

Test & Itchen salmon redd mapping

Winter 2020 / 2021

Introduction

This is the third year of planned, consistent redd mapping on the Test and Itchen. The project was set up in 2018 as one of the several fish monitoring components of the Water Company-funded Test and Itchen Drought Monitoring Programme. The aim is to record the locations of salmon redds each year in order to better understand the relationships between redd distribution and environmental conditions, especially flow. This is to provide a baseline to assess potential impacts of drought years.

The numbers and distribution of salmon redds in this survey period are of particular interest because the 2020 salmon runs on both rivers were unusually large. In fact, in the past 30 years, the number of salmon ascending the Test was unprecedented.



Methods

Redd mapping on the Test and Itchen is carried out during February so that spawning is largely completed and redds are as recent and prominent as possible. Survey days are carefully planned around the weather to take advantage of the lowest possible turbidity. Surveys are carried out on foot, using polarising glasses and the surveyor is often accompanied by the Keeper, who is invariably able to offer valuable guidance and information on spawning observations over the previous few weeks.

This year, we recorded all redd locations using the "What3Words" app, which has useful data storage and management features. Hard copy, back-up records are also made in the field, using pencil and paper.

On both rivers, we aim to survey as much of the river as possible between specific downstream and upstream points; on the Test, this is the M27 motorway bridge upstream

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to the Mayfly Inn, Fullerton, and on the Itchen it is from Mansbridge upstream as far as Durngate Hatches, Winchester. Within these two reaches, only river sections that provide areas of suitable spawning habitat are surveyed. On some reaches where numbers of redds tend to be relatively low, we may consult the Keeper rather than survey ourselves. There is inevitably a small amount of variation in the survey extent in different years, as a result of access being available or unavailable, or due to adverse flow conditions.

This year, the total channel length surveyed was 54km on the Test and 38.2km on the Itchen. Salmon redds were reported at Wherwell and Longparish on the Test, upstream of the programmed redd mapping reach, but formal surveying could not be extended beyond the regular boundary at the Mayfly Inn. However, following reports of redds upstream of Winchester, the surveyor was able to extend this year's coverage to Easton Bridge, slightly farther upstream of the programmed limit at Durngate. The confirmation of salmon redds in this reach is a very unusual occurrence.

Spawning is the end of the line for most salmon: this vividly coloured cock fish was found close to redds at Kimbridge. Unusually it hadn't yet been damaged by predators or scavengers.

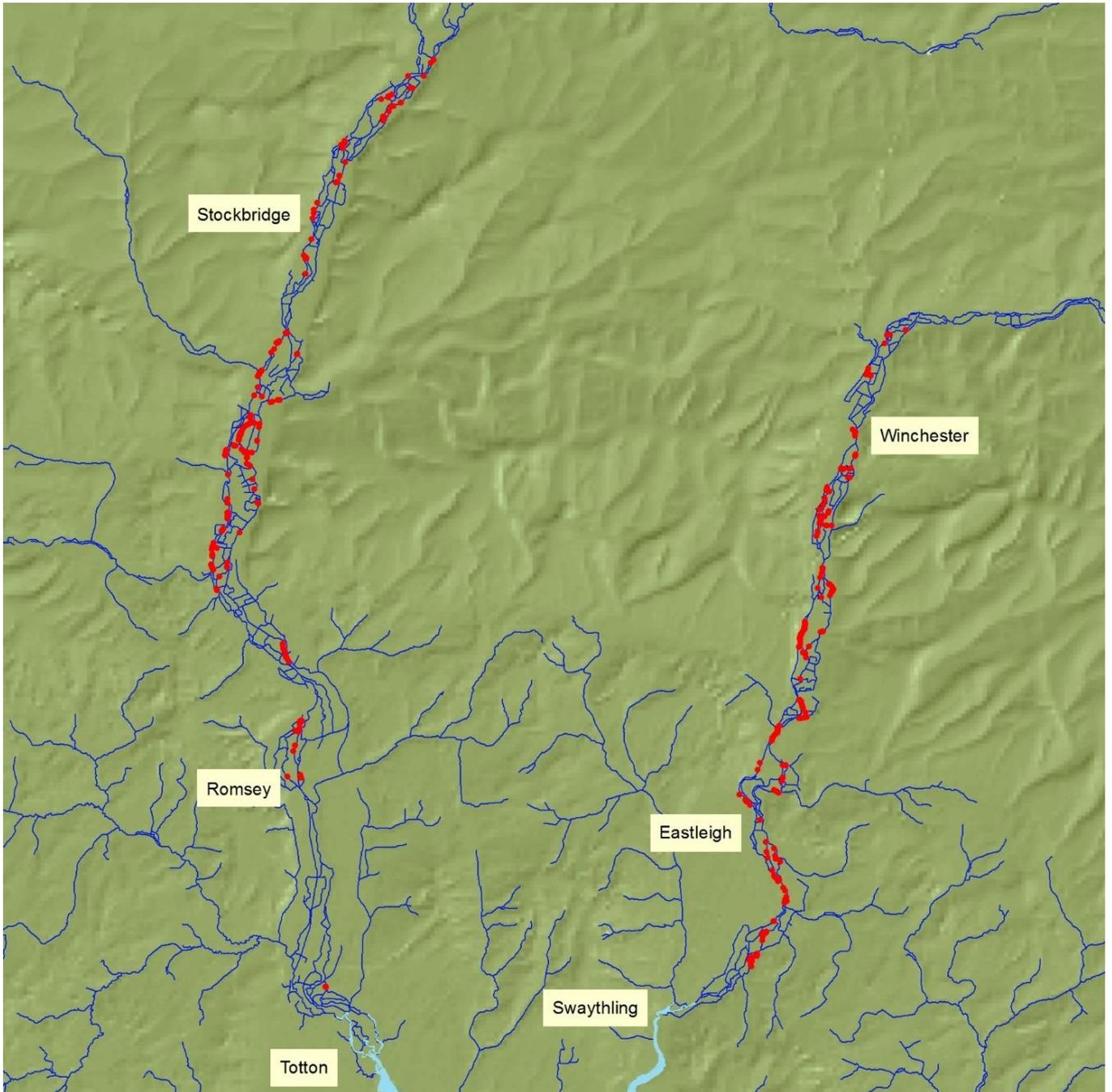
Even before spawning, in-river mortality is considerable: having entered freshwater it's estimated that 9% of salmon die before reproducing.



Results

The map below shows the salmon redds located in February 2021 on both rivers. The omission of detail from the map is deliberate and avoids providing the specific locations of prime spawning areas (please note: if any Keepers, landowners or fishery managers would like detailed maps of redd locations on their properties, these can be provided - contact us using the email address at the end of the report).

Redd locations winter 2020/2021



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Tables 1 and 2 give summary statistics on redd counting over the past three years on the Test and Itchen respectively - please note:

Length: *length of channel surveyed (Km)*

RSE: *Returning Stock Estimate; estimated size of the salmon run, based on counter data*

u/s NTL: *average distance of redds upstream of the Normal Tidal Limit (Km)*

Flow: *maximum flow recorded from 1st November to 31st January (cumecs / m³/sec.)*

Table 1:

Test	Length	Redds	RSE	Redds/Km	u/s NTL	Flow
2018/19	51.4	69	683	1.3	9.3	15.1
2019/20	52.2	39	984	0.7	13.8	31.1
2020/21	54	261	2,947	4.8	15	27.2

Table 2:

Itchen	Length	Redds	RSE	Redds/Km	u/s NTL	Flow
2018/19	32.1	100	355	3.1	6.79	4.64
2019/20	32.1	27	475	0.8	6.39	9.64
2020/21	38.2	244	717	6.4	8.33	8.87

Discussion

Redd mapping in February 2021 was completed successfully, in conditions of good visibility during breaks in the wet weather. Access availability and support from Keepers and landowners was exceptionally good. Numbers of redds mapped and observations on spawning provided by Keepers and anglers indicate very good spawning seasons on both rivers, commensurate with numbers of salmon recorded at the counters in 2020. This does not guarantee high parr abundance in summer 2021 nor a subsequent strong smolt run in spring 2022, but it greatly increases the chances of these outcomes.

The data in tables 1 and 2 reflect the obvious relationship between returning stock estimates and redds observed per kilometre, but also between average distance from the NTL and winter peak flow. However, the relationship between salmon migration and flow patterns throughout the year is complex and requires quite in-depth analysis. Also, the data suggest that the effectiveness of redd mapping in winter 2019/20 was probably constrained by the very high flows and turbid conditions. More importantly, there are currently only three data points with which to assess these potential relationships; a clearer picture will develop as subsequent data is added.

For further information contact: dominic.longley@environment-agency.gov.uk