Upper Dee Riparian Scheme: 2019 Electrofishing Results

Introduction

This report provides a brief look at juvenile salmon densities in the upper Dee based on 2019 electrofishing surveys. Full results and stock assessment from all electrofishing surveys in 2019 will be available in early 2020.

Sites in the upper Dee tributaries have been electrofished since 2013. Data gathered during the annual surveys are essential for monitoring juvenile fish populations and distribution in the upper reaches.

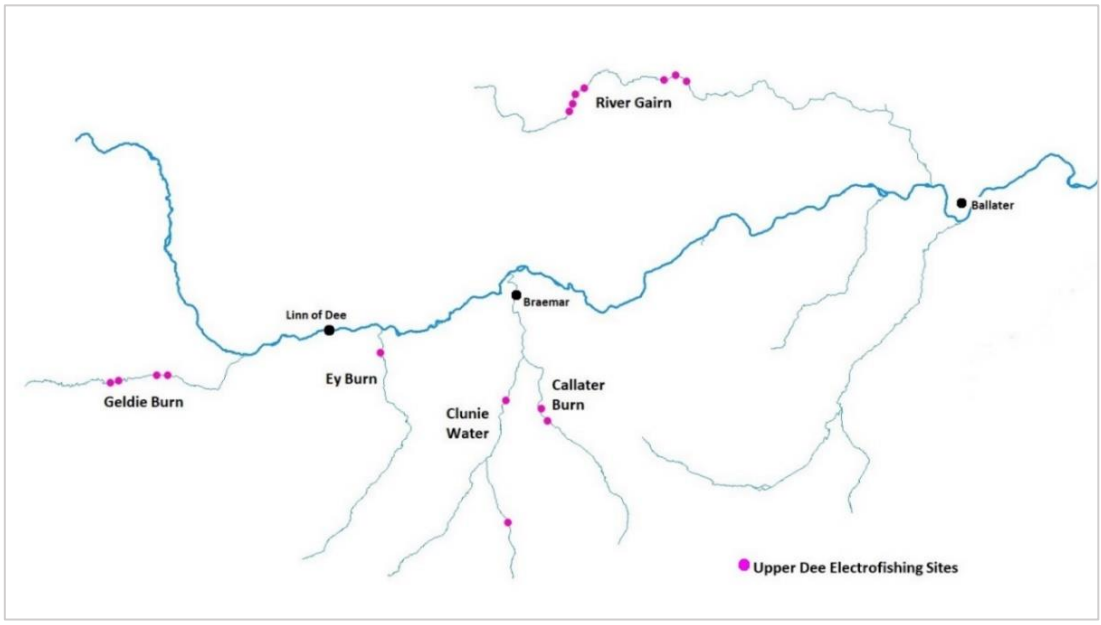

Figure 1. Upper Dee catchment electrofishing survey sites represented by pink dots.

Fish Densities

In 2019, the average number of fry per 100m² was 10. This is similar to numbers seen in 2014/15, but is below what was found in 2018, when the average number of fry per 100m² was 28 (Fig. 2). The large number of fry in 2018 could be explained by low river levels that followed a prolonged dry spell, coupled with a very hot period at the start of the summer which shrunk rivers to very low levels. These conditions resulted in juvenile fish being 'squeezed together' on a more narrow river bed, which also increased their catchability during electrofishing.

In 2018, the average number of salmon parr per 100m² was 22 (Fig. 3), which was highest in the last 6 years. It is possible that, like fry, the numbers of parr caught may have been exaggerated during the severe drought conditions which resulted in more fish being caught.

In 2019, 14 parr were caught per 100m². Although this was lower than in 2018, it is still higher than in the years 2014-2017.

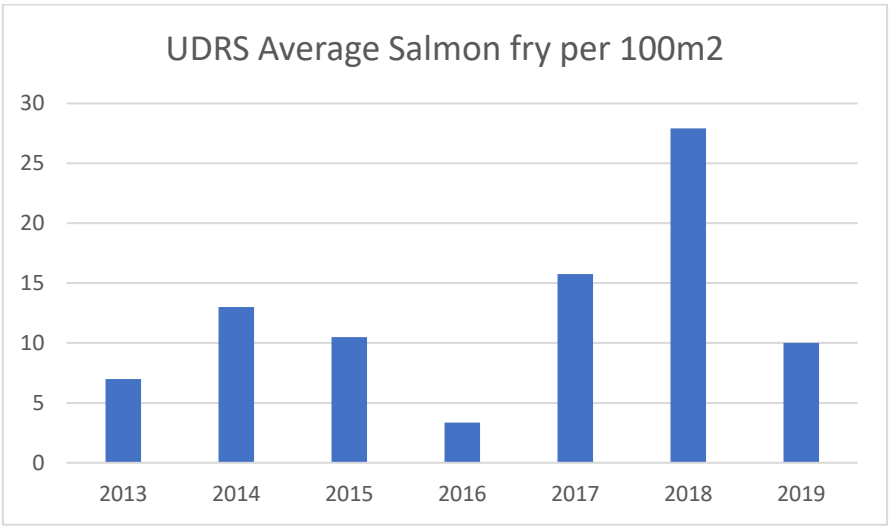

Figure 2. Average salmon fry numbers per 100m² in the upper Dee catchment.

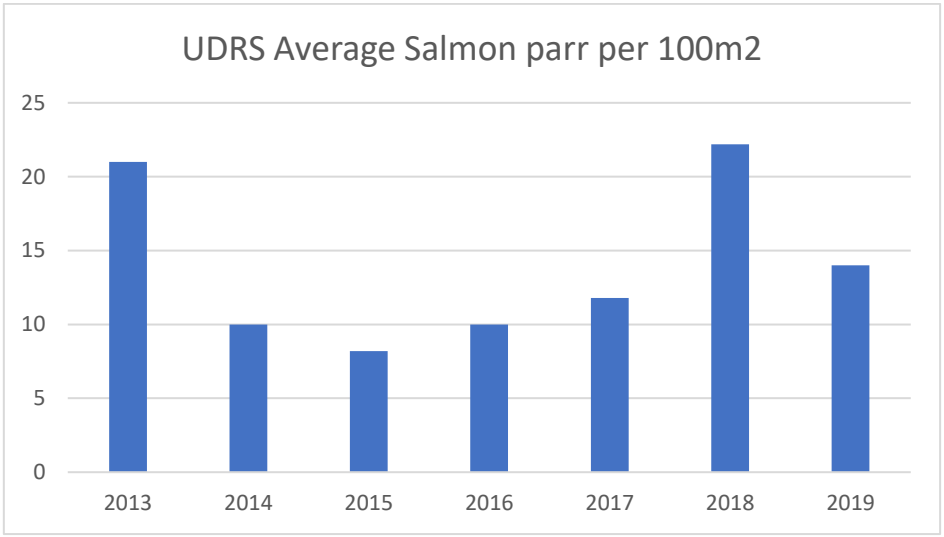

Figure 3. Average salmon parr numbers per 100m² in the upper Dee catchment.

The graph below (Fig. 4) shows the average number of fry and parr combined. 2019 sees numbers fall after the high numbers caught in 2018. 2019 had typical water height and temperature conditions.

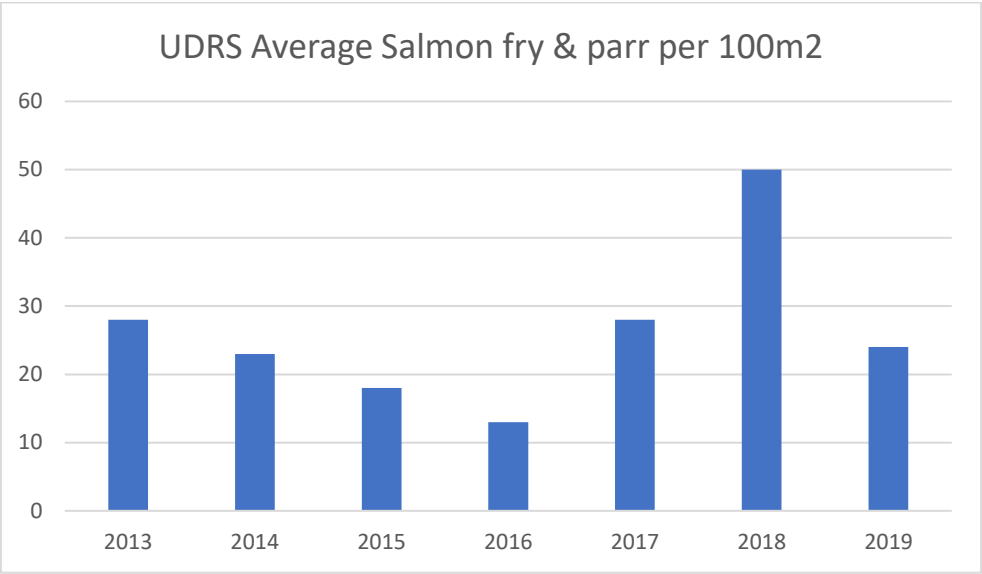

Figure 4. Average salmon fry numbers per 100m² in the upper Dee catchment.

Stream temperatures

Water temperatures in the upper catchment are recorded by temperature data loggers. When downloaded, these loggers produce graphs displaying daily high and low temperatures.

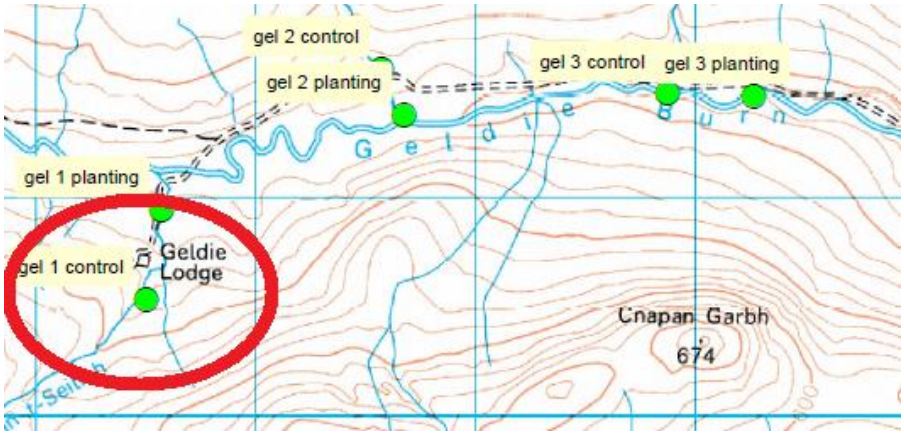

Figure 5. Map of electrofishing sites (green dots) and the temperature logger location on the Geldie (red-circled green dot).

In early July 2018, the water temperature in the Geldie reached 25°C. Sustained high temperatures (>25 °C) prove lethal for fish as the oxygen supply in the water diminishes and fish become unable to feed. These high daytime temperatures were offset when the burn cooled down to around 15°C through the night, giving a brief reprieve before high temperatures the next day.

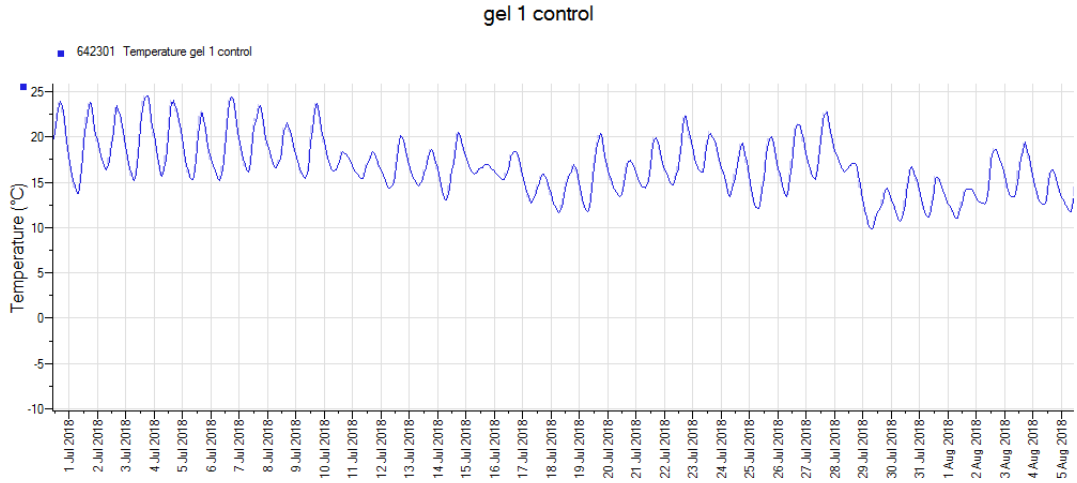

Figure 6. Daily maximum and minimum water temperatures of the Geldie in July 2018.

In 2019, the maximum daily water temperature at the beginning of July was around 14 °C. During the same time in 2018, the daily maximum was 24 °C, an overwhelming 10 °C higher.

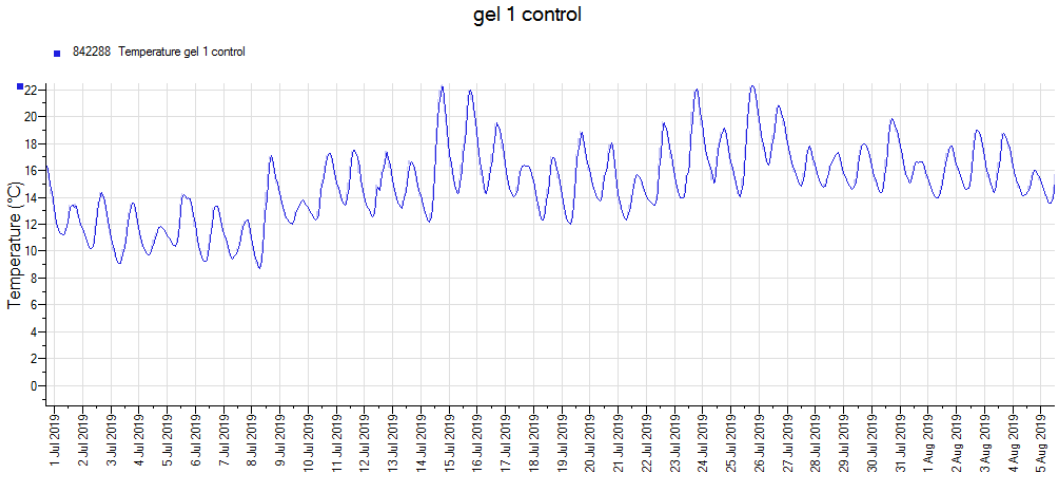

Figure 7. Daily maximum and minimum water temperatures of the Geldie in July 2019.

River levels were extremely low during the summer of 2018 when the whole catchment suffered drought conditions. As a result, juvenile fish were forced to live closely together in the shrinking river which meant more were caught during the time of survey. Higher river levels in summer 2019 have helped to keep water temperatures low and enabled juvenile fish to live more spread out in their territories.

Figure 8. Mayfly nymph- vital food for fish.

Figure 9. Salmon Parr.

Figure 10. European eel.

Figure 11. Salmon parr anaesthetised in clove oil.

Figure 12. Temperature data logger.

Figure 13. Downloading data logger information.

In addition to these surveys, the Trust is participating in the National Electrofishing Programme for Scotland (NEPS) and has surveyed 30 sites throughout the catchment in 2019. These sites will be used to assess juvenile stock health in the whole catchment, against a benchmark that considers what juvenile densities the Dee is able to produce. This assessment will not be available until Spring 2020 and so these UDRS surveys give us an early impression that juvenile stocks in 2019 are broadly in line with recent years, excluding 2018.