Lots of brown trout about! New redd survey results revealed

In Winter 2025/26 we piloted a new survey technique on the River Chess to monitor brown trout breeding by counting 'redds' – the breeding scrapes they make to lay their eggs in gravel riverbeds. Here we go through the headline results and main (tr)outcomes of this study pilot.

What is a redd?

Redds are oblong shaped scrapes of cleaned gravel that trout and other salmonids make to create well oxygenated conditions in which to lay their eggs. Incredibly just by beating with her tail, a female trout can make redds up to 0.5m wide and >1m long. These redds are visible in the river as areas of pale disturbed gravel, meaning they can be spotted to detect trout breeding.

Figure 1 – Photograph of the River Chess highlighting a brown trout redd. Credit: Paul Jennings

Why count redds?

Brown trout are a Priority Species in the UK, facing many threats including climate change, pollution, habitat degradation and fragmentation. Therefore, understanding the health of brown trout breeding populations is important to the future of this iconic species.

Healthy chalk streams with their gravel beds, habitat diversity and clear, clean water should be ideal trout habitat. There are populations of brown trout in 5 of the 9 major

Chilterns chalk streams. The Chilterns Chalk Streams Project (CCSP) helps to conserve brown trout by mitigating barriers to fish passage and doing practical river restoration.

Getting data on where trout *are* and *are not* breeding therefore provides information to assess success of restoration work and prioritise problems to be addressed.

River Chess Redd Surveys 2025/2026

CCSP collaborated with the Environment Agency and the River Chess Association to create a new programme of redd surveys for the River Chess, funded by the Chess Smarter Water Catchment Initiative. The aims were to provide useful data for management on the Chess, provide information for the EAs regional assessment of trout breeding, and trial citizen science redd monitoring methods as there is not an established national standardised method.

In November 2025 we ran a training day in redd ID and fieldcraft at Restore Hope Latimer and recruited 15 citizen scientists. Everyone was assigned a stretch of the river to walk every couple of weeks, with the data recorded on a new Survey123 form.

A combined ~260 hours of volunteering across November-March produced incredible results with 76 surveys submitted and 191 redds counted!

Figure 2 – Redd survey training day at Restore Hope Latimer. Credit: Iona McMillan

Results

Breeding season

There was a long breeding season with peak redd counts stretching across December-February, see the chart below. Interestingly this was a later and longer breeding season than on other chalk streams in the region included in the EA analysis. For instance, the first redds were spotted in October on the Gade, and on the Ver breeding peaked in mid-November and was over by mid-December.

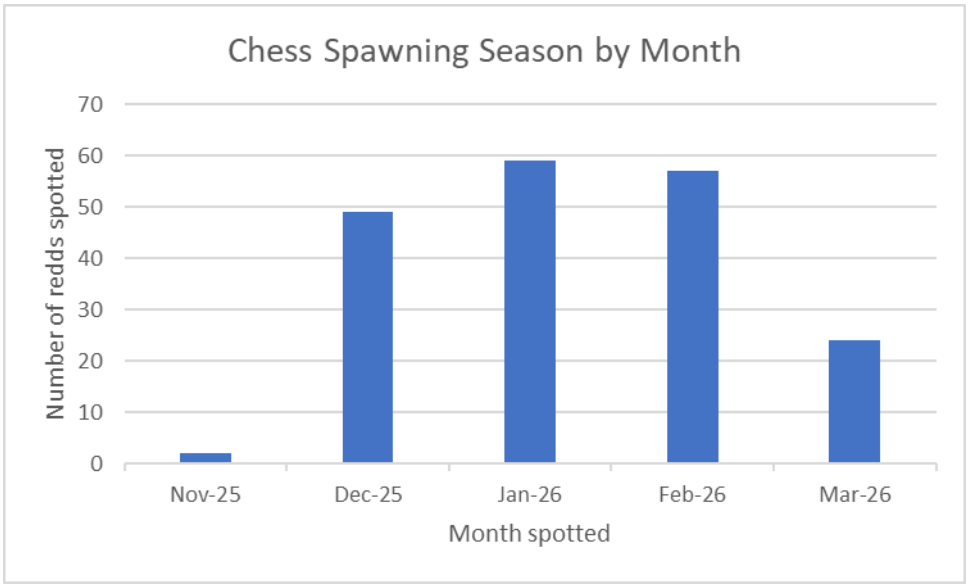


Figure 3 – Bar chart of redds counted each month in the 25/26 breeding season. Credit: Iona McMillan

Water temperature

The success of brown trout breeding is highly temperature dependent, with an egg survival maximum temperature threshold of 12C during the November-February breeding season. Climate change is a major threat to the future of brown trout in England, with a recent report from the Environment Agency suggesting that by 2080 >70% of rivers modelled would exceed this threshold.

Surveyors were given thermometers to measure water temperature above the redds to investigate current conditions. The mean temperature recorded was 8.7C, with the mode being 10C. Continuing to monitor temperature will enable us to track changes between years and the risk of overheating. We also increasingly consider the threats of climate change within river restoration work, such as creating cool refugia through shading and deeper pools.

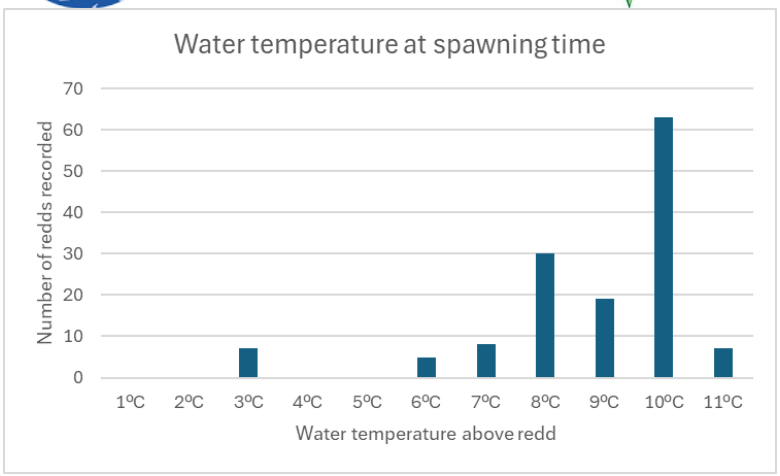


Figure 4 – Bar chart of the number of redds recorded at different water temperatures. Credit: Iona McMillan

Chess redd map

The map below shows the location of all 191 of the redds recorded – an impressive spread with trout active all the way from Chesham to Rickmansworth!

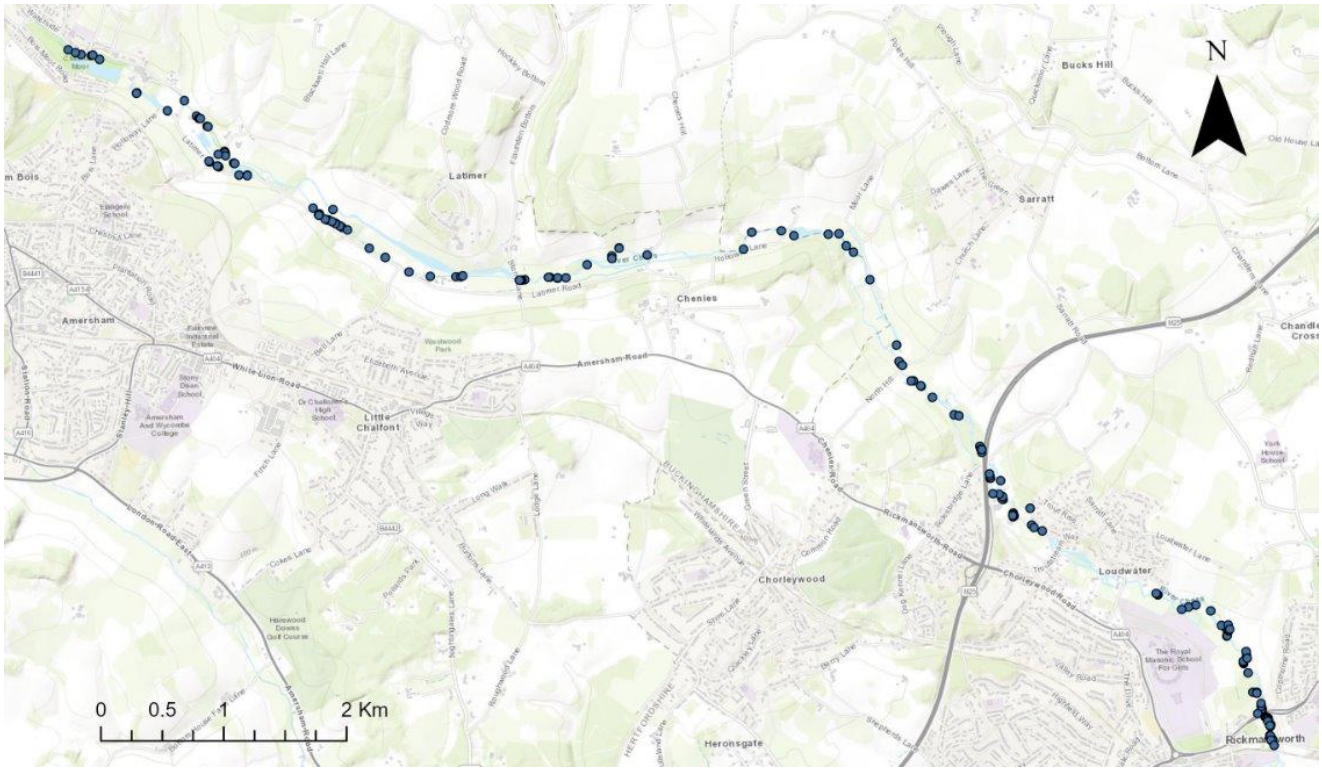


Figure 5 – Map showing locations of recorded trout redds along the River Chess. Credit: Iona McMillan

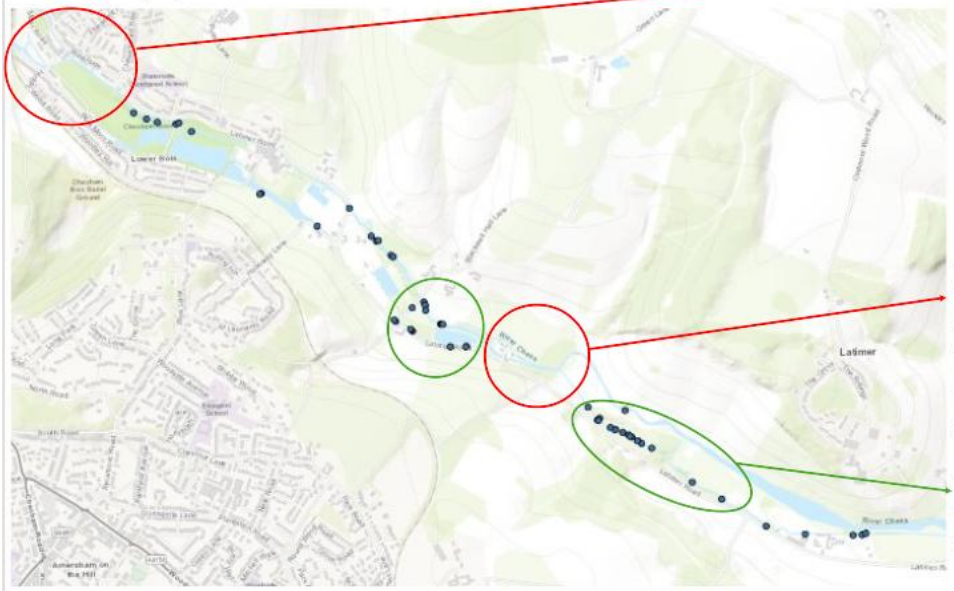
Looking at the locations that trout redds were spotted provides vital information on important spawning areas that need to be protected for trout, whilst digging into the areas redds were *not* recorded highlights priority problems such as barriers or poor habitat. The below maps focus in on different sections of the river and what we have learnt from the redd survey results.

CHILTERNS CHALK STREAMS PROJECT

The River Chess Association

Environment Agency

Upper Chess

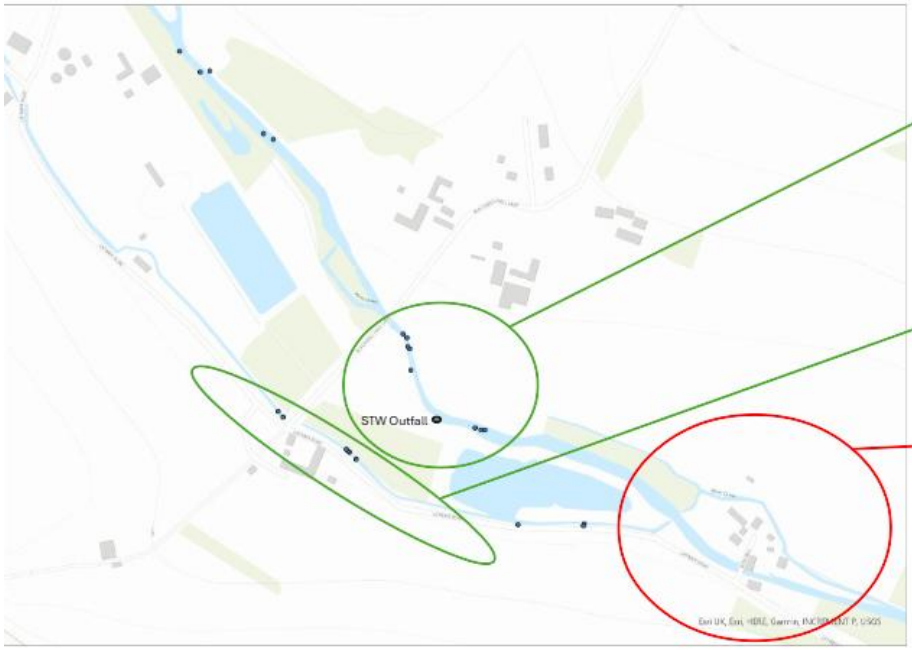


No redds found upstream of Cannons Mill – area with unreliable lower flows, barriers to fish passage and heavily modified sections

No redds recorded in area around Bois Mill in either Little or Main Chess – barriers to passage and mill channel

Redd hotspot in main channel at Latimer

Spotlight: Blackwell, Chesham STW, Bois Mill



High numbers of redds recorded in Blackwell Farm restoration area Evidences importance of protecting this area which is vulnerable to Chesham STW outfall

Good numbers of redds in Little Chess in Blackwell farm area

Absence in both channels in Bois Mill

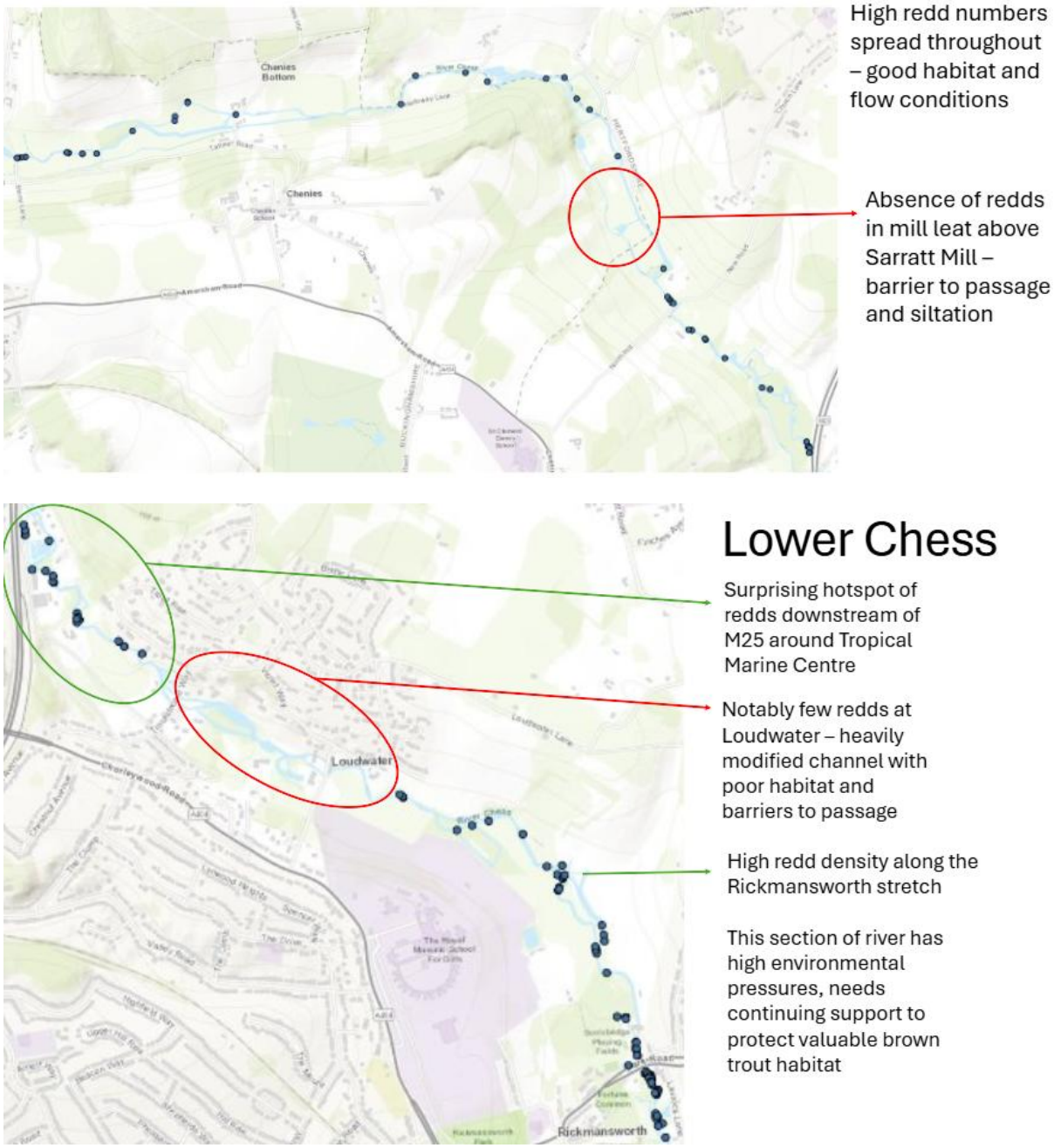


Figure 6 – Series of maps of trout redds recorded in the Chess in winter 2025/26. Credit: Iona McMillan

This data will be fed into our catchment management plan, and we are working with partners to address issues identified through the survey. Continuing the survey year on year will enable us to keep track of population trends and hopefully see increases following river connectivity improvements.

Survey method assessment

As there was no preexisting standardised national survey protocol, a core aim was to develop, test, and improve survey methods.

Some key points from our assessment include:

Reliability of data

Previous investigations have found high risks of both under and over reporting redds, so we wanted to make the survey method as robust as possible.

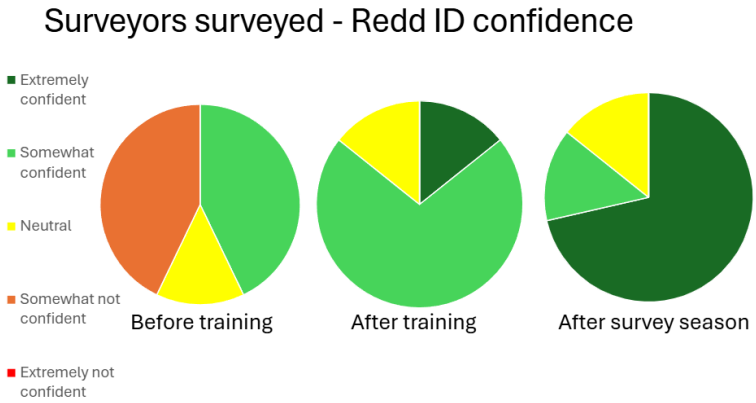
Data quality was improved by:

-Training course

-Survey123 Form required submission of a photo of each redd for verification

-Ongoing support through WhatsApp group, surveyors to check any uncertain records in advance of data entry through sharing photos or staff offering site visits

The surveyors were surveyed in their confidence in redd ID, and the charts below show that this increased after the training course, and subsequently after the survey season was completed. This shows that the volunteers were becoming increasingly proficient as the season progressed.



Analysis of survey effort versus redd counts also suggest the survey was detecting real difference in redd density between river sections – the variance in redd counts was statistically significantly higher than the variance in number of surveys between stretches.

We want to continue improving on data reliability for next year by offering refresher courses and buddying up experienced and new surveyors. We will also add a question on confidence in specific redd id to the Survey123 form.

Figure 7 – Brown trout fry. Credit: Allen Beechey

Future plans

- Continue Chess redd surveys to monitor trout population health and phenology
- Expand to other rivers including the Misbourne (2026/27)
- Combine with barrier assessment and temperature monitoring projects
- Work with collaborators and partners to contribute towards national monitoring strategies. If you have been involved in redd surveying elsewhere, please email us at chalkstreams@chilterns.org.uk.

Fancy getting involved in this winters surveys? We need more volunteers on Chess and Misbourne, and can also put other local rivers groups in touch with the EA, so please email chalkstreams@chilterns.org.uk to register your interest now!

Make sure to sign up to our newsletter to keep up to date with the latest opportunities and events, including when the Autumn training dates are announced: eNewsletter | Chilterns Chalk Stream Project

Acknowledgements
Thank you to all the volunteers – your incredible efforts made this all possible!
Thank you to the landowners who gave us access along the river

Report author: Iona McMillan, Citizen Science Coordinator, CCSP

With thanks to Martin van Heerden - EA, Paul Jennings - RCA, and Steph Horn - CCSP, for their work developing and delivering this project