

Grayling and brown trout on the River Wylfe

The European grayling is a member of the Salmonidae family, found in the UK and central and northern Europe. It is typically a freshwater species which, owing to its distinctive large and iridescent dorsal fin and streamlined body-shape, is affectionately known as the ‘Lady of the Stream’. The Wylfe Grayling and Trout Study (WGTS) has been monitoring European grayling and brown trout since 1996 on the River Wylfe, a tributary of the Hampshire Avon. This makes the dataset one of the longest continuous time series of a European grayling population.

Since 1996, European grayling and brown trout have been monitored on the River Wylfe, a tributary of the Hampshire Avon (see Figure 1). The annual fishing survey, which is supported by GWCT, the Grayling Research Trust, and the Piscatorial Society, takes place each autumn. Survey methods have evolved with improvements to telemetry technology and increased capacity. Six sites have been continuously monitored since 1996, and from 2009 onwards, have been quantitatively electro-fished (i.e. multiple fishing passes) to collect data on numbers of grayling and trout, as well as morphological data, such as length and weight. Additionally, since 1999, all caught grayling are tagged so that we can monitor movements, growth, and survival of recaptured individuals.

Long-term monitoring is a powerful tool in the management and conservation of species. Only with consistent surveying of populations can we build up time series data to be able to detect trends over time. Grayling abundance, while fluctuating between years, appears to have declined over time, with the mean number of newly caught grayling in a single fishing pass since 2018 (ranging from nine to 18) consistently below the long-term average ($n = 34$) (see Figure 2a). Similarly, mean abundance of small trout ($\leq 150\text{mm}$ in length) caught in a single fishing pass has declined from 69 to 29 between 2018 to 2024 (see Figure 2b). Comparatively, mean abundance of larger trout ($> 150\text{mm}$ in length) caught in a single fishing pass appears to have increased over

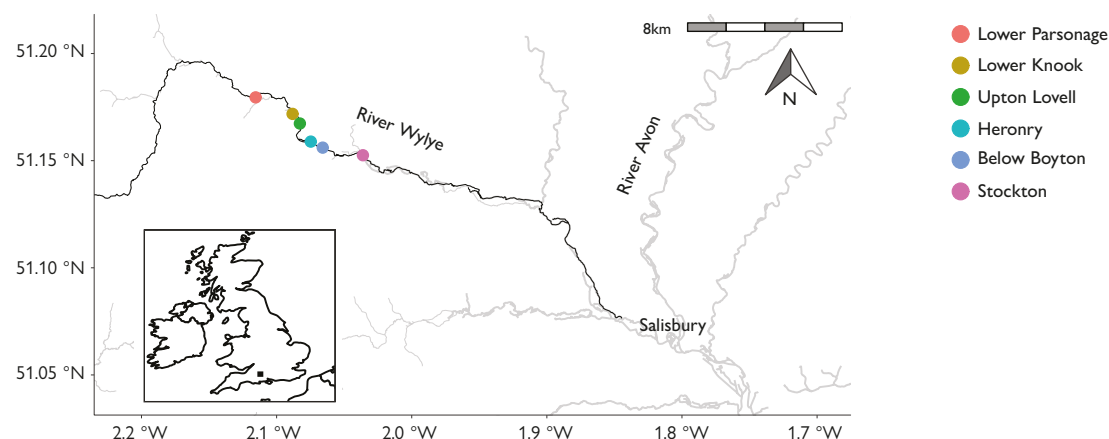
time, from 63 to 84 between the first half (1996 to 2010) and second half (2011 to 2024) of the time series (see Figure 2b).

Detecting trends is an essential first step in understanding the status of a population; determining what is driving trends is often more difficult as the availability of covariates describing potentially influential biological and environmental factors is often limited and generating robust estimates of population structure can require bespoke analysis. Nonetheless, previous GWCT studies using these grayling data (see *Review of 2018*, pp.32-33 and *Review of 2020*, pp.58-59) have identified several factors considered detrimental to both survival and growth of grayling at various life-stages. These include low flow and high temperature events during summer and increased macrophyte cover. In June this year, these findings were presented to members of the Trout and Grayling Group (Environment Agency and Natural Resources Wales), in discussions shaping the group’s future grayling research priorities at a meeting hosted by the GWCT and the Piscatorial Society on the banks of the River Wylfe.

The 2024 survey was successfully completed despite challenging field conditions following the unusually wet spring and summer months. We caught a total of 127 grayling and a total of 949 trout. Grayling body length ranged from 106 to 416mm with a mean length of 265.5mm and the length of trout ranged

Figure 1

Location of the six long-term monitoring sites on the River Wylfe (main channel shown in black) and its situation within the Hampshire Avon catchment, and the location of the Hampshire Avon (black rectangle) in the UK (inset map)

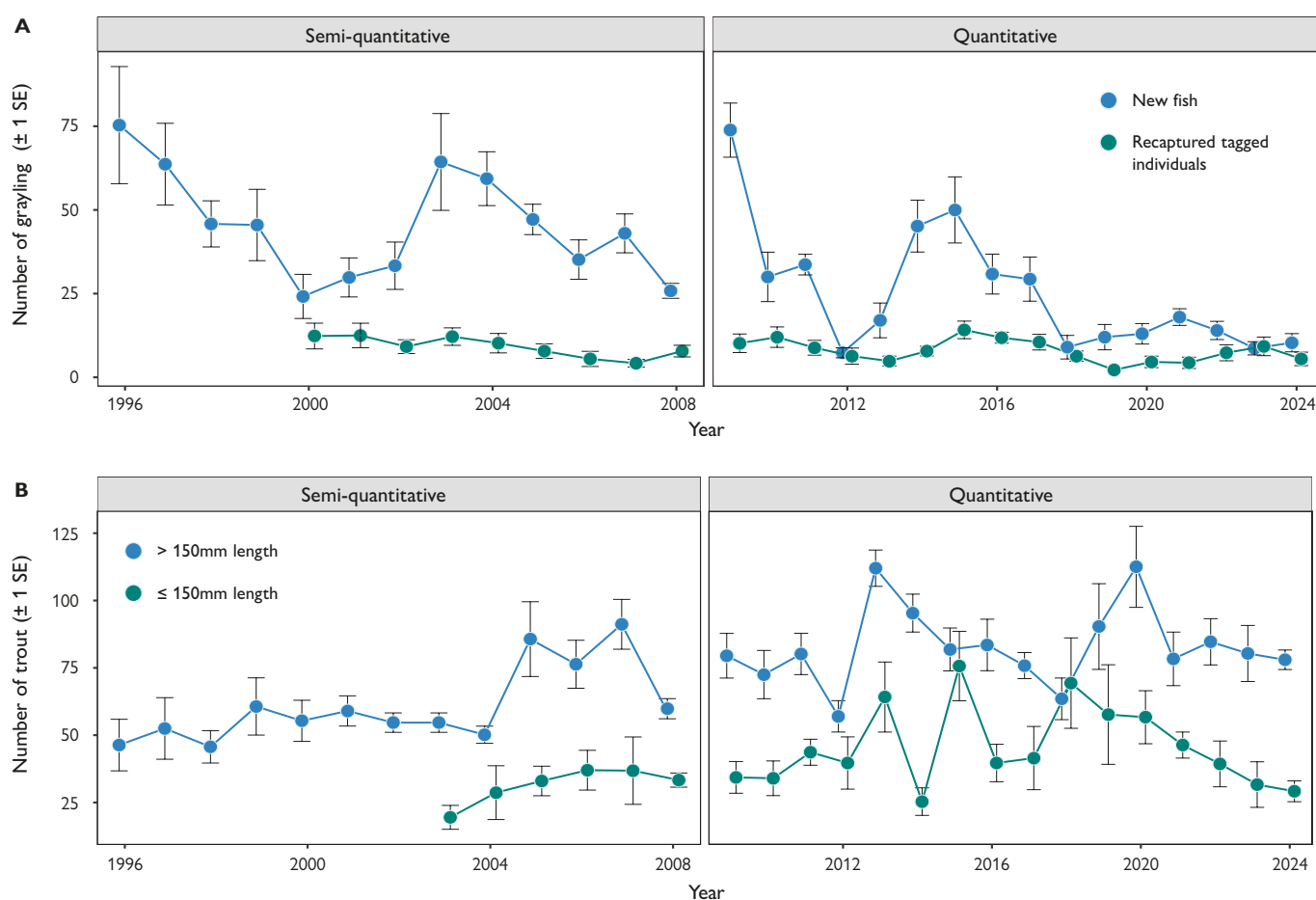


from 68 to 408mm with a mean length of 184.3mm. Of grayling caught in the first fishing pass, the percentage of age 0+ grayling was lower (11.8%) than the long-term average (30.8%) and the percentages of ages 1+, 2+, 3+ and 4+ were higher (42.2%, 25.5%, 12.7%, and 7.8%, respectively) than the long-term averages (33.4%, 19.9%, 10.1%, and 4.1%, respectively). We always aim to review and improve our sampling methods for the benefit of the study species as well as the data collection. This year we trialled a new tagging method for grayling older than 0+, reducing the

amount of processing time and thus, the time that the fish spent out of the water. We have also expanded the data collected on trout to include weight, a useful metric for assessing condition of individuals. Next steps for the Wylle study will be to understand better the drivers of changes in grayling population dynamics, particularly under predicted climate change scenarios, and to begin to use this valuable dataset and the research to date, to implement and monitor management actions that aim to improve habitat conditions for this iconic species. ■

Figure 2

The mean number of a) grayling and b) brown trout caught during electrofishing on the River Wylle over time. Grayling are categorised as newly tagged fish or recaptured tagged individuals, and trout are divided by length: > 150mm and ≤ 150mm. Panels indicate the change in electrofishing methods over time from semi-quantitative (single-pass fishing, 1996 to 2008) to quantitative (depletion electrofishing, 2009 onwards)



KEY FINDINGS

- 2024 marked the 29th year of data collection for European grayling on the river Wylle.
- Since 2018, the mean number of newly caught grayling in a single fishing pass (ranging from nine to 18 between years) has been consistently lower than the long-term average ($n = 34$) and well below the peak in 1996 ($n = 75$). Similarly, mean abundance of small trout (≤ 150 mm in length) caught in a single fishing pass has declined from 69 in 2018 to 29 in 2024.
- In contrast, mean abundance of larger trout (> 150 mm in length) caught in a single fishing pass appears to have increased across the time-series, from 63 (1996 to 2010) to 84 (2011 to 2024).
- In the 2024 survey we caught 127 grayling and 949 trout.

Jessica Marsh

