 **Project Outline: Smolt run timing v3** RW 23/04/21

Currently very little is known about smolts and smolt run timing in the catchment.

Background

Smolt run timing varies each year and is determined by winter-spring temperatures, moon cycle and flow. Smolt run timings out of the Abhainn Deabhag (top of the Glass) and Farrar may also differ from each other.

In 2018 >8,000 smolts were trapped (and then rescued) at Aigas and Kilmorack dam gate slots which highlighted a problem with downstream smolt migration. In response to this, SSE invested significant funds to improving the infrastructure at the gate slots and improving flows in the system to help get smolts out.

Brushes were installed onto G1 gate slots in 2019, and on to G2s in 2020. SSE also developed a procedure to improve flows for smolts across the 2 month window of 1 April and 31 May with generation occurring through a single turbine at Aigas and Kilmorack where possible, with increased generation at night. To date this has occurred only on an ad-hoc basis due to the finite nature of the water resource.

SSE report that a few hundred smolts were held up in 2020 across all gate slots so mitigation appears to have improved the situation, however there is still room for improvement.

Purpose

Information on the precise run-timing of smolts each year will mean that SSE can focus their efforts and water resource more effectively to when smolts are actually running. Peak smolt run is likely (based on neighbouring catchments) to be a window of perhaps 3 weeks.

Long-term temperature monitoring in the catchment may result in the ability to better predict when smolt run timing will occur reducing the need for trapping in the long term.

**Improvement of flows for smolts should increase smolt output from the catchment. It will also be a good first step for the board to learn more about smolts in the catchment.**

Smolts represent the end product of the freshwater life-stage of salmon. Information gained will help our understanding of where the bottlenecks are in the lifecycle and where we should be focusing our efforts for better salmon (and possibly sea trout) conservation.

2021

Potential smolt trap sites were identified at the top of the Glass and Farrar. The site identified at the top of Home pool by Fasnakyle house was chosen for various reasons including access and volunteer location in respect to COVID. SSE provided the board with a 4ft smolt trap and delivery.

Two temperature loggers were installed. One on the Abhainn Deabhag (c1.8km upstream of Knockfin bridge), and the other on the Uisge Misge (top of the Farrar) for long term monitoring.

The trap will be checked every morning (flows permitting) from 29 March until the end of the smolt run.

**2021 Output: Daily smolt counts will be reported to SSE to inform the operation of the improved flows for smolts. All smolts will be counted and released. A subsample of smolts will be measured, weighed and scales taken. As trap efficiency will be unknown a minimum smolt output for the Abhainn Deabhag will be gained along with smolt metrics, smolt age, and the timing of the smolt run.**

2022

SSE have indicated that they may provide the board with a second smolt trap. Smolt transport facilities should be in place. The staff and volunteer team will be more experienced. Work may depend on staffing and/or volunteer recruitment.

Mark-re-capture methods will be used to assess trap efficiency.

**2022 Output: Known trap efficiency will mean that smolt output for the Abhainn Deabhag and/ or the top of the Farrar can be determined. Metrics, smolt age and run-timing will also be gained.**

Temperature monitoring will continue.

Future years:

Smolt trapping at Fasnakyle and the Farrar to continue in conjunction with temperature monitoring.

Temperature (and SEPA flow) data to be analysed after 3 winter/springs to see if this can be used as a smolt run timing predictor (2024).

Depending on board priorities and the development of smolt monitoring methods in Scotland, pit tagging with pit tag receivers at dams may enable smolt-adult survival to be assessed.

Resource Considerations

This is an important project that gains very useful information for us about smolts whilst improving their survival during their migration downstream but it is worth considering the amount of staff time and experience involved to ensure its success.

Tasks associated are:

-Smolt trap checking (every day including weekends)

-recruiting, organising, and training volunteers

-Good H+S practices (e.g. risk assessing, provision of H+S kit)

-Data recording and analysis

-Kit logistics including smolt trap transport, storage and calibration of temperature loggers

It is essential to have 2 full time staff members. In the future, if 2 smolt traps are in place a seasonal staff member with relevant experience will be necessary.