no suggestion or implication** is being made. However, if bacteria levels are high in this section of the river (and elsewhere), one factor to look is possible seepage from non-water company sewage discharges. It would be interesting to sample for bacteria closer to the source of the river, perhaps in the Criggan Moors area.



Sampling point near Minorca Lane SX 02657 59788

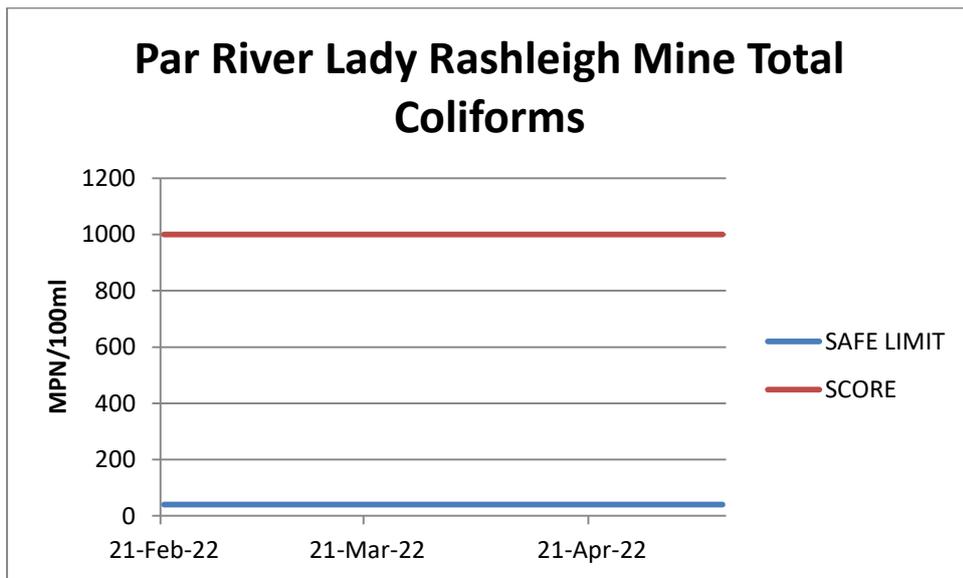
(e) Par River at Lady Rashleigh Mine (SX 06451 56509)

- (i) E.coli was 136 MPN/100 ml, which is considered to be **High Risk/Probably Unsafe**.



N.B. The last survey date was 9th May but Excel was not being very cooperative.

(ii) Total Coliforms

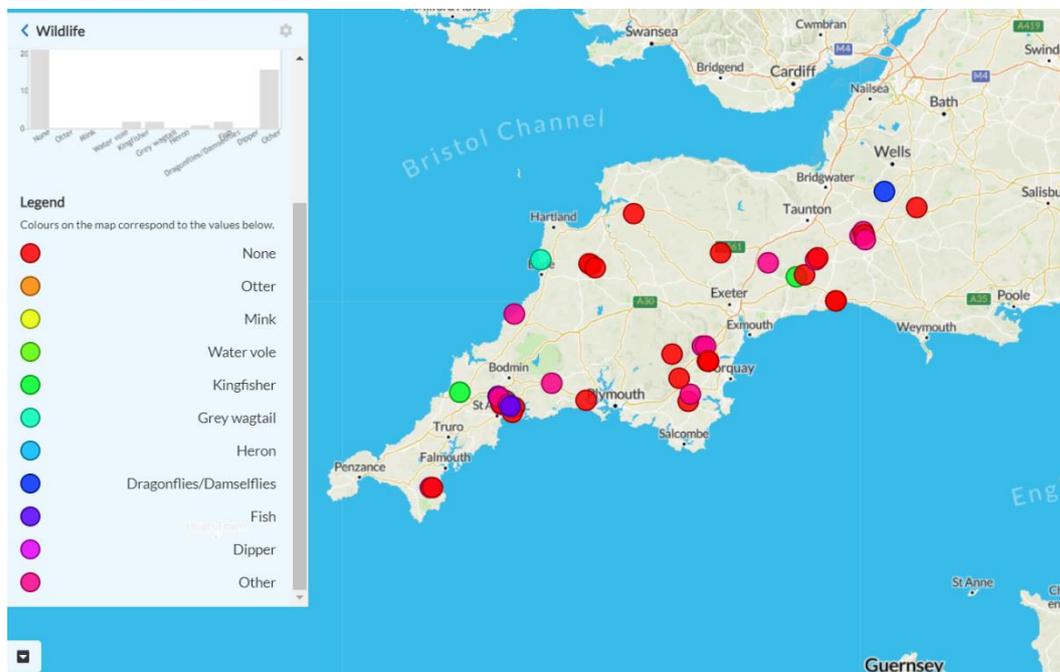
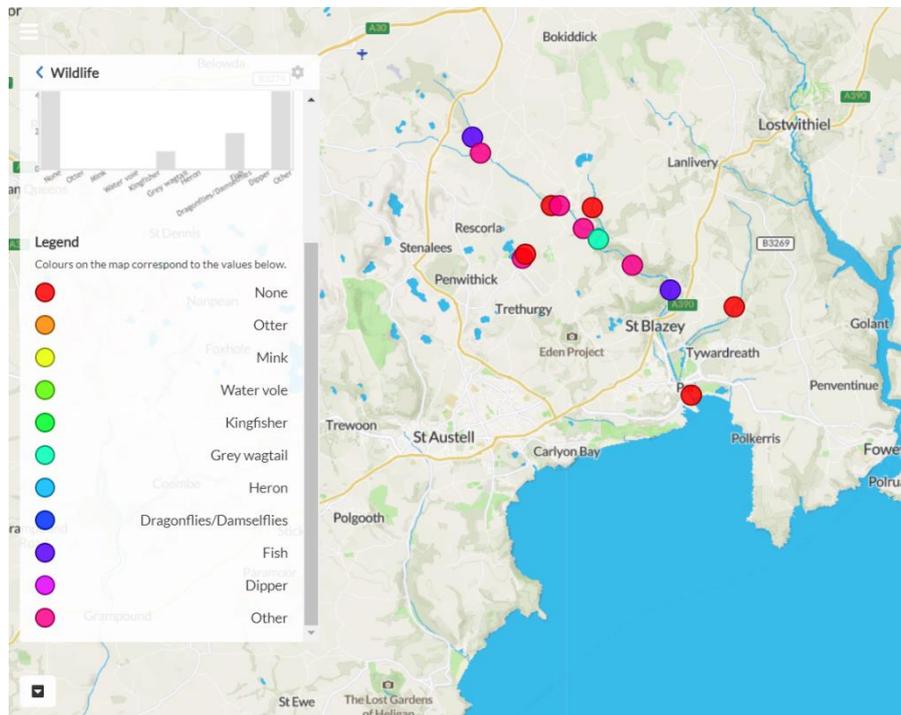


N.B. The last survey date was 9th May but Excel was not being very cooperative.

Also: The Aquagenx interpretation table has a category of >1000 MPN/100ml. This has been shown on the graph as 1000.

2. Wildlife

Source: Cartographer.



This month a greater variety of wildlife was spotted than usual, including fish in the Par River at Minorca Lane and Ponto Mill (and tiny fish in the Fowey Consols leat). Otter spraint is included,

as usual, under 'Other' but once again there was evidence for the presence of otters along the river.

3. Otter survey:

A. SURVEY CONDITIONS

Date & time	7/5/2022, 8/5/2022, 9/5/2022
Surveyors	Roger Smith, Joan Farmer, Dave Burrell, Veronica Jones
Areas surveyed	Par River from STW to Cam Bridges; Par River from Treffry Viaduct to Pontois Mill; Upper Par (Criggan Moors and Minorca Lane)
Weather	Recent light rain
River level	Low
River flow	Steady
Water quality	Too High phosphate levels from Luxulyan allotments downstream (1000 ppb); at Par Beach 500 ppb. There are also concerns about levels of E.coli and Total Coliforms.
Other wildlife	Dippers and Grey Wagtails seen in Luxulyan Valley on 8/5/2022. Fish seen in the river near Minorca lane on 7/5/2022 and at Pontois Mill on 9/5/2022. Deer tracks noted in riverside mud at Cam Bridges on 8/5/2022.

B. EVIDENCE FOR OTTERS ✓

EVIDENCE	SEEN/ ORKS*	LOCATION	NOTES
Spraint - fresh			
Spraint – recent	✓ *	SX 04747 58056 Luxulyan allotments boulder in river	
Spraint - old	✓ *	SX 06456 56498 Lady Rashleigh Mine – boulder in river	
Anal jelly			
Sign heap			
Staining			
Tracks			
Path			
Slide			
Holt			
Hover			
Couch			
Live sighting			
Corpse			

*Report sent to ORKS: <https://ercis.org.uk/>

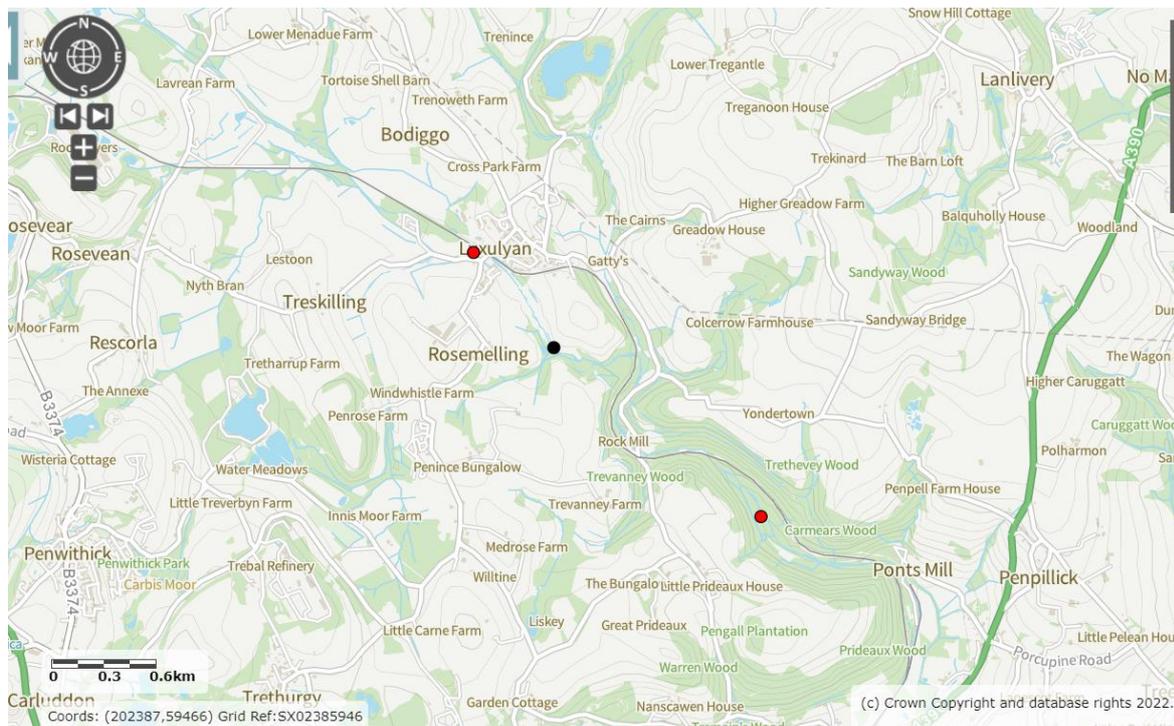
C. MAP

Source: <https://magic.defra.gov.uk/MagicMap.aspx>

Red dots – definite evidence. Recorded on ORKS.

Black dots – possible evidence. Not recorded on ORKS.

Green dots – definite evidence but may have been recorded in the previous month, e.g. old spraint.



Ross Tonkin suspected the presence of otters near Cam Bridges. This has been indicated by the black dot.

D. PHOTOGRAPHS

1. No evidence was found under canal bridge at Pons Mill (SX 07312 56164). This may be because of disturbance and the dumping of rubbish (see photo).



Rubbish under Pons Mill canal bridge. This was removed.

2. Old spraint on the boulder at Lady Rashleigh Mine (SX 06456 56498). It is thought to have been deposited since the last survey in April.



3. Recent spraint at Luxulyan allotments (SX 04747 58056).



4. ARMI Riverfly Survey

Three of the group (Joan Farmer, Veronica Jones and Roger Smith) have undertaken the training to carry out Riverfly Surveys under the Anglers' Riverfly Monitoring Initiative (<https://www.riverflies.org/rp-riverfly-monitoring-initiative>). In short, sampling for 8 riverfly groups is carried out using standardised methods with scores calculated for their abundance. Information is passed to ARMI and the ORKS database. If the score does not reach a trigger level (in our case trigger level has been raised from 5 to 6 from May 2022), the Environment Agency must be informed immediately since it is highly likely to indicate that the water is polluted. Our group received approval to sample at two sites: Luxulyan allotments (SX 04743 58054) and Lady Rashleigh Mine (SX 06453 56500). We have decided, for the time being, to concentrate on the latter.

It is impossible to count every invertebrate so this counting method is used:

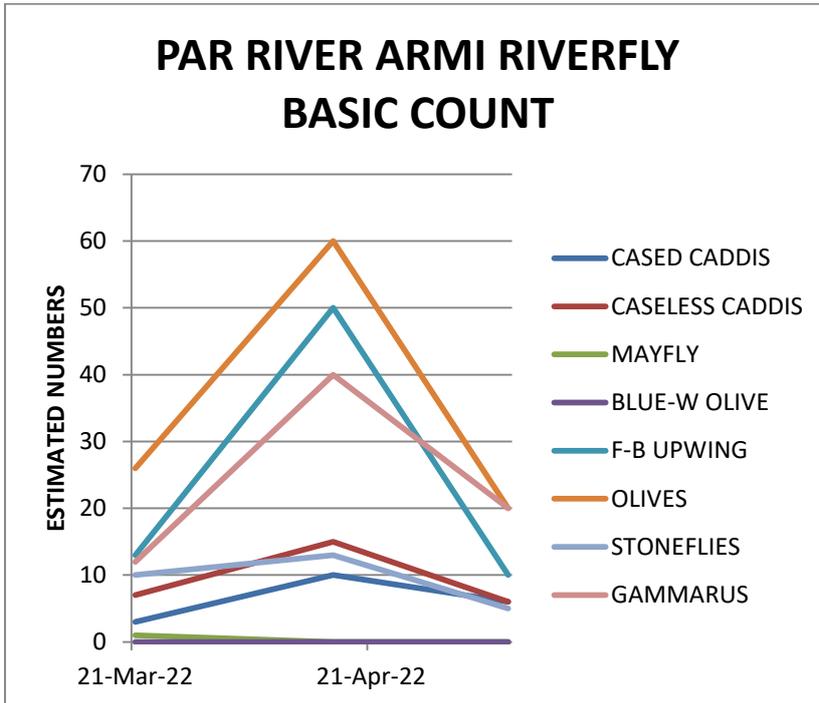
Abundance	Score	Estimated Number
1-9	1	Quick count
10-99	2	Nearest 10
100-999	3	Nearest 100
>1000	4	Nearest 1000

Results, 9th May 2022

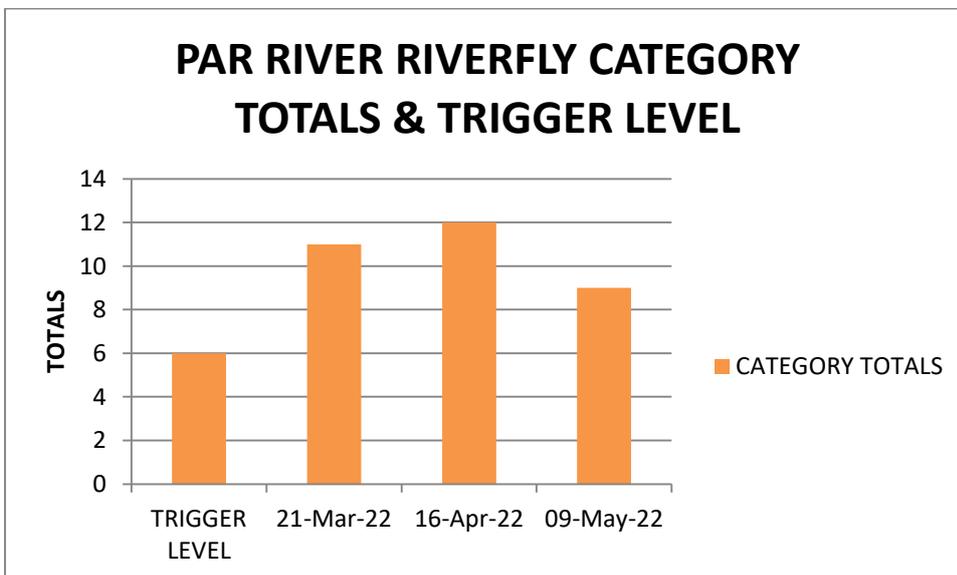
	SPECIES	NUMBER	CATEGORY
Trichoptera			
1	Cased Caddisfly	6	1
2	Caseless Caddisfly	6	1
Ephemeroptera 3 tails			
3	Mayfly (Ephemeridae)	0	0
4	Blue-winged olive (Ephemerellidae)	0	0
5	Flat-bodied up-wings (Heptageniidae)	10	2
6	Olives (Baetidae)	20	2
Plecoptera 2 tails			
7	Stoneflies	5	1
Gammaridae			
8	Freshwater Shrimp	20	2
			9

CATEGORY TOTAL	9
TRIGGER LEVEL	6

Whether due to the reduction in time taken with the survey, warmer weather or other unknown factors, the category total fell below that achieved in previous months.



N.B. The last survey date was 9th May but Excel was not being very cooperative.



J. DISCUSSION

1. Positive observations.

- (a) The variety of wildlife spotted was greater than usual, including fish, otter spraint, dippers, grey wagtails, damselflies, pond-skaters.
- (b) The Carbis Stream was relatively clear (see photo).



Carbis Stream just downstream from SX 02834 59401. Usually the white Carbis Stream (on the right) is white where it joins the main river on the left.

- (c) Although this is a subjective judgement, the river water looked particularly clear for much of its length.
- (d) The Riverfly Trigger Level was exceeded.

2. Points of concern.

- (a) Notwithstanding our inexperience, lack of peer review and tiny database, results for bacteria (E.coli and Total Coliforms) suggest that, by United States Environmental Protection Agency Recreational Water Health Risk standards, the water was Very Unsafe near Minorca Lane and High Risk/Probably Unsafe (E.coli) and Very Unsafe (Total Coliforms) at Lady Rashleigh Mine.
- (b) Phosphate levels were Too High (WRT classification) from the sampling point at Luxulyan allotments downstream to the sea. This is a regular finding and may be associated with low river levels.
- (c) Although the Riverfly Trigger Level was met and exceeded it is becoming noticeable that certain categories, such as Mayfly, which are not tolerant of lower water quality, are absent.
- (d) It is believed that some of the contaminants in the river may come from the St Austell North Sewage Treatment Works at Luxulyan. This may raise a question about the capacity of the plant to cope. The group understands that sewage from West Carclaze Garden Village will be pumped here for treatment. On a far smaller scale, the likely development of housing at Chapel Field in Luxulyan may also add to the amount of sewage that the plant will have to process. It is not known if these considerations have been made during the planning process.

3. Areas of doubt

- (a) The bacteria testing is showing alarming results. Support and review will be needed for confidence to be placed in our findings. Likewise, if our concerns are justified, expert consideration of possible contributory factors (such as the use of sewage discharge into groundwater, with, and possibly without, permits) will be essential.
- (b) Less in doubt are our results for levels of phosphate. However, advice will be needed on how we can take our concerns forward.
- (c) An approach to South Water about any possible impact it is having on the Par River resulting from the St Austell North STW might be worthwhile.
- (d) South West Water intimated last year that repairs to the decrepit headwall and pipe near its pumping station (SX 05033 57849) would take place this year. No evidence of any work has been seen yet. Although incorrect stories about very recent sewage pollution at this location are still in circulation locally, it is necessary to tidy up this unsightly riverbank structure.

