Water Quality of the River Stour

Update and Summary following the meeting of PACE Water Quality Volunteers On Thursday 1 October 2026 in The Crown at Manningtree.

Present: Bob Rowles, John Hall, Drew Henderson, Trudi Needham, Arnrid Wood, Caroline Hall, Philip Bohannan, Emma Hylton, Lily Hylton, Charles Crookes, Judy Wakeling, Louise McRae, Tom Hancock, Steve Marr, Natalie Singleton, Rob Ferguson, Ben Hammond, Denis Baldry, Margaret Baldry.

Thank you to everyone for coming and thank you also to the other Water Quality Volunteers who have trained and helped but who could not make this particular meeting:
Iris Marr, Kelly Lench, Dominic Watts, Rachael Hurst, Anna Helm- Baxter, David Eisenhart, Heather McCollin, Alyssa Carrington.

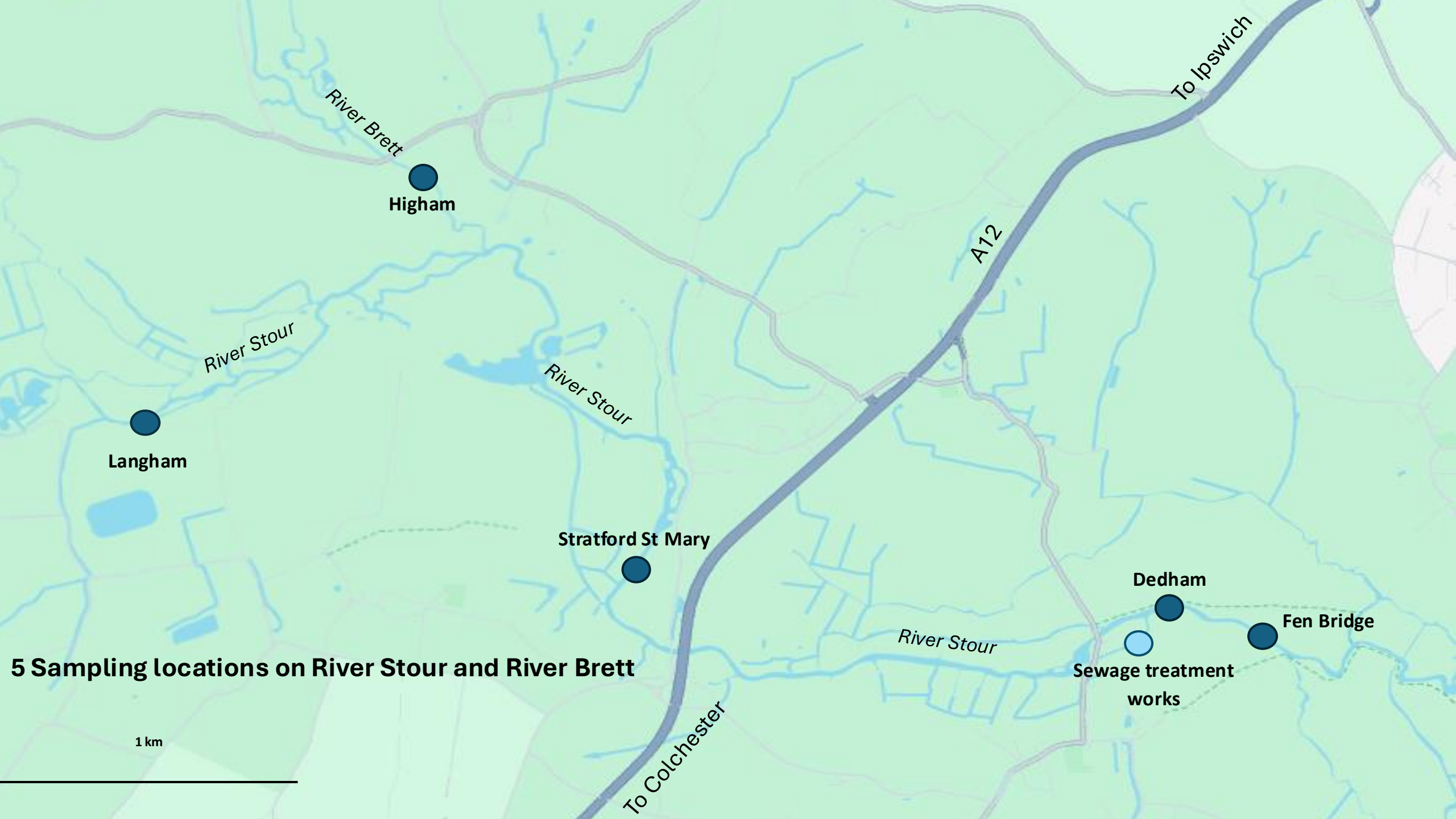
Thanks for support from John Findlay, Dan Mills, Ian Hawkins (Environment Agency), And Dedham Vale National Landscape and Freshwater Biological Association.



Programme for Thursday 1 Oct 2026 at The Crown
Water Quality of the River Stour

Introduced by Bob Rowles, John Hall, Drew Henderson

19.00	Volunteers meet at The Crown. Order Drinks	
19.15	Welcome and Introduction to the evening.	Bob
19.25	Summary of what we have done.	John
	Aims of the Scientific Paper.	Drew
	Bacteria Studies and main findings.	
	The invertebrate results from *Riverfly* Scores.	John
	Why different species are more abundant at some sites	
	Association between E coli and *Riverfly* Scores.	Drew
	Questions and answers	
19.50	Introducing possible options for future practical work.	Bob
20.00	Eat – chat about the results and future options	
	Further questions and discussion	
	What do we think might be the better options and any further info needed before we decide	
21.30	Latest finish time	


River Brett
Higham
To Ipswich
A12
River Stour
River Stour
Langham
Stratford St Mary
Dedham
Fen Bridge
River Stour
Sewage treatment works
To Colchester
5 Sampling locations on River Stour and River Brett
1 km



Taking a sample of freshwater invertebrates as part of *Riverfly* using a 3-minute Kick-sample



Sorting and identifying a *Riverfly* sample

PACE has 3 years of records of Water Sampling once per month at 5 locations on the River Stour at Higham, Langham, Stratford St Mary, Dedham, Fen Bridge.
To undertake these 16 PACE volunteers were trained by the Environment Agency in *Riverfly*

PACE has established links with University of Essex, School of Life Sciences.
They have undertaken the assessment of bacteria like E. coli in Water samples taken from the same sites.
We have 2 full years of bacteria records from the same 5 sites.

We paused the water and bacteria sampling at the end of December 2025 to give time to analyse the existing results and determine what course our future efforts should take.
We are also producing a scientific paper looking at the interactions between E. coli bacteria and the abundance of the different invertebrate species.

Here are a few of the results which are all statistically significant (at probability level $p < 0.05$) and are presented in the following graphs:

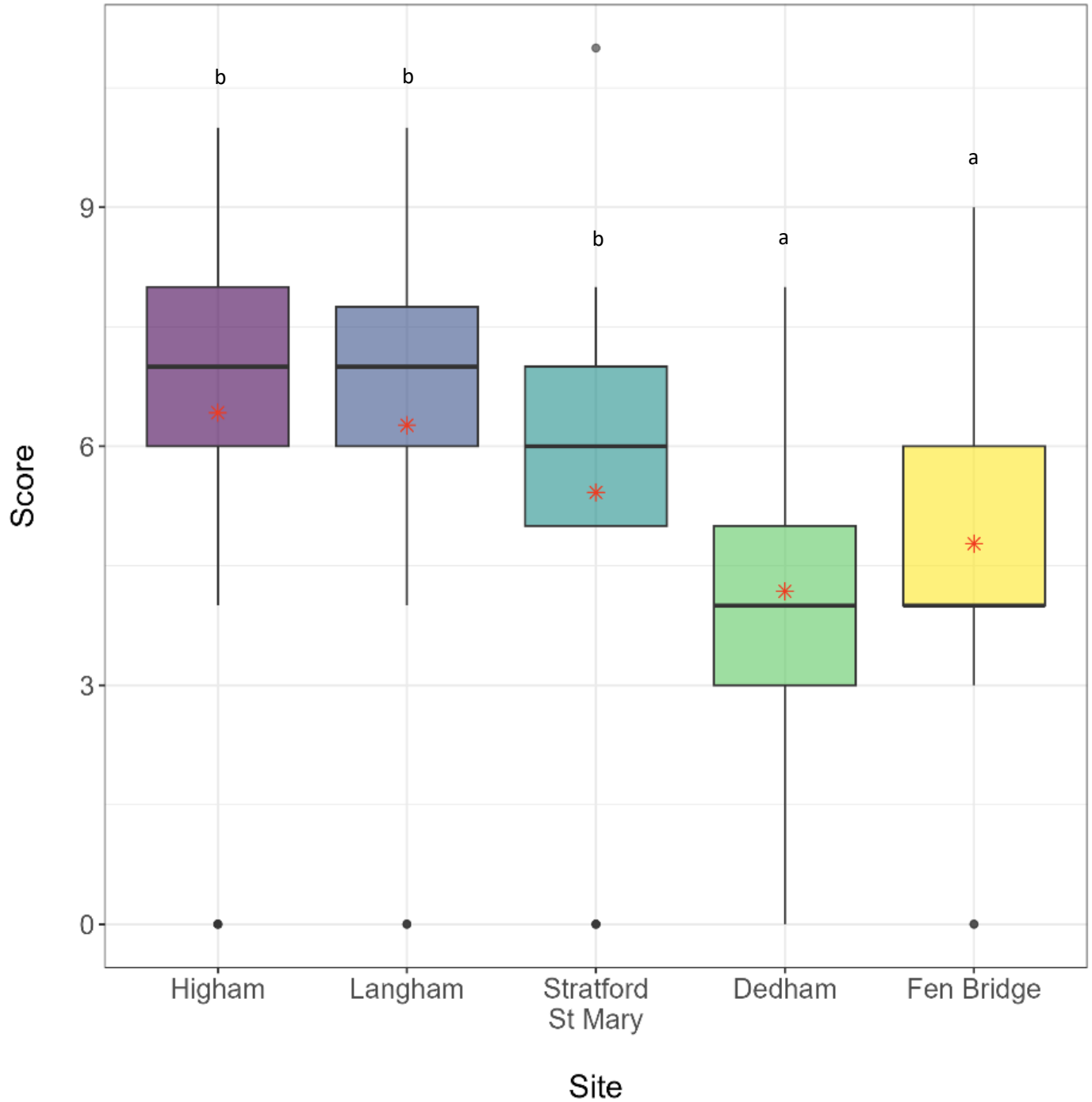
- The *Riverfly* Scores **decrease** as you come downstream from Higham to Dedham and Fen Bridge
- The E. coli concentrations **increase** as you come downstream from Higham to Dedham and Fen Bridge
- As the concentrations of *E*. coli increase so the collective abundance of the indicator species **decreases.**
- As the concentrations of *E. coli* increase the abundance of Burrowing Mayfly (Ephemeridae) **decreases**, but the abundance of Swimming Mayfly (Baetidae) **increases**.

    Burrowing Mayfly are found in the bed of the river, and their relative lack of mobility makes them more susceptible to pollution than Swimming Mayfly which are free swimming.

(Each of the sites shown in the following bar charts is appended by letters, e.g. “a”, “b”, “ab” etc. These designations reflect the level of similarity between the results obtained at different sites, such that the differences in the results obtained at two sites appended **with the same letter** can be regarded as statistically insignificant.)

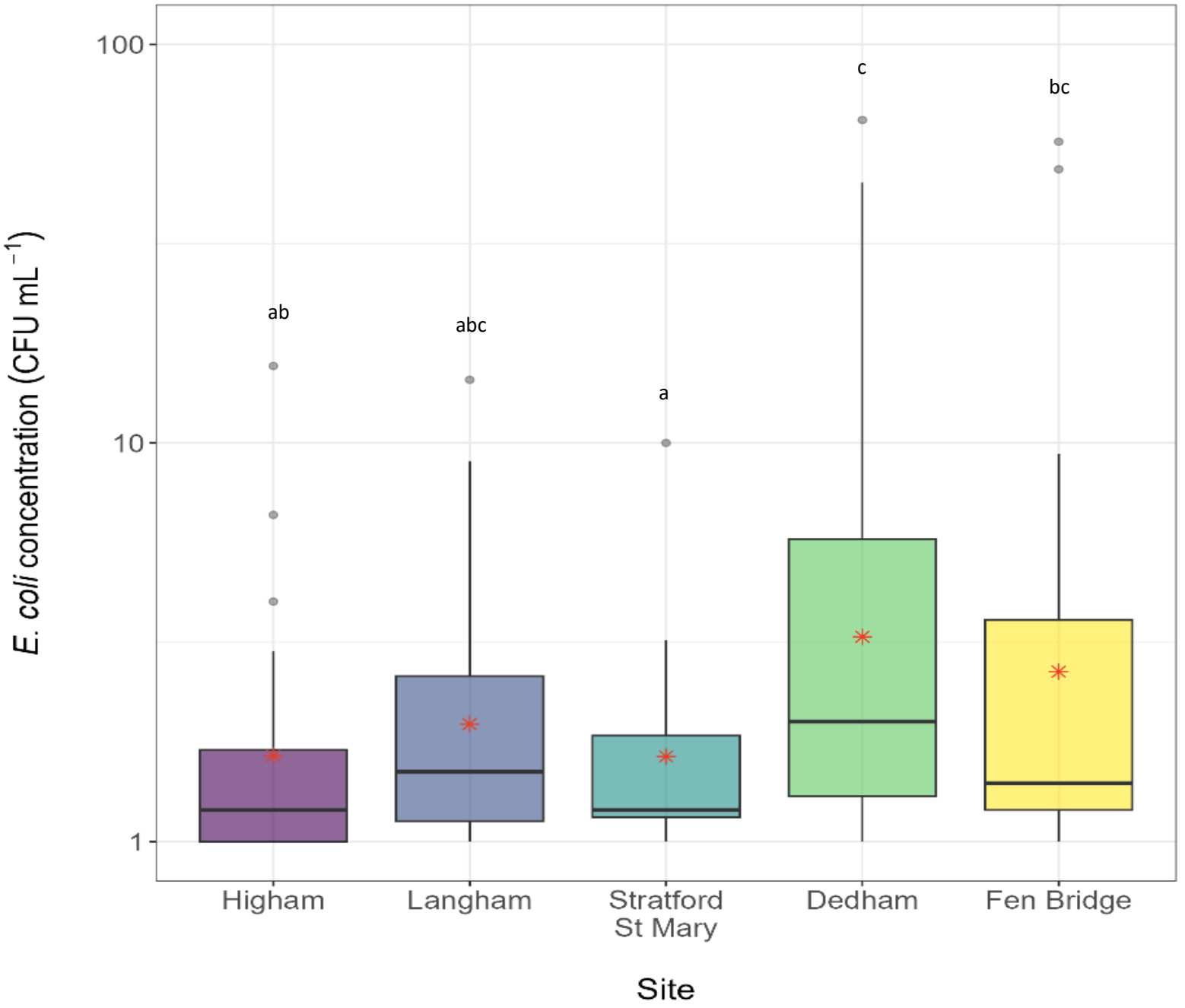
Total *Riverfly* Scores

Coming downstream from Higham to Fen Bridge



E. Coli concentration

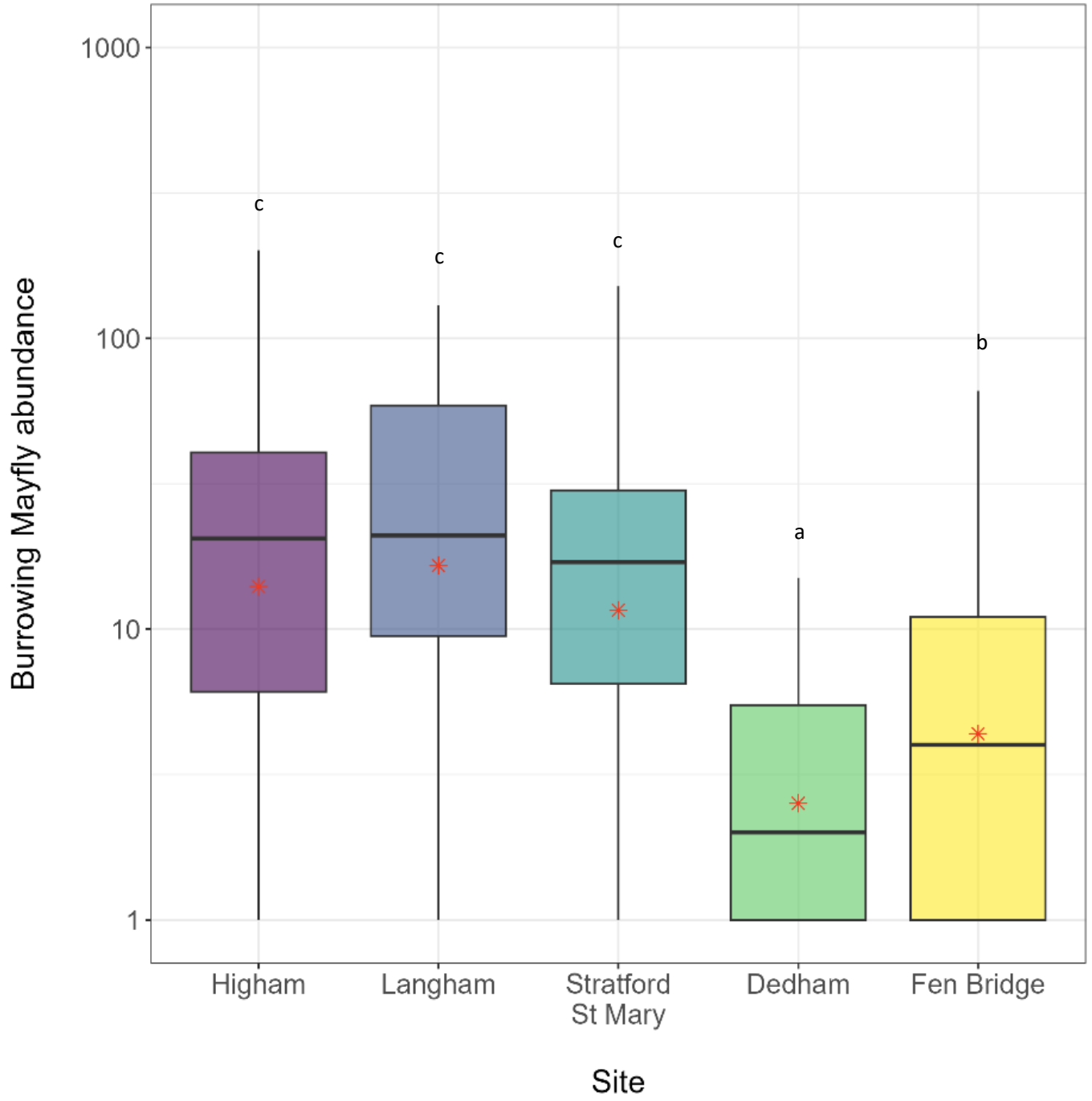
Coming downstream from Higham to Fen Bridge



Burrowing Mayfly Abundance

Coming downstream Higham to Fen Bridge

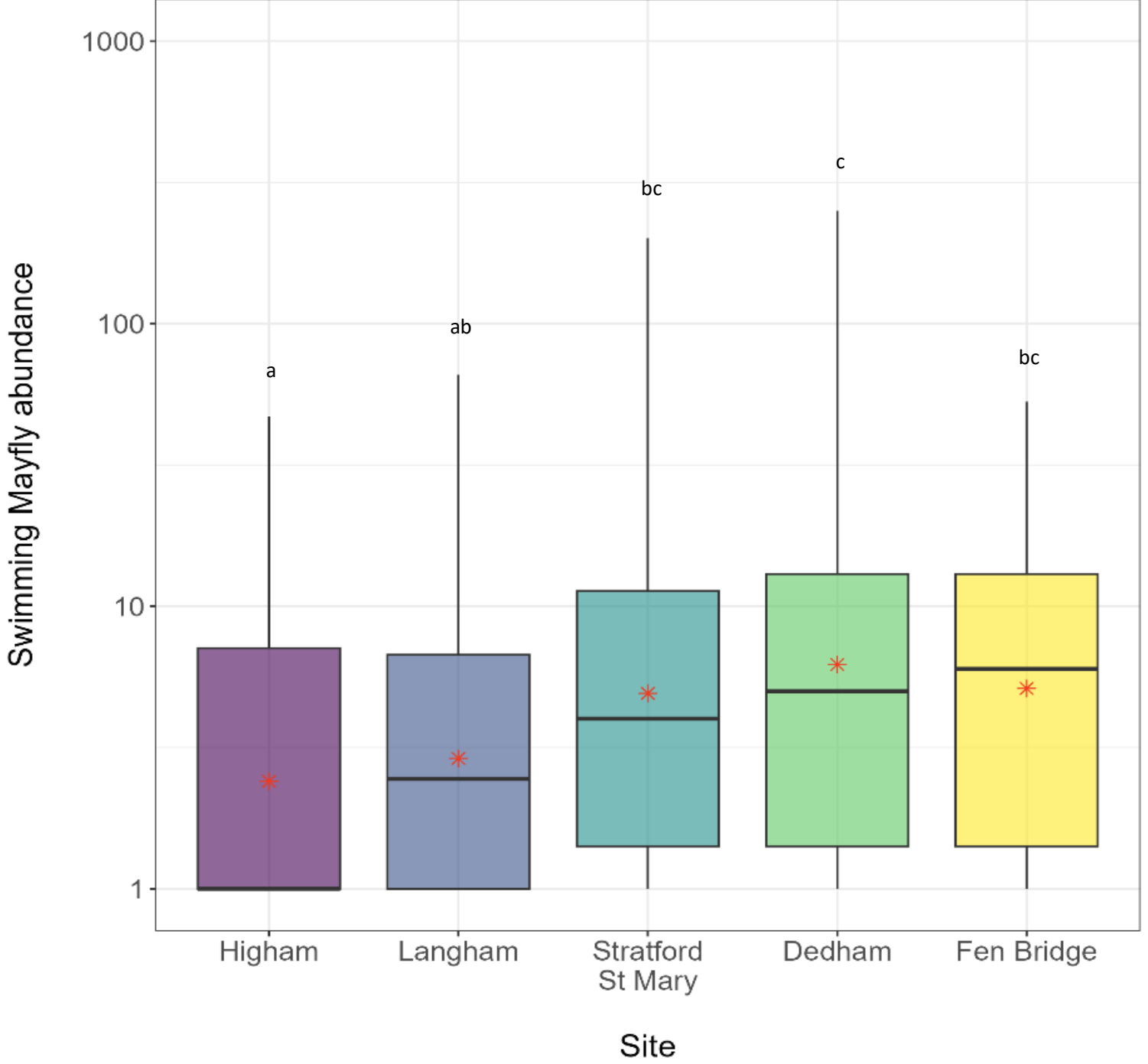




Swimming Mayfly Abundance

Coming downstream Higham to Fen Bridge





Discussion of possible Options for future water quality work on the River Stour

1. We've done that – should we stop? *Everyone wanted to continue the work in some form.*
2. Return to sampling the same sites – *we thought it is useful to continue to produce long term Records and to be able to flag up pollution issues to the Environment Agency - but do we need to do all 5 sites?*
3. Just sample 2 Sites monthly, one above, one below sewage outlet. *We thought this would be useful and would give us time and opportunity to add another element to the research – like the chemical analysis.*
4. Sample 3 sites by adding a site at Nayland so we can check further upstream. *We thought this would be good if there are volunteers at Nayland who want to take on the work.*
5. Change to practical projects which improve water quality at Dedham – examples of projects: Fence off so cattle cannot get in the river; work with riparian farmers and the Farm Cluster to get them to reduce fertilizer/pesticide use adjacent to the River; introduce meanders or dams to create natural flow. *We thought that, before we do this, we need to understand more about why the water quality is poor in some sections.*
6. Change to doing chemical analysis to identify the causes of poor water quality: the suspicion is that Sewage or Agricultural run-off or Road run-off are the probable causes of poor water quality, but we do not know which are the most important. *We thought we should undertake some initial chemical testing to see if we can identify the most important cause. For example: Test the water or sediment where Road run-off comes in from the A12; Test for Nitrate and Phosphate where water comes in from Agricultural land; check the releases of sewage from the Dedham Sewage Works as they have to monitor any such releases.*
7. Other Options?

    Desk Study into what other groups are doing who are monitoring water quality. *Good idea*
    There could be other chemical problems like flea treatment (Noenicitinoids). *Look into it*
    Wider DNA analysis could tell us about the fauna and food web of the River Stour. *How do we do it?*

Conclusions on what we do next.

Bob, Drew and John will complete the scientific paper and aim to get this published.
Bob, Drew and John will look into the possibilities of the initial chemical analysis.
We will aim to re-start *Riverfly* sampling at 2 or 3 Sites in January 2027.
New volunteers can join us if they wish. And later they can be trained in *Riverfly*.

Would someone like to start the Desk Study to ask other Water Quality Groups how their projects have developed and what they have decided to do?

Thanks to Rob and the University of Essex for their support and for the bacteria testing.
We need to look for sources of funding – Dedham Vale are keen to help.
Thanks to PACE for covering the cost of our meals for the Review Meeting.

Thanks to everyone involved – it was great to meet everyone.

John will be back in touch with everyone by Doodle Poll to restart up the *Riverfly* sampling in January.