Report on licensed activity to capture Pink salmon *(Oncorhynchus gorbuscha)* in Scotland during 2021

1. Introduction

Migrations of invasive, non-native Pink salmon *(Oncorhynchus gorbuscha*) have been observed in Scotland in recent years, most notably and in increasing numbers during 2017, 2019 and 2021.

Working with Marine Scotland, NatureScot, the Scottish Environment Protection Agency (SEPA), District Salmon Fishery Boards (DSFBs) and Rivers and Fisheries Trusts, Fisheries Management Scotland co-ordinated efforts to collect data on pink salmon, including captures through fishing and sightings of these fish. Guidance was prepared to assist with this process, and publicity and communications were designed to encourage reporting of these fish through a web-based data collection tool.

As well as surveillance and collection of data, one priority was to establish what management measures might be appropriate, and it was agreed to trial methods to examine what might be feasible in terms of removal of these fish. Fisheries Management Scotland secured appropriate licences from Marine Scotland and NatureScot to allow named agents to undertake targeted fishing and legally be in possession of captured pink salmon. Pink salmon are an invasive non-native species, and therefore fishing for and retaining pink salmon (i.e. to have one in your possession or under your control) without a licence is an offence under the Wildlife and Countryside Act 1981. Whilst licences were required to permit targeted fishing, a large proportion of the fish recorded were incidental captures taken by anglers legitimately fishing for other species.

We are required, as a condition of licence, to provide a report on the activity undertaken to manage pink salmon and this summary report provides the information required to comply with this condition.

2. Results of licensed targeting fishing

Four DSFBs undertook targeted fishing within the licence period, and a summary of this activity is provided below.

River Dee – 19th and 20th August 2021 (Park fishing beat), grid ref NO 78778 97834

A small shoal of 9 spawning pink salmon were observed and filmed using drone footage. They were targeted and four were successfully removed using a spear gun on 19th August. On 20th August two pink salmon were observed at the same location using the drone and one was successfully removed. All pink salmon shot with speargun were males. Of the nine individuals observed two were female and seven were males. The approximate weight was 0.9kg. Video footage of pink salmon being shot with spear gun is available as is video of the shoal cutting redds.

No further reports of spawning salmon were recorded and no further attempts to control using a speargun were undertaken. Two redd locations were observed and dug over and eggs destroyed at this location. Another location of previous pink spawning in 2017 also exhibited redds but no fish, these were dug over and where eggs were present, they were destroyed. This was at the Altries beat NO 83830 98830.

River Spey - 20th August 2021 (Orton fishing beat) grid ref 332195/853650

A small number of fish (estimated number 16) were observed in proximity to around 11 redds within a 100-metre stretch. Attempts to capture pink salmon using electrofishing equipment were undertaken, but it was not possible to get within range of the fish. Attempts were made to drift down with a speargun but the flow was too fast to have any control. Netting, at the time when the fish were seen may have worked, but it is fast flowing section of river, and having any sort of control over the net would have been difficult. Netting a slower flowing, snag free, pool would work but fish have not been observed in this type of location. The ghillie reported that there were a small number of Atlantic salmon amongst the Pink salmon. In that case netting may have resulted in some collateral damage to Atlantic salmon. The location of two bankside redds was noted.

It is not easy trying to remove these fish. The coordination required in having the right resources and assets available, when the fish are spotted, is not easy. A fully equipped team on standby would be required, however the DSFB is not resourced to do that. Based on this observation, it is likely that there were a hundred plus redds in the river.

River Thurso 13 – 28 August 2021

Using bankside electrofishing equipment 67 fish were captured of which 49 were male and 18 female ranging from 1.1 – 2.7kg. High voltage (400 volts) was required to have any effect on the fish, and therefore pink salmon were caught selectively by stalking individual fish to ensure that native species were not impacted.

River Oykel 28 August 2021 (grid ref NC 43366 00928)

Netting was used to target a shoal of fish which had been observed by local ghillies. A drone was used to locate redds in the area, and then to locate where fish were lying. Weather conditions (clear skies and sun) allowed for six fish to be clearly seen from the drone, and male pink salmon could be identified from the aerial footage by the distinctive humpback when viewed from an angle. The decision was made to attempt to net as many fish as possible by using one net downstream as a stop net and walking another net down to it to entrap fish. A mix of DSFB staff, local ghillies and two anglers were required, a team of nine people in total. A couple of fish escaped but 1 gravid female was captured.

The exercise showed that the effort required to be successful is immense. Local DSFBs do not have the manpower to be able to do this on-demand and this would only be possible in certain circumstances. Additionally, weather conditions can be limiting for using a drone to aid in searching for pink salmon or redds. The fishing was filmed and the activity can be viewed on the Kyle of Sutherland DSFB website.

3. Captures of Pink salmon in Scotland

Information on captures was collected with the aid of a web-based data collection tool. The tool was publicised through the Fisheries Management Scotland website, via the membership and on social media channels. A map of fish captures allowed stakeholders to view reports of pink salmon captures in real time.

Figure 1 GIS capture data recorded by the collection tool for 2021

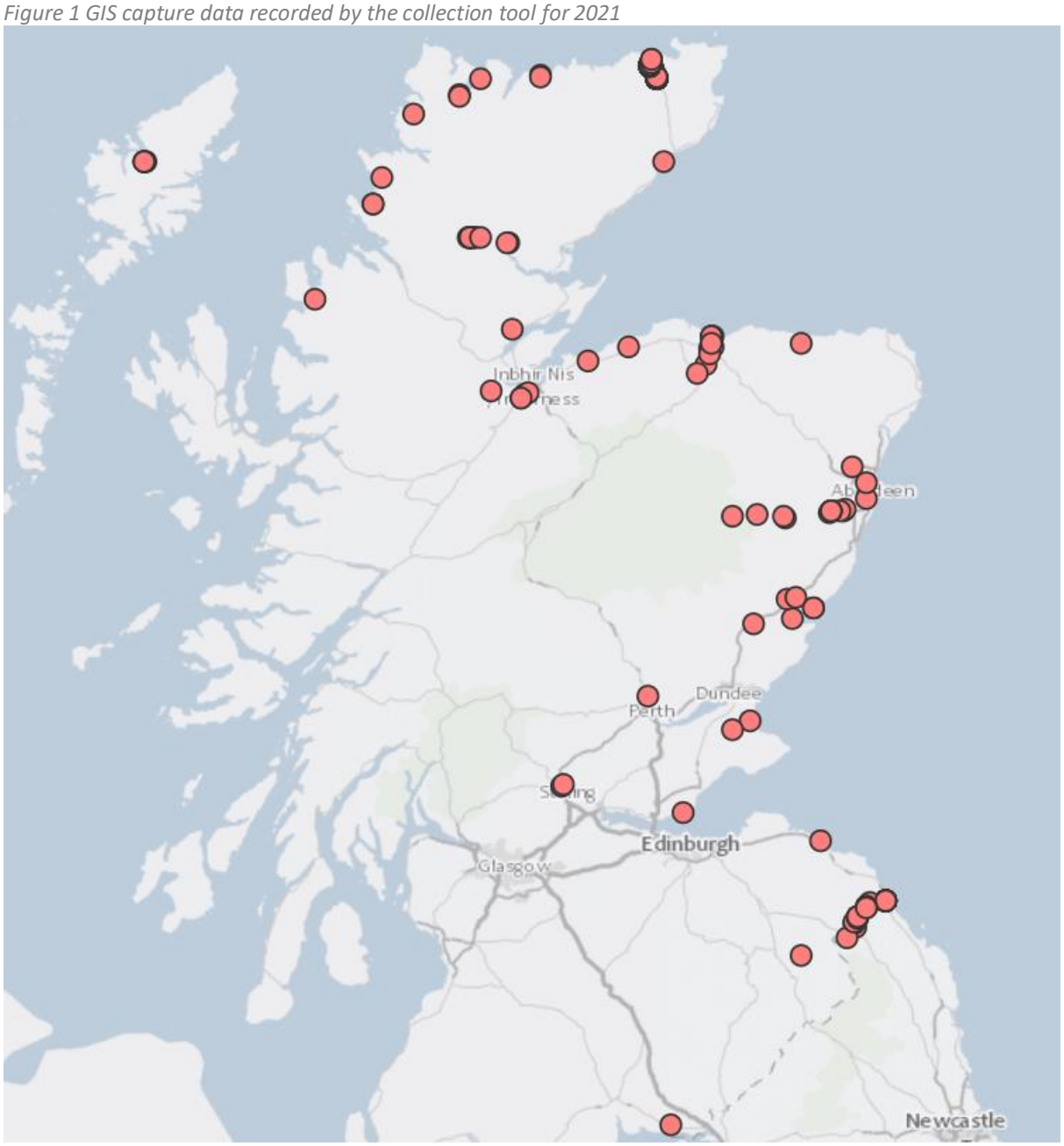
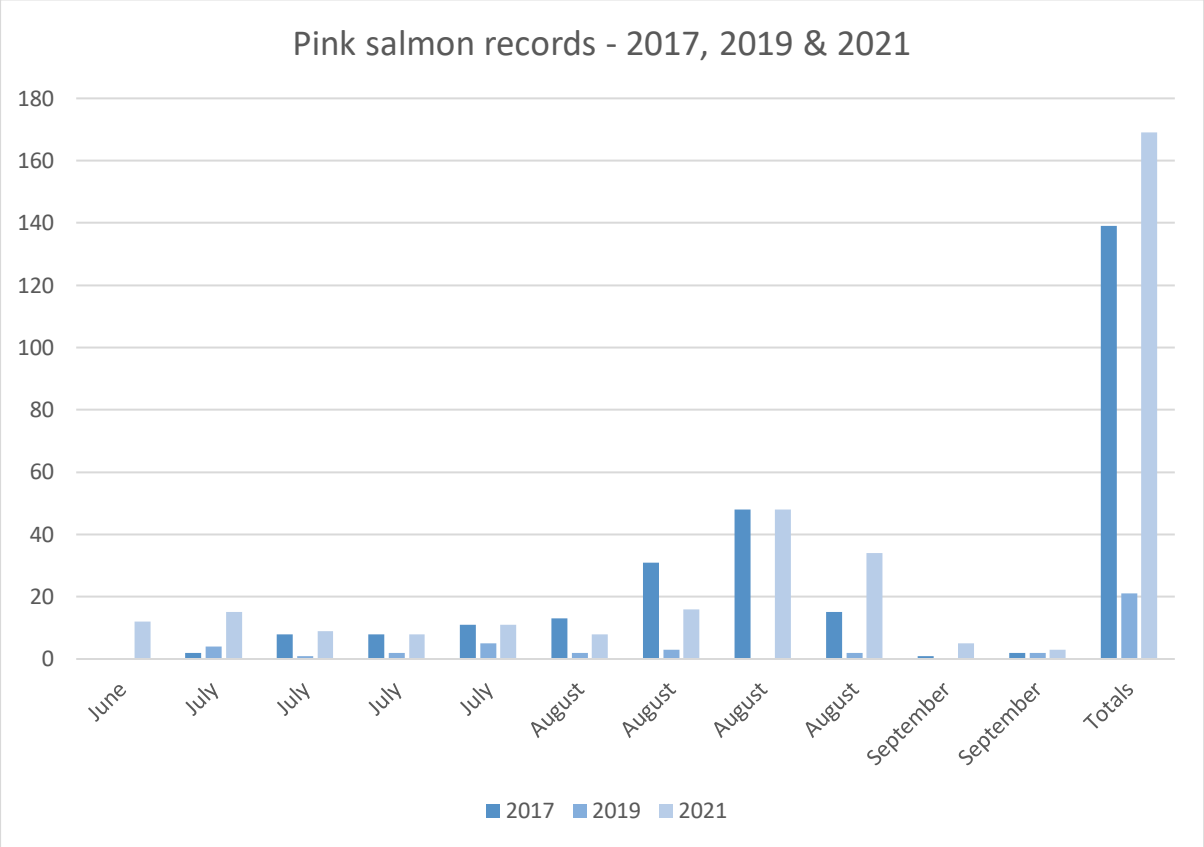


Figure 2 shows data collated by Fisheries Management Scotland for 2017, 2019 and 2021 when fish were reported by DSFBs, Trusts and individual anglers. These figures provide a general indication of

the presence of pink salmon, however due to variability in a number of factors which can influence capture (including water conditions, fishing effort, fishing methods etc), it is important to recognise that this data is not a reliable indicator of abundance. For example, commercial nets accounted for 28 of the 139 reported fish in 2017, and one licensed operator utilising electrofishing equipment in 2021 accounted for 67 of the 169 reported fish for this year.

Figure 2: Pink salmon captures reported to Fisheries Management Scotland by week for 2017, 2019 and 2021



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4. Summary

Management action such as targeted capture presents a number of challenges. In terms of practical matters, much will depend on the prevailing river and weather conditions. High water levels (as experienced in 2017) are likely to hamper the ability to detect these fish and successfully capture them. At a local level, the topography and characteristics of the river will determine whether capture is feasible and will dictate what methods may be most effective. This is clear from the four examples of fishing outlined above. However, it is clear that the Caithness DSFB had considerable success in removing pink salmon using electrofishing and this approach is worth further consideration in future.

A significant issue for consideration is resourcing of future management action. The financial and logistical challenges should not be underestimated. The opportunities presented for recapture will very much depend on active surveillance for these fish and the ability to respond quickly to local incidences. The examples on the River Spey and the River Oykel emphasise the extent to which co-ordination of available resources is essential. The current resources held by the network of DSFBs and trusts and the ability to deploy these at short notice will remain a challenge in managing future incidences.

Bearing in mind the above, Fisheries Management Scotland consider it a desirable objective to plan a longer-term strategic approach for Pink salmon management. This should, amongst other things, identify appropriate resources given the financial and logistical challenges for the DSFB and trust network.

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- The licensing and policy teams at Marine Scotland and NatureScot who quickly processed licence applications for the trial capture exercise