

Hydroacoustic fish population survey

The Relief Channel: 8th – 10th July 2026

WARNING: Giant Hogweed *Heracleum mantegazzianum* has been observed on the banks of this fishery. Visiting anglers should make themselves aware of this plant and avoid it. The sap of Giant Hogweed can cause severe burns and photosensitive blistering with effects of exposure potentially lasting for several years. More information can be found on the GB Nonnative species secretariat website [here](#).

This report provides a summary of results from our recent hydroacoustic fish population survey of the Relief Channel between Denver and Saddlebow. This annual survey is carried out to assess the health of the river and enable successful management of our principal fisheries.

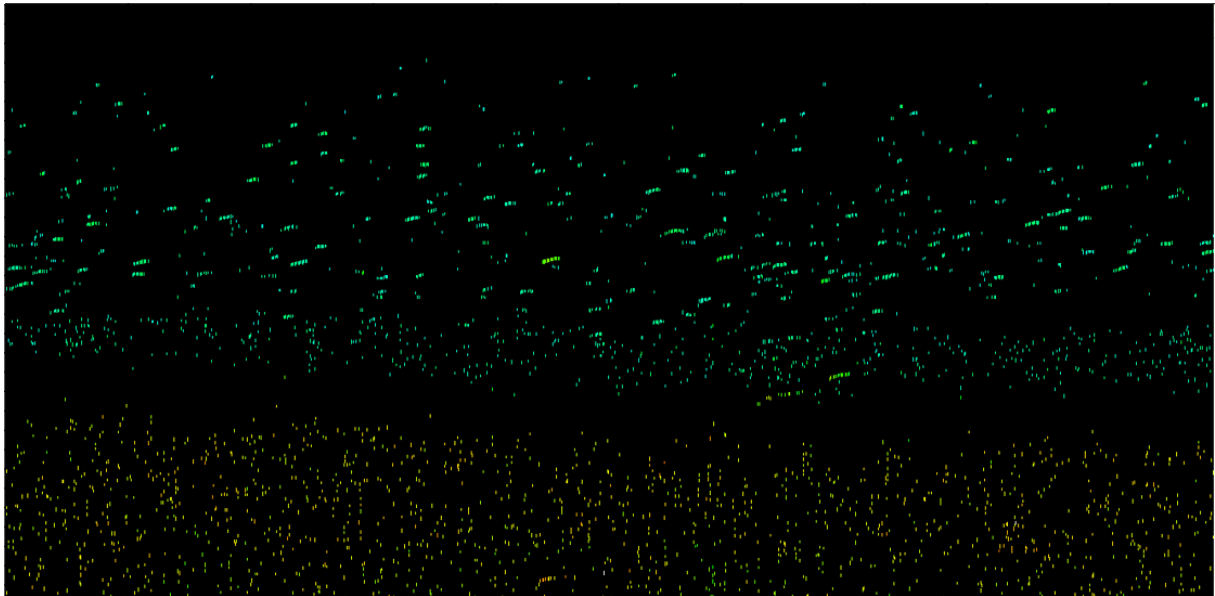


Image 1: Fish echoes and acoustic interference recorded near Denver Sluice - 10/07/25 - 1:48am

Summary

- The Relief Channel was surveyed over two nights between the 8th and 10th July 2026 using hydroacoustic sampling methodology.
- The downstream transect recorded fish densities that ranged between 7.1 and 121.4 Ind./1000m³ with an average population estimate of 46.8 Ind./1000m³.
- The upstream pass recorded a minimum density of 11 Ind./1000m³ and a maximum of 99.7 Ind./1000m³ with an average density estimate of 46.5 Ind./1000m³.
- The overall density estimate of 46.7 Ind./1000m³ is almost twice the long-term density value derived from surveys between 2010 and 2025.



Survey technique

- Our hydroacoustic survey technique utilises sound waves (pings) that are fired across the river channel at a rate of 10 'pings' per second. These 'pings' are reflected to the transducer from objects within the 4m x 10m elliptical beam.
- When struck by the acoustic beam, solid items such as the far bank, bridge supports, and riverbed reflect extremely strong returns; echoes from fish give a moderate return and surface scatter reflect a much weaker echo (See **Image 2** below).
- The survey boat travels at 6 km/Hr along the edge of the marginal shelf. Positioning the boat in this way helps avoid submerged macrophyte growth which may otherwise become wrapped around the sounder unit obscuring the acoustic beam or, at the very least, reduce sample range.
- Hydroacoustic surveys are conducted at night since fish are distributed more evenly throughout the water column during darkness and this allows them to be easily distinguished from reflected 'noise' e.g. from the channel substrate.
- After the survey is complete the data is post-processed, and output is provided as a fish density estimate expressed as individuals per 1000m³ (Ind./1000m³) and can also be displayed as density groupings via map format and these are provided at the end of this report as **Maps 1, 2 & 3**.

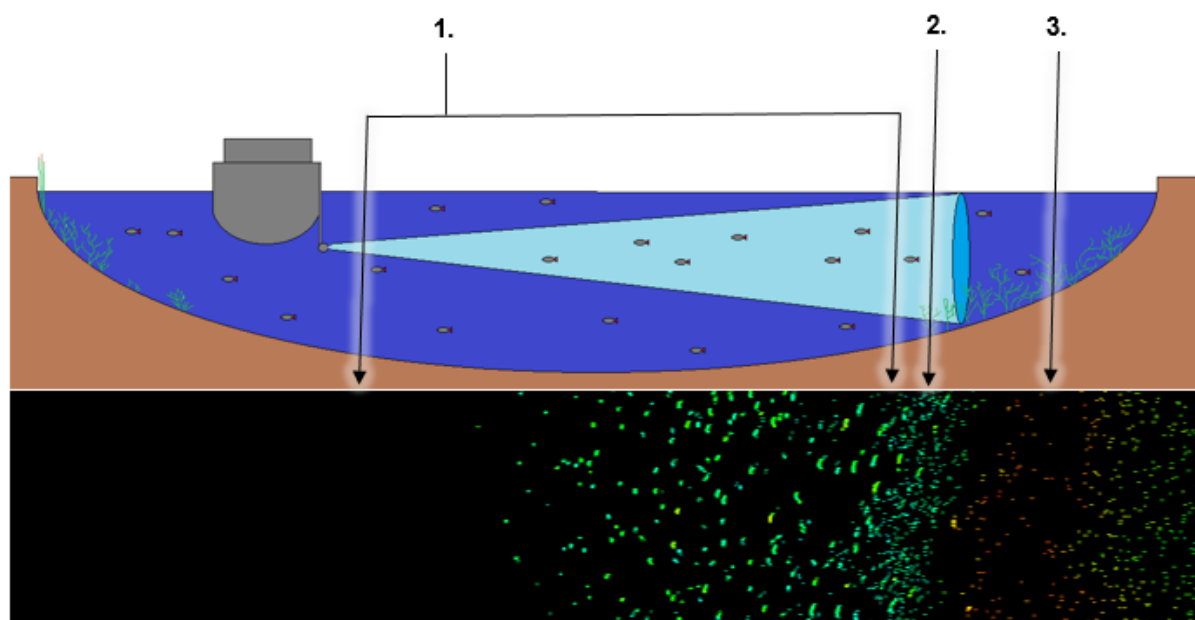


Image 2: Simplified image of the hydro acoustic survey technique.

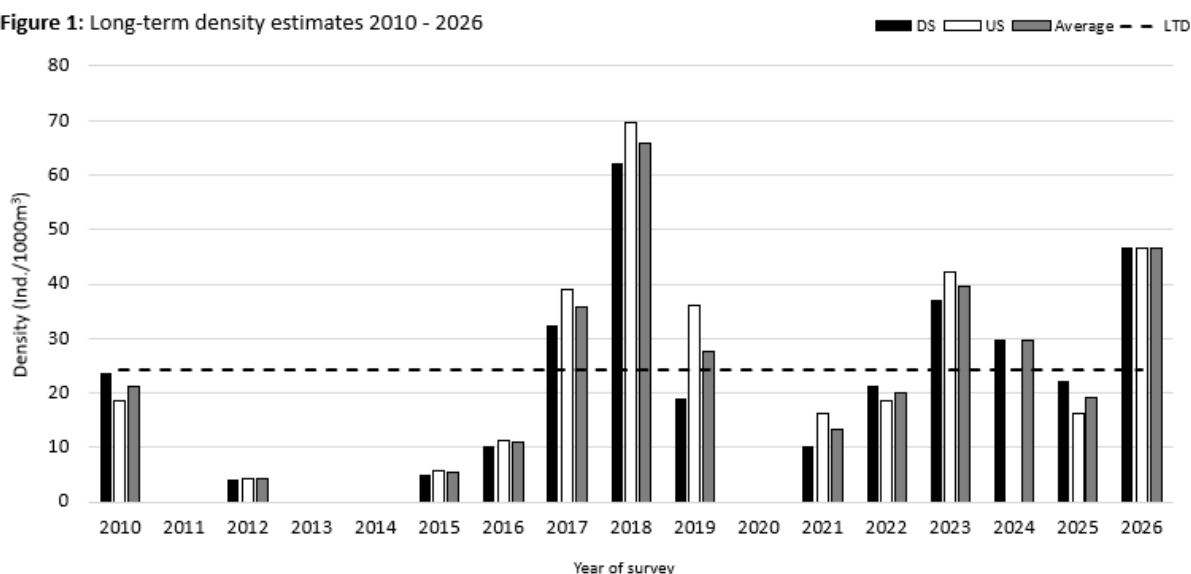
1. Open water and clearly visible fish echoes.
2. Limit of the 'usable' data surface scatter (light blue) and echoes from rooted plants (light green).
3. Heavy (red and brown) echoes from marginal slope and riverbank.

Results

- The Relief Channel was surveyed over two nights between the 8th and 10th July 2026 using hydroacoustic sampling methodology. Surveys began at 11:30pm and finished at
- Two transects were conducted along the channel, one downstream pass on the 8th/9th and one upstream pass on the 9th/10th.
- The two transects therefore demonstrate highly comparable population estimates.
- The downstream survey recorded an average fish density of 46.8 Ind./1000m³ with minimum and maximum densities of 7.1 and 121.4 Ind./1000m³ respectively.
- The upstream pass recorded an average density estimate of 46.5 Ind./1000m³ with minimum and maximum density values of 11 Ind./1000m³ of 99.7 Ind./1000m³.

The overall 2026 density estimate of 46.7 Ind./1000m³ is almost twice the long-term value of 24.4 Ind./1000m³ recorded on this channel (derived from surveys between 2010 and 2025), reversing the declining density trend observed since 2023. See **Figure 1** (overleaf).

Figure 1: Long-term density estimates 2010 - 2026



The substantial increase in fish density recorded between 2025 and 2026 may initially appear striking, however, similar fluctuations have been observed during previous survey cycles. It should also be noted that the 2025 survey results were likely affected by equipment failure, which prevented optimal alignment of the acoustic beam. In addition, the survey did not adequately sample the high-density reach around Downham Market. Consequently, the 2025 population estimate may have underestimated the true stock abundance within the channel.

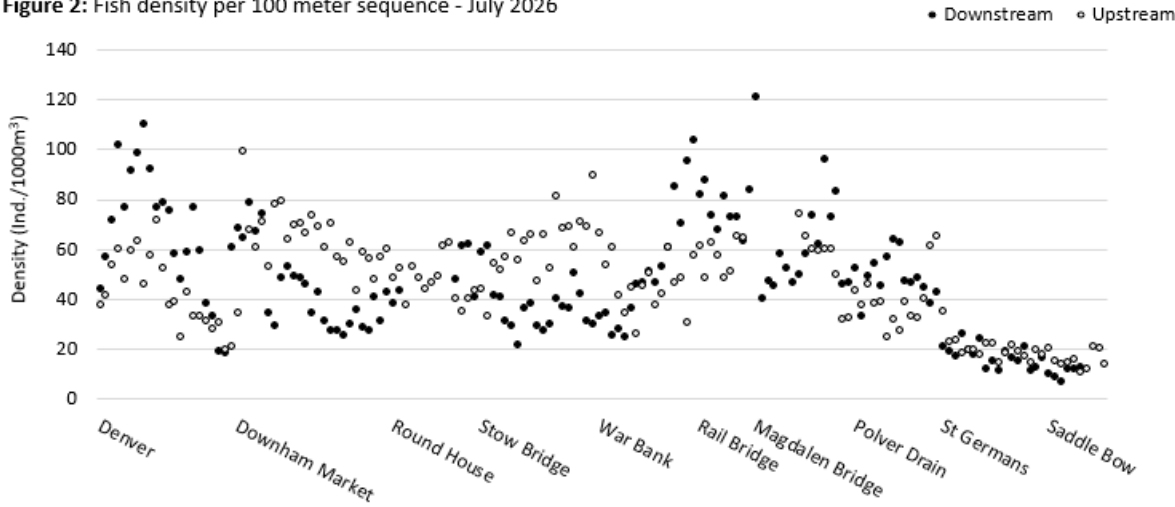
Although the 2026 survey was completed without any major equipment failures, several issues were encountered:

- Acoustic interference was observed throughout the water column, reducing both the effective survey range and the clarity of the resulting echograms. The cause of this fine scatter of noise remains uncertain at the time of writing but may be associated with diel vertical migration of dense zooplankton aggregations observed during the survey. Similar interference was also encountered during sampling of the lower reach of the Ely Ouse.
- A single GPS malfunction occurred during each transect, resulting in the loss of a small section of survey data (less than 1 km) from each run.

Stock Distribution

- The distribution of fish stock, expressed using density estimates derived from 100-meter subsections of channel, display a reasonably comparable pattern on each run. **Figure 2.**
- Elevated density was noted around Denver, Upstream of Downham Market, Downstream of Stowbridge and Upstream of Magdalen Bridge with a declining trend observed in the lower reaches below St Germans.

Figure 2: Fish density per 100 meter sequence - July 2026



Population density

The 2026 survey produced an average fish population density of **46.7 individuals per 1,000 m³**. The most consistently high densities were recorded within the area known as the *Golden Mile*, while the highest density observed during the survey, **121 individuals per 1,000 m³**, was recorded downstream of Magdalen Bridge.

Fish densities were considerably lower in the downstream section of the river between Polver Drain and St Germans, declining progressively towards the tidal limit at Tail Sluice. The average density calculated from survey results downstream of Polver Drain was **26.8 individuals per 1,000 m³**.

Figure 3 presents the average density values recorded between key local landmarks. These sub-reaches are not of equal length and do not represent comparable sampling volumes. Instead, they have been defined using readily identifiable geographical features and are provided to assist the angling community in identifying areas of potentially higher fish abundance when selecting fishing locations.

Figure 3: Average fish density in sub-reaches of the Relief Channel

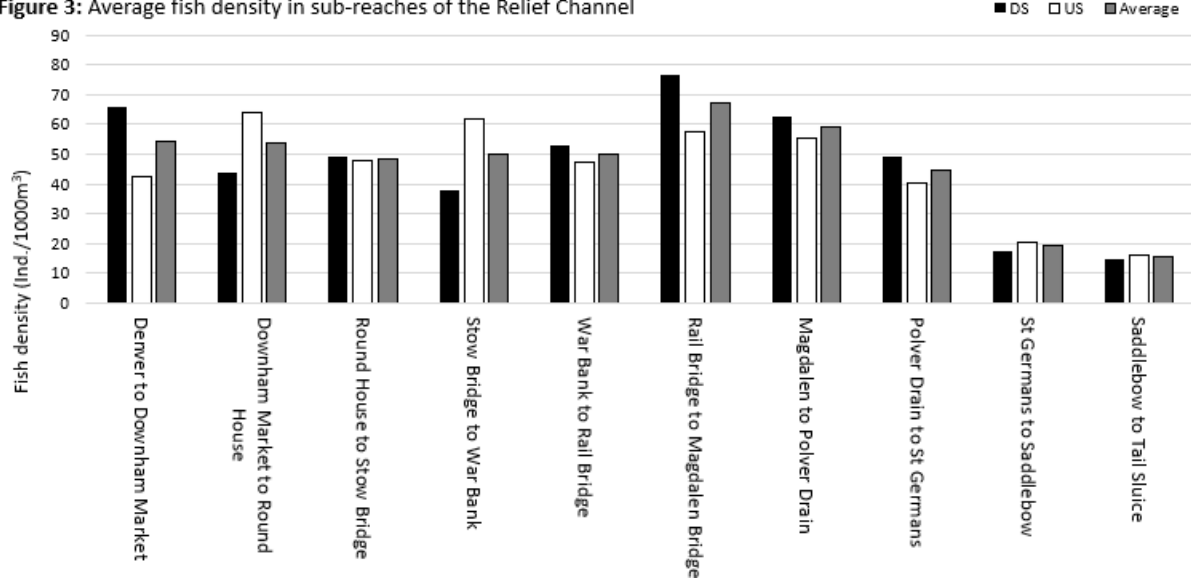
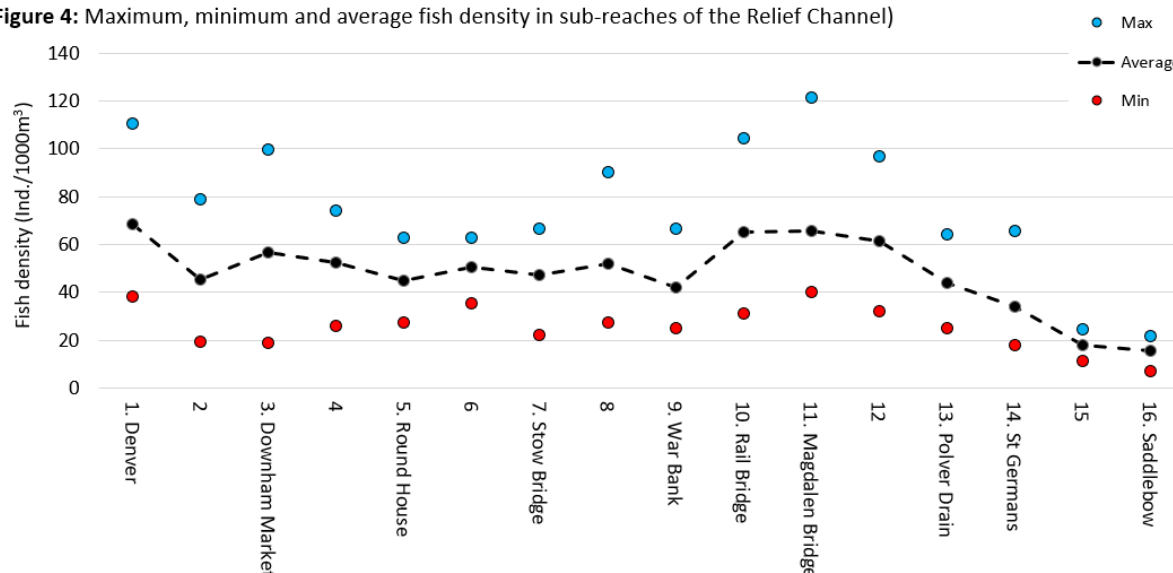


Figure 4 (below) presents average fish density data derived from a series of similarly sized sub-reaches. Where possible, the analysis incorporates 20 survey sequences per reach, each approximately 100 m in length, with ten sequences taken from the upstream transect and ten from the downstream. Collectively, these provide an average density estimate for approximately 1 km of channel length. Where notable landmarks fall within a reach, these have been identified on the graph for reference. The minimum and maximum density recorded within each sub-reach are also displayed to demonstrate the range of values observed.

This data further highlights the elevated fish densities recorded at Denver, Downham Market, the Golden Mile, and the Magdalen Bridge area, together with the comparatively lower densities observed downstream of St Germans.

Figure 4: Maximum, minimum and average fish density in sub-reaches of the Relief Channel)



Conclusions

During the 2025 survey fisheries staff were pleased to see large numbers of juvenile fish present, particularly around Denver Sluice and Downham Market Bridge, and these may have benefited from increased survival from the two consecutive warm summers given the significant increase in density observed.

Unfortunately, the planned seine-netting survey, which was scheduled to coincide with the acoustic sampling programme, could not be undertaken. Water temperatures were unusually high at the time of sampling and proceeding with the survey would have posed an unacceptable risk to fish welfare. As a result, it has not been possible to report on the current species assemblage, growth rates, and age structure as originally intended.

It is hoped that the increase in fish density will lead to improved fishery performance, particularly for pleasure anglers targeting the 'silver fish' species present within the channel. An increase in fodder species may also have positive knock-on effects for populations of predatory fish, for which the channel is well known.

It is hoped that this validating sampling can be undertaken in 2027 immediately after the acoustic survey and a more detailed report can then be produced.

It is anticipated that validation sampling will be undertaken in 2027, immediately following the acoustic survey. This will allow a more comprehensive assessment of the population to be completed and a more detailed report to be produced.

Justin Mould

Analysis and Reporting

17/09/2026

The Relief Channel will be sampled by hydro acoustic and seine netting techniques in 2027

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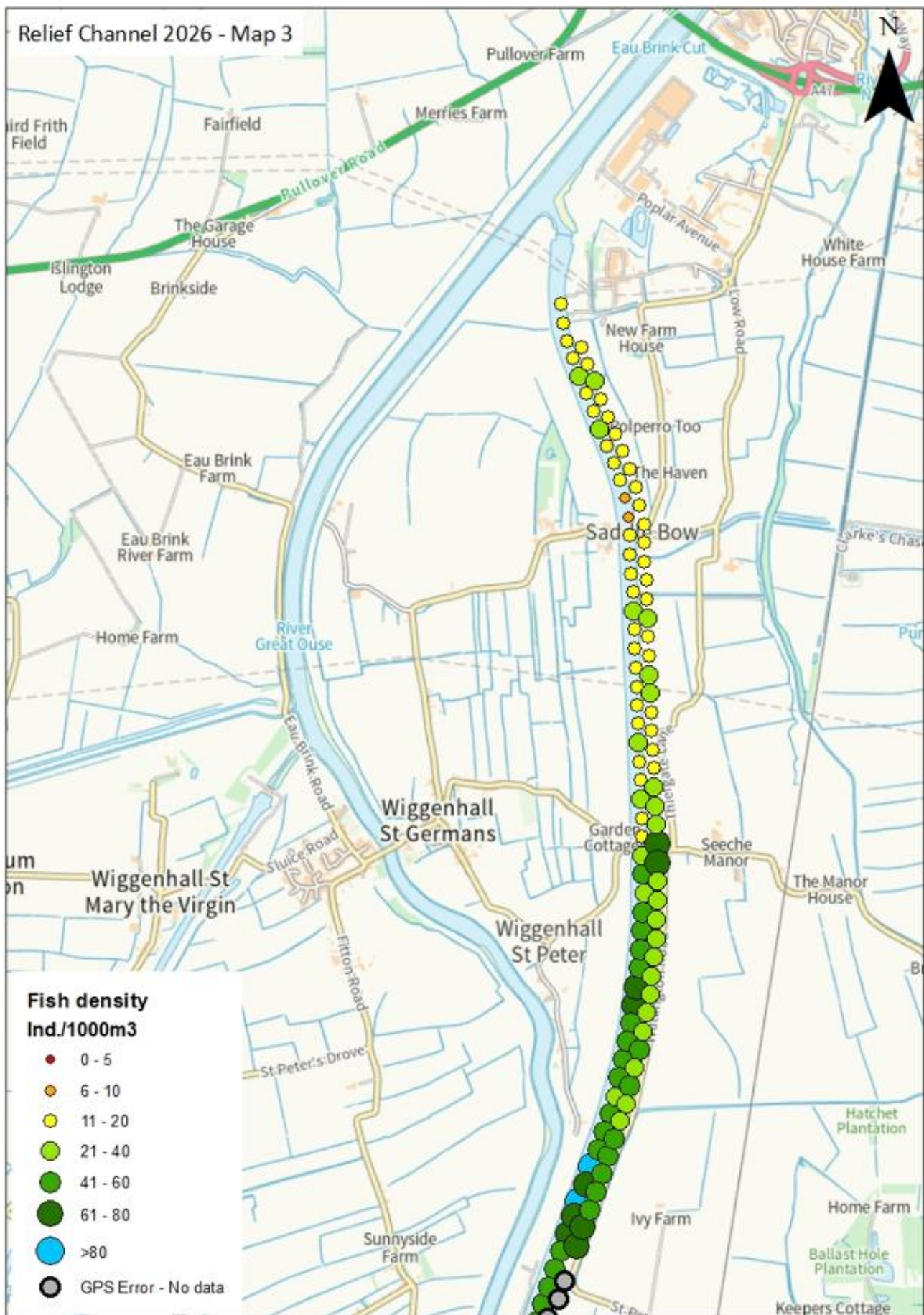


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