

Electrofishing is a key monitoring tool that provides us with information about how fish are using the catchment. It can highlight problems that as a board we can work to fix, and it can help us monitor the effectiveness of any management changes we make. As survey time is limited to the summer months (July-September) it is important that we are gathering the right information.

Up until now it would appear that electro-fishing has been done on the Beauly at a suite of historic, representative sites, and to answer specific questions (e.g. how far do salmon get up a specific burn). So far our analysis has been based on classifying electrofishing data into quartiles to give a 'poor', 'moderate', 'good', or excellent' classification.

In 2018 and 2019 NEPs was done on the Beauly as well. NEPs was set up to help inform the Conservation Limit assessment and has been adopted by almost all fishery boards and trusts. Based on a lot of past data and environmental variables it gives us a benchmark fry and parr density of what we should expect to find as an average figure for the catchment, and for individual sites. The **observed** juvenile densities are compared to the **expected** densities and the difference between these lets us know if a site is looking good or not (is it at carrying capacity?). Sites are selected randomly but are slightly weighted to areas where fish are predicted to be present.

Sites are re-visited annually, or every 3, 6 or 9 years.

The Drawbacks:

- 1) It is fair to say that in 2018 and 2019 the NEPs sites were somewhat clumped, although this high resolution did mean that potential issues at the top of the Glass were highlighted.
- 2) Although habitat is recorded at each site, this is not considered during data analysis and visualisation. Therefore results require further interpretation.

The Advantages:

Apart from informing the Conservation Limit assessment and putting the Beauly into context with other rivers across Scotland:

- 1) We gain useful information. This year, the decision to include the River order 5 rivers (the big mainstems of the Glass and Farrar) meant that we got a very good spread of sites (**Map 1**). In fact mainstem Glass sites were electro-fished for the first time ever, which meant that we got to start answering our own questions too. E.g. Are the hydro flows on the Glass (which are opposite to how they should be naturally) affecting juvenile fish densities?
- 2) We get paid to do it, which means we can employ a seasonal staff member and get more work done, and gain greater insight into what's going on. Any money left over can be used to employ staff to further other work we deem to be priority (e.g. riparian tree work, smolt monitoring), or put to other uses etc.
- 3) Genetic samples (NIPs) are analysed for potential introgression from farmed fish. This may not seem perfectly relevant to the Beauly as we are placed away from Fish farms however the genetic samples we are gathering from parr may be used by us in the future to answer our own questions. Building a genetic bank is advantageous if we ever run out of fish and need to consider re-stocking

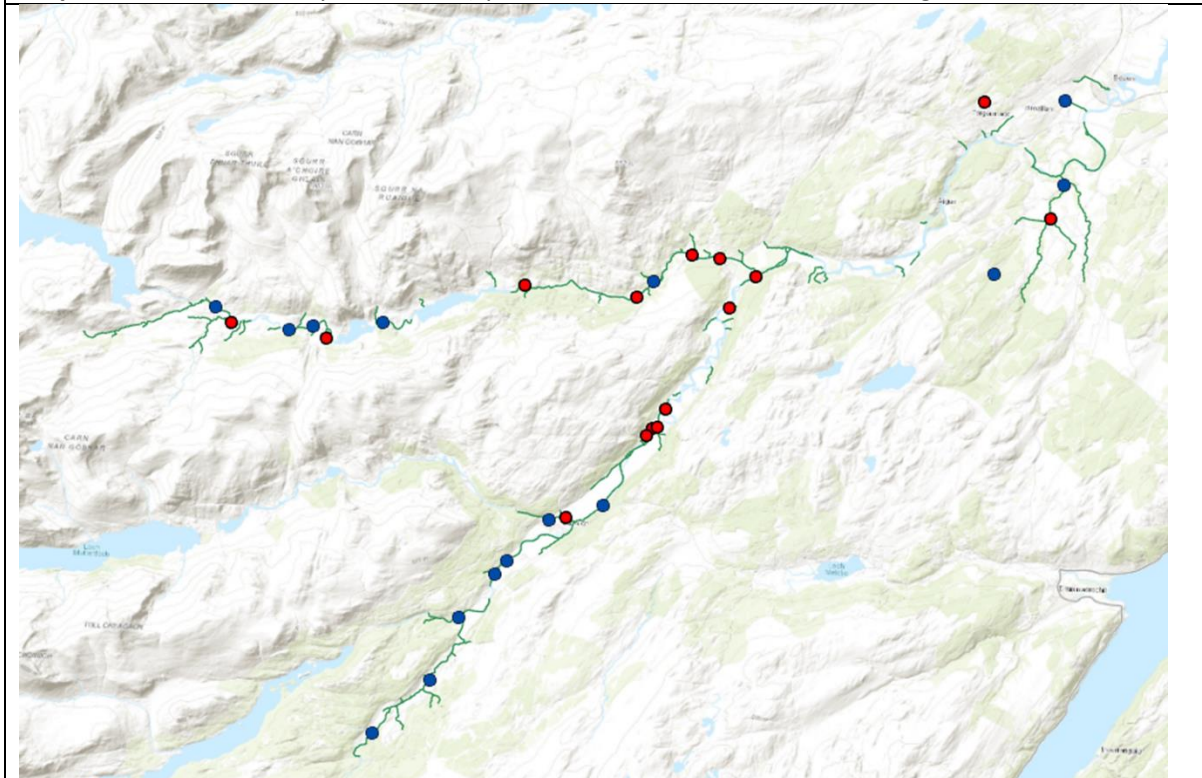
areas where salmon have gone extinct. We could use genetic markers to assess where the spring fish or multi-sea winter fish occur...etc or identify areas where fish are more tolerant to increasing temperatures.

4) The data analysis tool (Shiney app) can be used to analyse and visualise existing data that we already have and this tool has been peer reviewed. It takes into account all sorts of things we do not usually consider during data analysis e.g. time of year, altitude etc i.e. It's the best juvenile fish analysis tool Scotland's got!

5) Generally NEPS is a superior sampling programme, as it results in as close as practically possible to being representative of the fish-accessible parts of the catchment and means that all fishery boards in Scotland are doing things in the same way. Therefore comparisons between catchments can be robustly made.

It is important to note that although NEPS is a significant amount of work, depending on the weather/ flows over the summer, there is still time to do further electro-fishing to answer more specific questions or fill in the gaps. For example this year we will also be surveying historic sites to use as a baseline for management changes, other years we might want to focus in on other questions e.g. look more closely at the U. Misge and Upper Glass where juvenile densities have been shown to be patchy etc.

Map 1: Initial NEPS survey sites 2021 (spread out across catchment including mainstem Glass).



Please feel free to make contact if you have any questions (ruth@beaulyfishingboard.org, 07391553647).

Further information:

[National Electrofishing Programme for Scotland - gov.scot \(www.gov.scot\)](http://www.gov.scot)