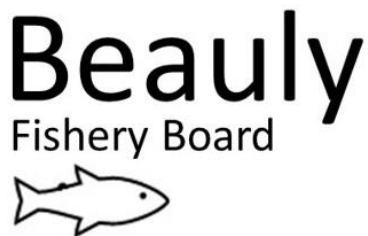


Beaully Catchment Fishery Management Plan

2022-2027 v2 (updated Feb 2025)



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FOREWORD

“It is with great pleasure that I introduce you to our Fisheries Management Plan for 2022-27 that has been produced by our Senior Biologist, Ruth Watts. This key document sets out how over the next five years the Beaully Fishery Board is going to monitor, manage and protect our salmon stocks. This plan builds on previous plans and is ambitious in its outcomes. In 2021 we commenced smolt monitoring to inform SSE’s management of flows in the catchment for improved smolt passage down the river and we hope to build on this in future years.

I would like to thank our hard-working team consisting of the Senior Biologist, the Fisheries Officer and seasonal staff, together with all the volunteers who help them.

We work closely with all parties and partners who share an interest in fisheries management in the Beaully catchment. We greatly value and seek the support of the community from schools, families, and businesses to the landowners, fishery proprietors, their employees and their fishing guests through engagement, education and communication.

The best interests of the River Beaully and its tributaries are key to us all.”

Frank Spencer-Nairn (Chairman of Beaully Fishery Board 2022-2024)



Alastair Campbell
Chairman from 2024



Hamish Hope
Clerk from 2024



Ruth Watts
Senior Biologist



Ali Skinner
Water Bailiff

1. INTRODUCTION

This Fishery Management Plan (FMP) takes a catchment-based approach and outlines the main pressures that Atlantic salmon and sea trout face and our plan to address these pressures in the Beaulieu catchment. This plan follows on from the previous [Fishery Management Plan 2014-2020](#) and background information can be viewed in that document.

The Beaulieu Fishery Board (BFB) takes an evidence-based approach to make good management decisions and recognises that information comes from not only practical scientific study but a wide range of sources including those who have lived their lives close to the river.

Our statutory aim as a fishery board is to protect Atlantic salmon and sea trout ([Salmon and Freshwater Fisheries Act 2003](#)). BFB see fish in the context of the river and catchment as a whole. Fish need clean, cold water to be able to **breathe**, they need a range of substrate to be able to **live** their various life stages, and they need natural nutrient levels and riparian vegetation so they can **feed**.

Our main work areas for the next few years include:

- * Maintaining a strong bailiffing presence**
- * Studying the survival and behaviour of smolts in relation to the dams to improve smolt survival where possible.**
- * Improving sediment management in relation to the large hydro dams to improve the availability of spawning habitat below them.**
- * Minimising predation from seals and piscivorous birds**

These main work areas have a * next to them throughout this Fishery Management Plan and other high priority work is highlighted in the Work Plan (Section 9).

BFB will do this through information gathering, assessment of the key pressures faced by salmonids and delivery of actions to reduce these pressures. We aim to protect adults and juveniles when in freshwater, improve degraded habitat to ensure maximum juvenile production, ensure fish passage, and protect the genetic integrity of fish so they can adapt to the rapidly changing environment.

Broad action themes are covered under '5. THE PRESSURES' and specific planned work to tackle the pressures are tabled under '9. WORK PLAN'. This plan will be reviewed periodically.

All references to "salmon" refer to the Atlantic salmon (*Salmo salar*), and references to "trout" refer to both Brown trout and sea trout (*Salmo trutta*).

2. CONTEXT

This Fishery Management Plan aligns with international and national guidance.

Table 1: International (NASCO) and national (Scottish Government) guidance summary.	
The North Atlantic Salmon Conservation organization (NASCO) , the international organisation who protect Atlantic salmon	Scottish Government Wild Salmon Strategy [11] : Themes for Action
Managers and conservation organisations need to promote strong, healthy, and resilient populations of local wild salmonids in rivers and estuaries in order to reduce the impacts of changing ecosystems. A primary strategy to achieve this is protecting the genetic integrity of stocks, enhanced water quality and habitat protection including improving access for salmon to important habitats, and minimizing human impacts reducing growth and survival in rivers and coastal areas.	Improving the condition of rivers and giving salmon free access to cold, clean water
In the face of a rapidly changing environment, management approaches and decision-making should be broadened to include ecosystem protection of rivers, estuaries and marine environments including water quality, habitat quality and other valued components of the ecosystem.	Managing exploitation through effective regulation, deterrents, and enforcement
Agencies, managers and conservation organizations considering introductions or managing invasive species should consider the following principles: a. Discourage any introduction, intentional or otherwise, of non-native species into salmon rivers; b. If established, invasive species should be eradicated where possible, and prevented from spreading when eradication is not feasible; c. Work with other organizations to ensure strong and healthy populations of local Atlantic salmon to mitigate the potential impacts of invasive species.	Understanding and mitigating pressures in the marine and coastal environment
To optimize species productivity under future conditions fisheries managers and conservation organizations should ensure the highest number of wild smolts in the best condition leave from rivers and near-coastal areas to the ocean.	Making a positive contribution through international collaborations
	Developing a modernised and fit for purpose policy framework

Membership and close co-operation with our representative body Fisheries Management Scotland (FMS) will be maintained so that our local activities are in line with, and influence wider government policy.

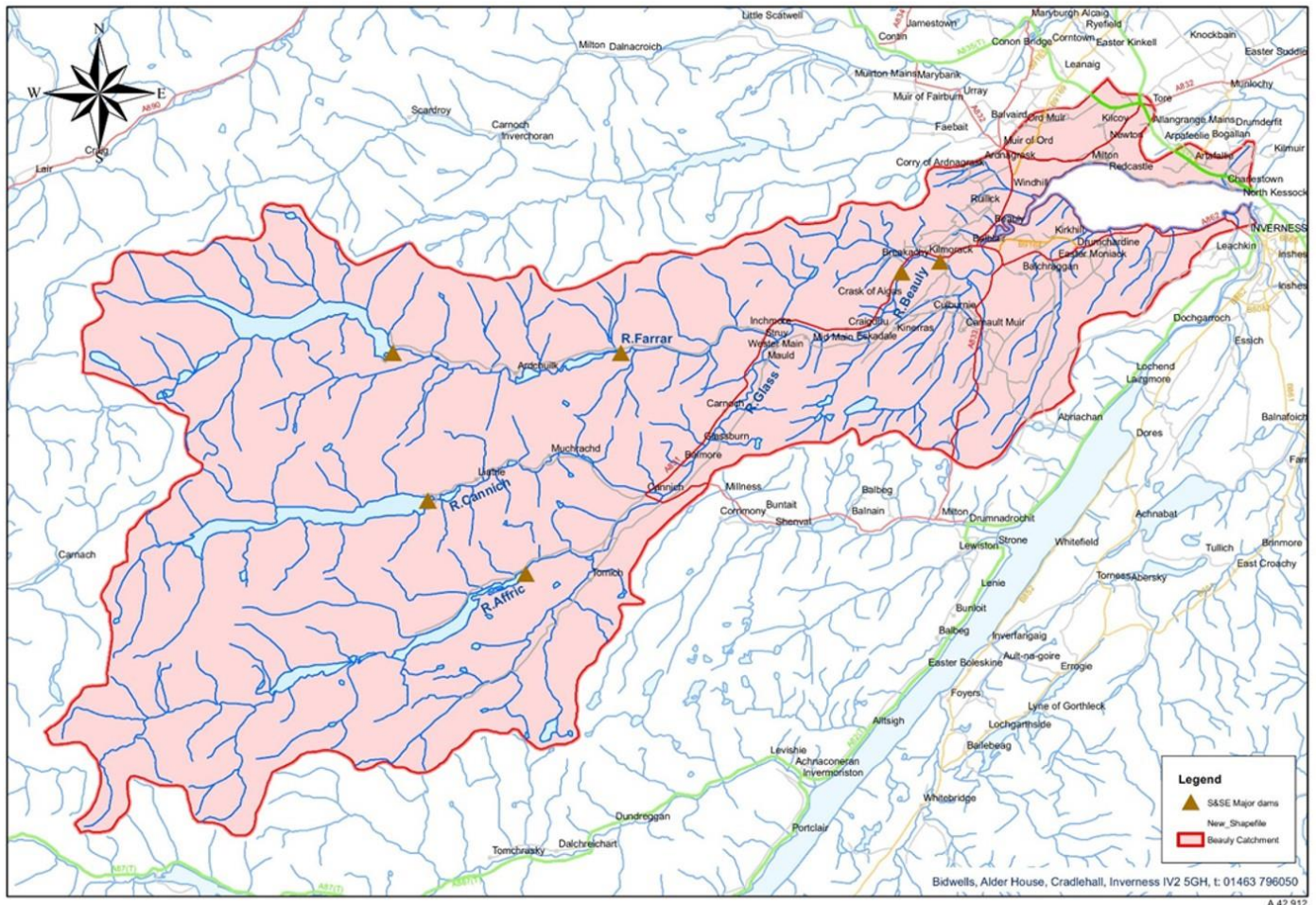
Apart from the Beaully District Salmon Fishery Board, a range of organisations have a part to play in managing the catchment. This plan is designed to link with other existing management plans. See Section 10 PARTNER ORGANISATIONS AND GROUPS.

Landowners and proprietors are key in delivering many of the aims of this FMP as well as farmers and other individuals/ community groups and it is through our relationships with them and wider stakeholders that we can make things happen (often in partnership).

3. THE CATCHMENT

The River Beauly has an approximate catchment area of 1000km² and 120km of accessible reach. The R. Beauly has two main tributaries naturally accessible to salmon and sea trout, they are the R. Farrar and the R. Glass.

Figure 1: Overview map of the catchment.



The catchment can be broadly split into four main management units.

3.1 Beauly

The R. Beauly is host to two large hydro dams (Kilmorack and Aigas), both allow fish passage via Borland fish lifts. The majority of the angling happens on the River Beauly below Kilmorack dam. The Beauly's main tributary is the Belladrum burn which has a rich geology compared with the rest of the catchment and hosts both excellent numbers of juvenile salmon as well as trout. The Belladrum sub-catchment is one of the main spawning areas for sea trout (as well as small coastal burns).

3.2 Farrar

The R. Farrar is one of the two main tributaries of the R. Beauly. The Farrar is host to Beannacharan dam which is equipped with a Borland fish lift. Numerous hydro abstractions are present on the R. Farrar's tributaries. The U. Misge is the R. Farrar's main tributary. Loch Monar (a large hydro loch) at the top of the Glen Strathfarrar provides water for the R. Farrar.

3.3 Glass (including Affric, Cannich)

The R. Glass is the other of two main tributaries of the R. Beaully, with the majority of the potential spawning habitat for the catchment. The main proprietor for this section is the Glass syndicate. At the top of the R. Glass is the Abhainn Deabhag above the confluence with the R. Affric. The A. Deabhag contains excellent juvenile habitat. The Rivers Affric and Cannich are tributaries of the R. Glass. Both have natural barriers close to the confluence with the mainstem Glass making them largely inaccessible to migratory fish. Both host large hydro lochs (Loch Beinn a' Mheadhoin and Loch Mullardoch) respectively.

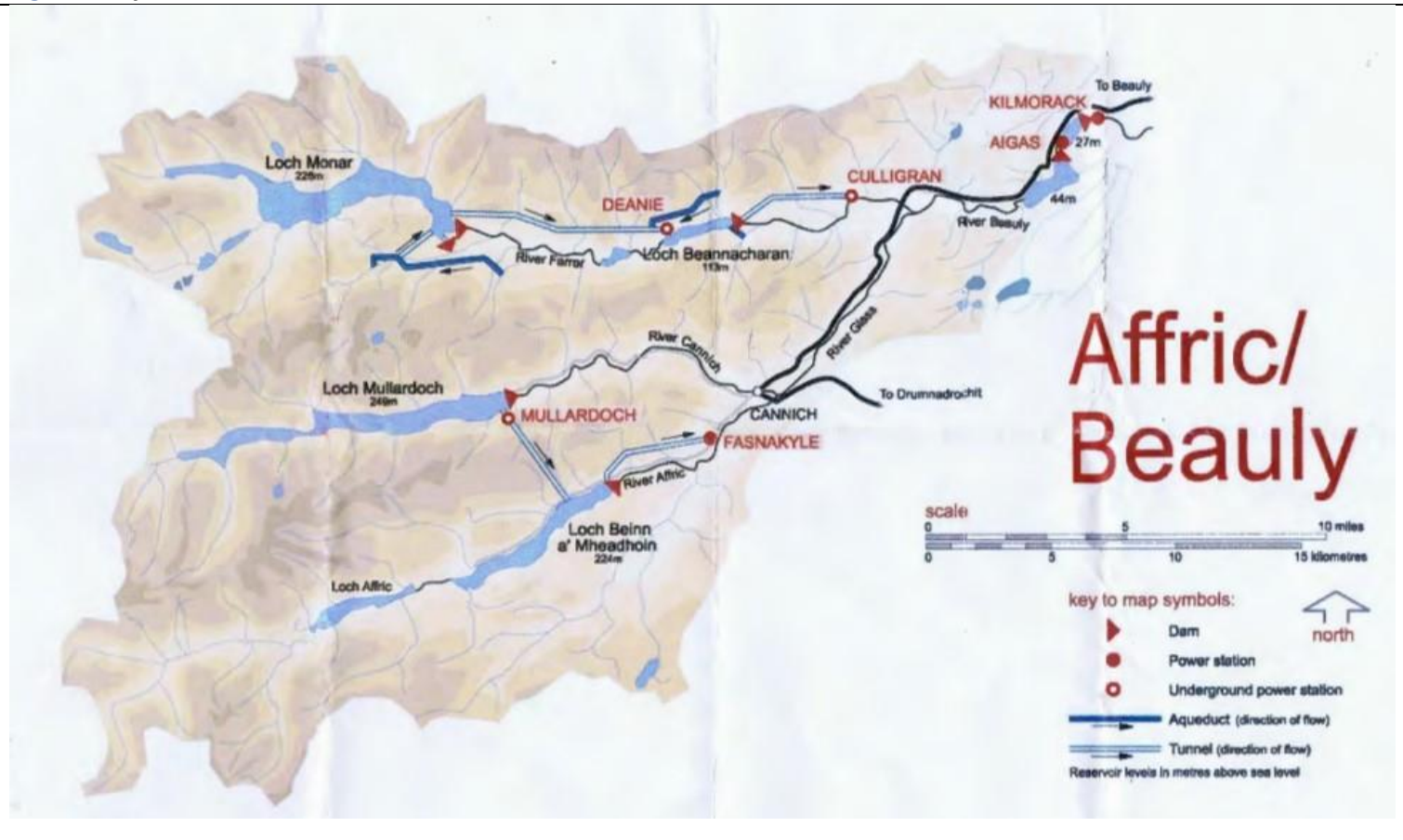
3.4 The Beaully Firth

The Beaully Firth hosts several coastal burns suitable for sea trout, and despite their size are extremely important for the sea trout who spawn there. Key burns include: Bunchrew burn, Kirkton burn, Moniack burn, Bridgend burn, Tomich burn and Redcastle burn.

3.5 Hydro

The Beaully catchment is host to hydro infrastructure, schemes built 1951-1963. Three dams with Borland fish lifts (Kilmorack, Aigas, and Beannacharan) are present in the accessible reach to migratory fish, with storage dams present at the top of the Farrar (Monar), Cannich (Mullardoch) and Affric (Beinn a' Mheadhoin).

Figure 2: Hydro infrastructure across the catchment



3.6 Fish

The catchment hosts juvenile and adult Atlantic salmon *Salmo salar*, Brown trout and sea trout *Salmo trutta*, eels *Anguilla anguilla*, 3-spined stickle back *Gasterosteus aculeatus*, Brook lamprey *Lampetra planeri*, River lamprey *Lampetra fluviatilis* and Sea lamprey *Petromyzon marinus*. It is not clear whether Pike *Esox lucius* are indigenous to the catchment. Being north of the Great Glen they may have been introduced. Minnows *Phoxinus phoxinus* are an invasive non-native species but occur throughout the catchment. Charr *Salvelinus alpinus* originally occurred in Loch Bruicheach and Loch Sealbhanach, and Perch *Perca fluviatilis* (introduced) are thought to occur in a few small periphery lochans. Other non-native fish species (e.g. Carp, rudd, roach) occur in stocked ponds.

See the previous [Fishery Management Plan \[2\]](#) for more detailed catchment information



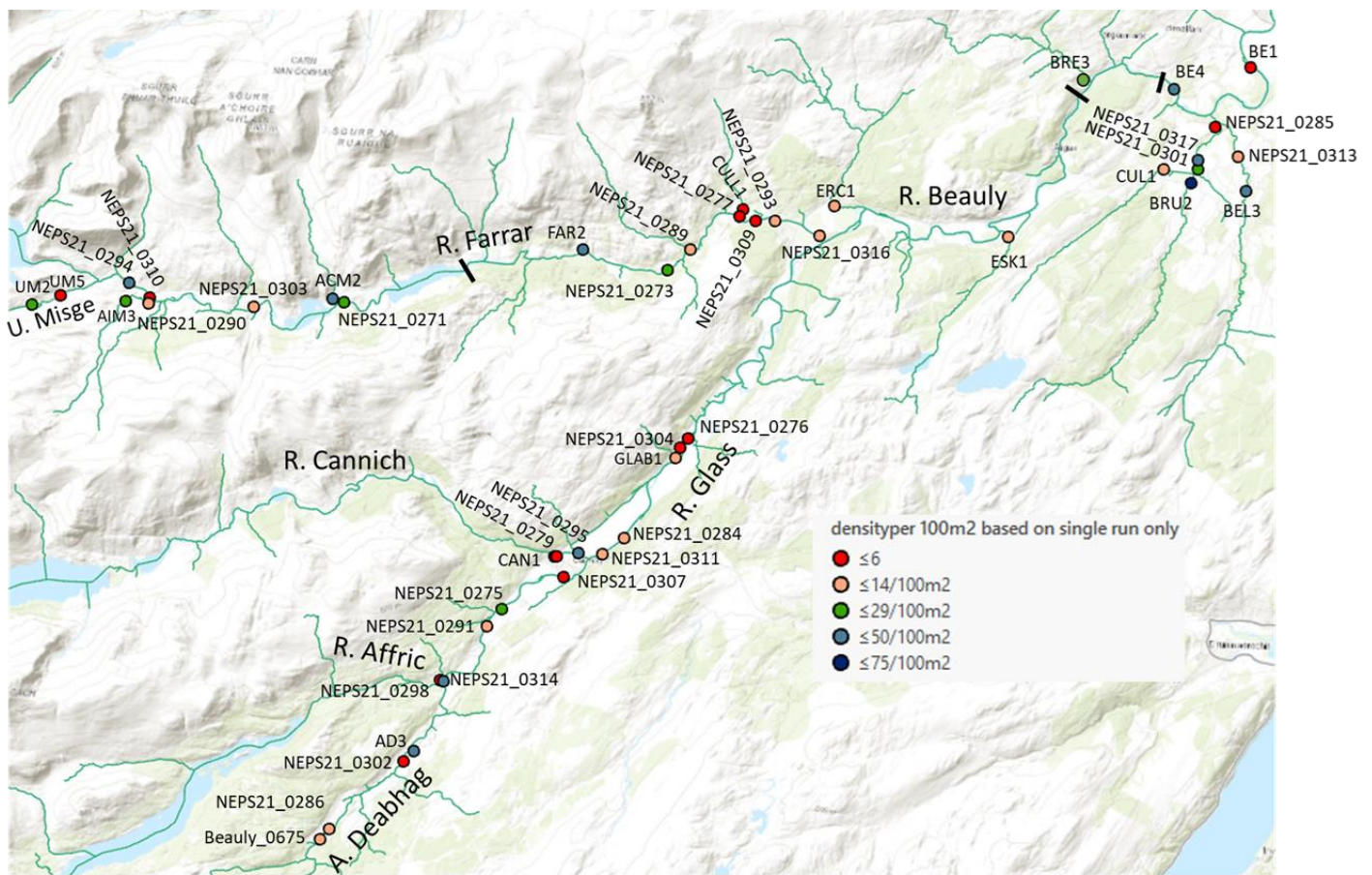
Adult River Lamprey caught on Bruaich burn during a 2021 Electro-fishing survey

4. INFORMATION SOURCES

4.1 Electro-fishing Data

Electro-fishing surveys are carried out annually. 2021-2023 saw comprehensive surveys of the catchment carried out mostly thanks to the Scottish Government funded National Electro-fishing Programme for Scotland. For the first time insight was gained into juvenile fish densities on the mainstem Glass. Salmon fry densities in the river Glass were on average higher compared to the other management units. Electro-fishing is an extremely useful tool to show how fish are using the catchment, it can highlight problems and identify trends. Fish survey results can make a good starting point for wider conversations about the river and providing evidence to justify and monitor the effect of responsible management actions. See [2021 Electro-fishing Report \[21\]](#) for more information. Recommendations made in our Electro-fishing reports are included in this FMP.

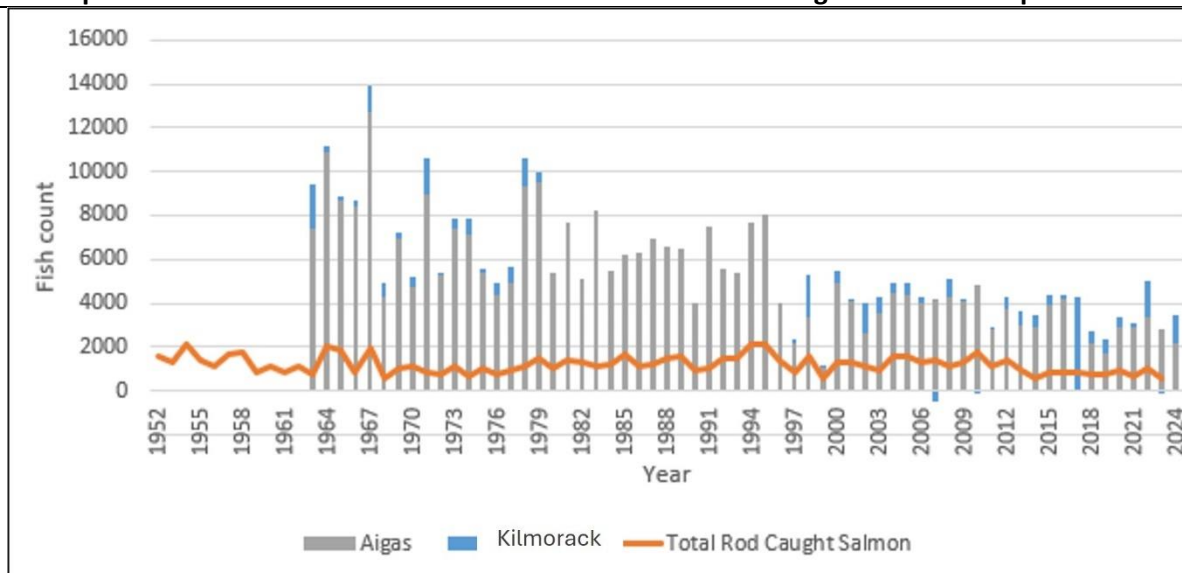
Figure 3: Map of Atlantic salmon parr minimum densities per 100m² (2021 NEPs and historic sites). Green category includes catchment mean for 2021.



4.2 Fish Counts

At each of the hydro dams in the accessible reach (Kilmorack, Aigas, Beannacharan) a fish counter is installed. These fish counters are there for the purposes of showing SEPA that SSE are meeting their fish passage obligations however this data is also useful to BFB and wider stakeholders as the fish counts show trends in adult fish returning to the catchment. This is especially true at Kilmorack dam as the dam is just 5.5km above the Normal Tidal Limit. Over the years, the model of counters has changed with varying count accuracy. Currently Artificial Intelligence counters are in place at Aigas and Kilmorack dams, these are highly accurate when data management is effective. The Mark 12 counter is running at Beannacharan, based on SSE observations at Pitlochry, efficiency is thought to be between 65-75%. Taking account of the varying efficiencies of the fish counters, there is a downward trend in returning adult salmon numbers. Evidence from [ICES](#), NASCO and a network of index sites across Scotland and the UK shows us that this is mostly due to reduced sea survival, although there are other factors within our control at play too.

Figure 4: Graph of Unvalidated Fish Counts over time at Kilmorack and Aigas dams with reported rod catch.



To understand better what is happening with adult salmon return, we will work alongside SSE whilst they improve the effectiveness of the fish counters.

4.3 Rod Catch

Rod catch can help to show what's going on in the catchment if reporting is accurate and angling effort and fishing conditions are taken into account. Angler observations (e.g. fish condition, presence of sea lice, predation marks, netting marks) can be useful in highlighting potential issues and patterns in the adult fish return. See [Figures 5A and 5B](#).

Figure 5A : Graph of historical Atlantic salmon rod catch for the Beaulieu catchment.

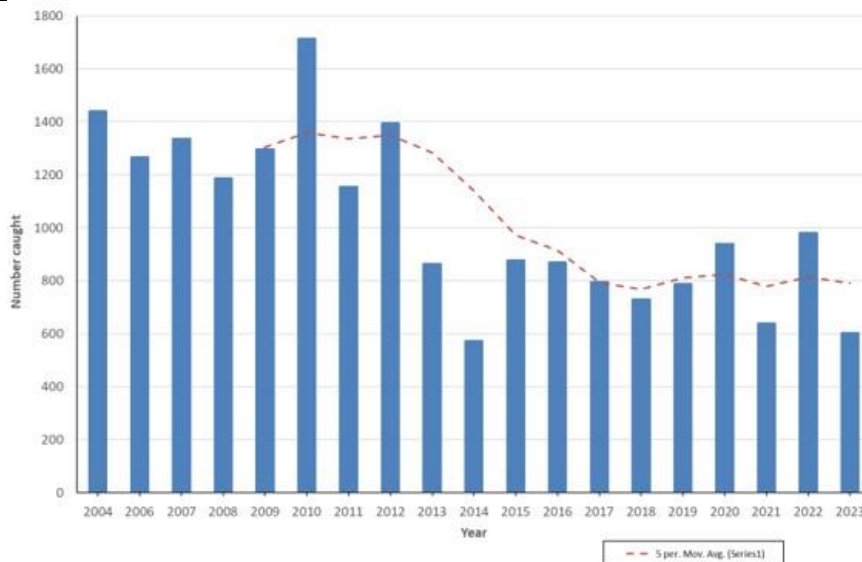
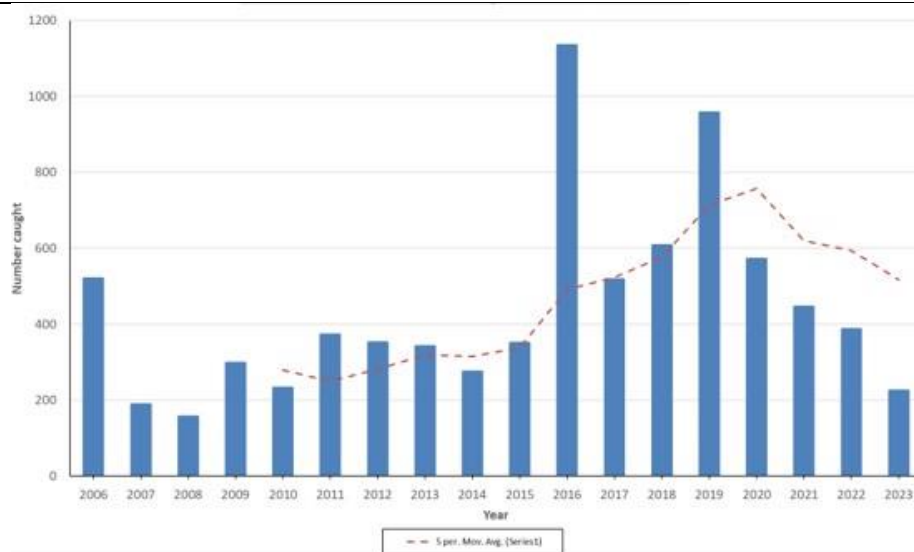


Figure 5B: Graph of historical sea trout rod catch for the Beaulieu catchment.

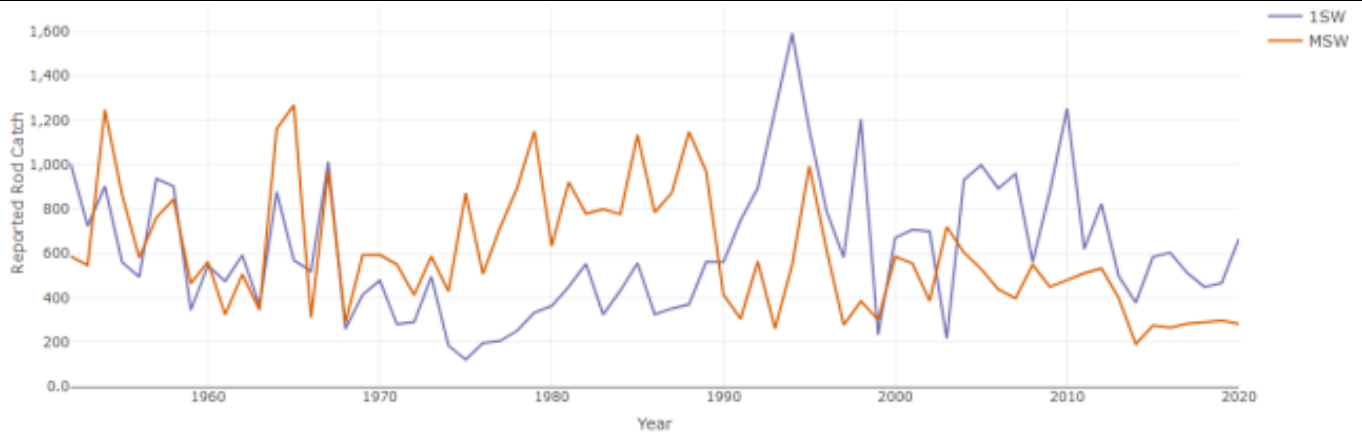


It is important that end of season angling returns are shared with board staff (via the Clerk) so that information such as weight, condition of fish, patterns in catch etc are available, and the value of this information maximised.

Adult scale reading can provide valuable information about individual life histories of Beaulieu fish and the population as a whole i.e. How are the sizes of grilse and multi-sea-winter (MSW) fish changing? We have participated in the National Adult sampling project annually since 2021.

Salmon return age is partly determined by genetics, partly determined by the size fish leave the freshwater environment as smolts, and there are also natural cycles in fish return and timing of return based on the [North Atlantic Oscillation](#). Reductions in food availability at sea will likely result in an increase of MSW fish returning to the Beaully, and they are likely to be smaller than in the past [26]. See Figure 6.

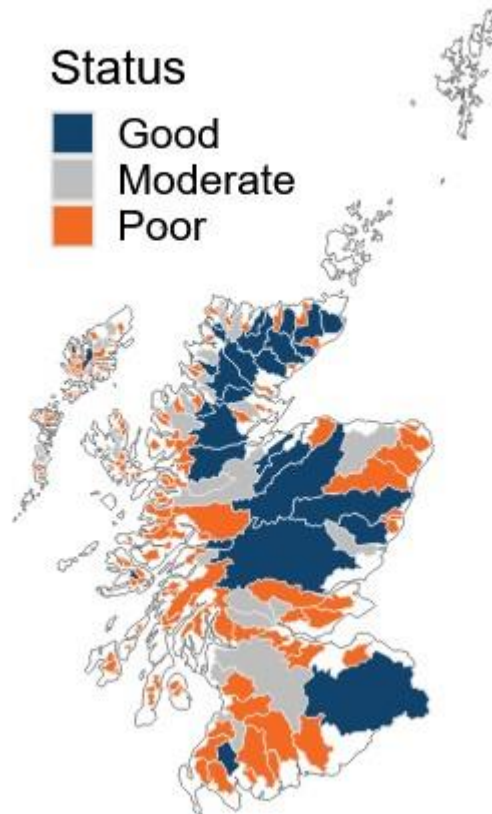
Figure 6: Rod catch by age over time for the Beaully Catchment (1SW=1 sea winter, MSW-Multi sea winter).
Marine Directorate. Salmon and Sea Trout fishery statistics: 2023 season- reported catch and effort by method.
<https://scotland.shinyapps.io/sg-salmon-sea-trout-catch/>



4.31 Conservation Status

Setting Conservation Limits is a basic requirement under NASCO. Marine Directorate (on behalf of Scottish government) use a combination of rod catch and dam count data to calculate the chance of the Beaully meeting its egg target based on available habitat. The R. Beaully is currently categorised as 'Good' based on the 5 year average of over 80% likelihood of meeting its egg requirement.

Figure 7: Map of Scotland showing the proposed 2025 conservation statuses. More information
<https://www.gov.scot/publications/status-of-salmon-in-scotland/pages/conservation-status-of-individual-salmon-stocks/> and <https://scotland.shinyapps.io/sg-salmon-conservation/>

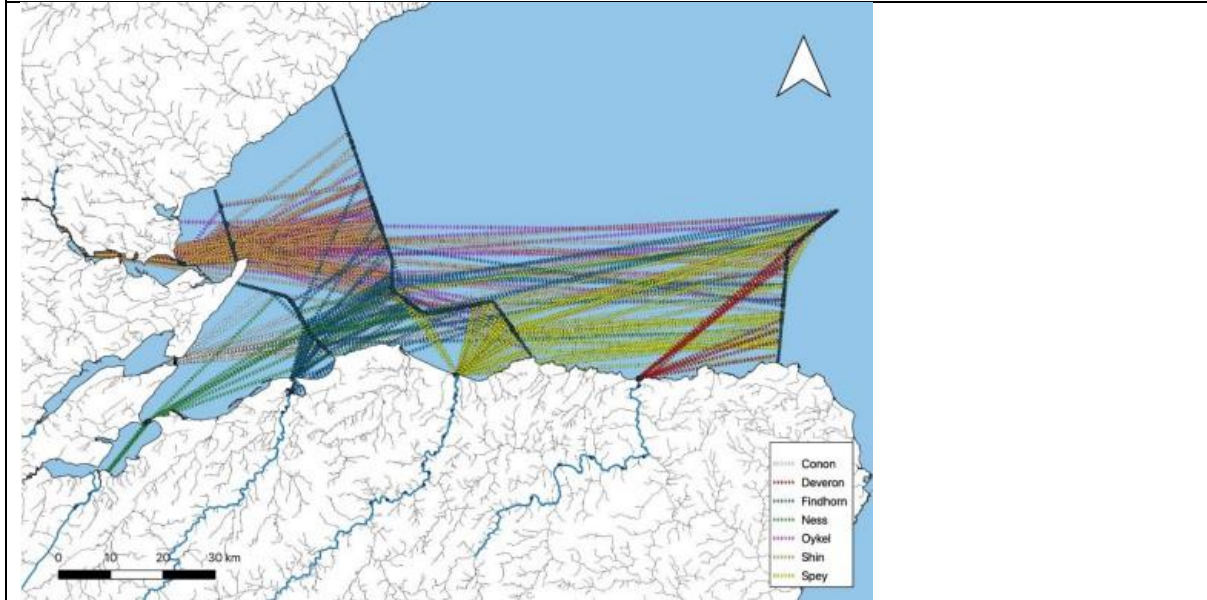


The conservation status informs BFB's Conservation Policy which includes catch and release (see section 5.7 Angling).

4.4 Local, National and Moray-Firth wide projects

National and Moray-Firth wide projects can really improve our understanding of salmon and sea trout ecology, behaviour and pressures. For example the Missing Salmon Alliance- Moray Firth Tracking Project [3]- highlighted that the majority of smolts from the neighbouring Ness and Conon travel East and North-Eastwards towards Fraserburgh (before heading north (Figure 8)).

Figure 8: Salmon smolt migration pattern (AST, SCENE) study 2019 [3].



Recent, national, funded projects e.g. the [National Adult Sampling Project](#), [National Electro-fishing Programme](#), National Introgression Programme (See section 8. Monitoring) allows BFB to learn more than before about the salmonids of the Beaully catchment whilst answering some of the more specific questions BFB have. For example, The National Adult Sampling pilot project in 2021 highlighted that salmon returning to the Moray Firth (despite being among some of the biggest fish returning to Scotland) are generally getting smaller and lighter in the months July-September, with significant size overlap between 1 sea winter (grilse) and 2 sea winter fish.

5. THE PRESSURES

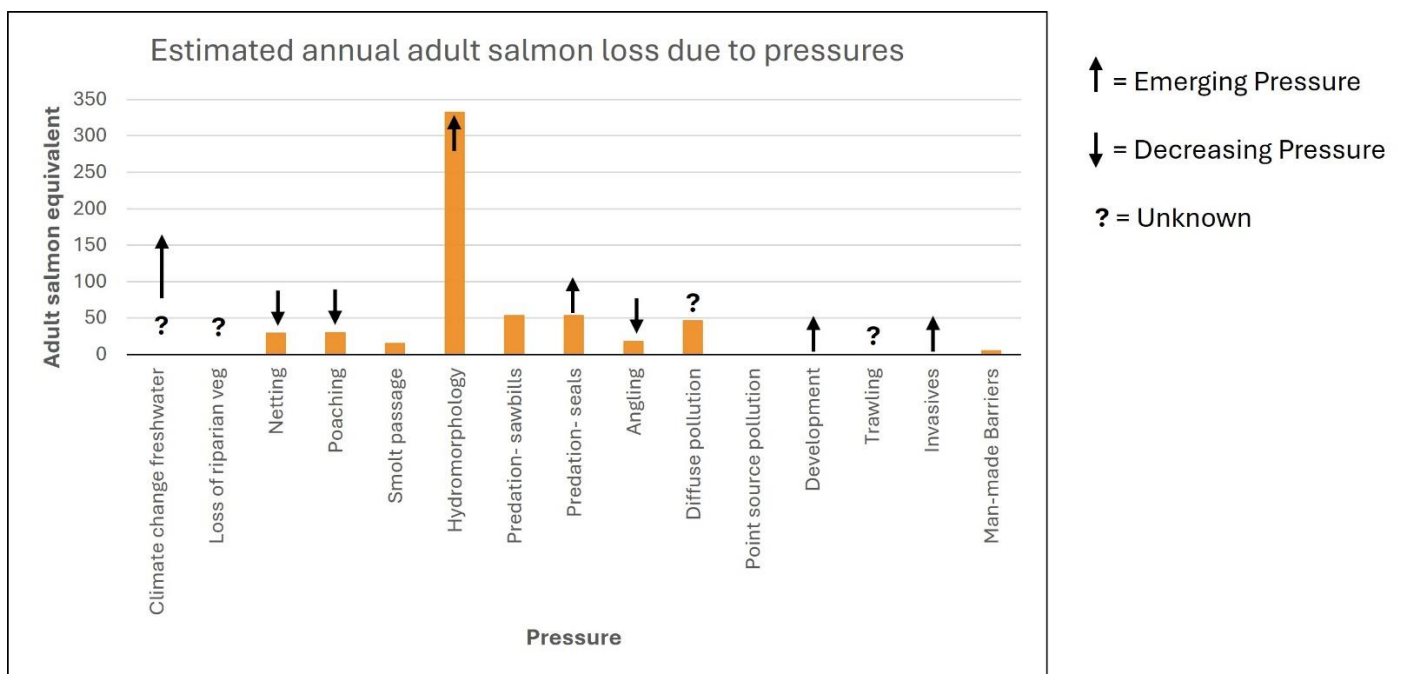
There are many pressures facing salmon, sea trout, and the catchment as a whole.

Some pressures are emerging (i.e. they are getting bigger with time), some pressures are declining (i.e. getting less with time), some are chronic whereas others are episodic. Individually these pressures may have a relatively small impact but if we tackle each of them we can go some way to helping salmon and sea trout. Climate change and associated declining marine survival is likely to be the biggest pressure on salmon, however the pressures highlighted below are the ones that we CAN influence.

The size of the bars have been worked out using information we have available and are illustrative estimates only. As the information we have improves we can refine the size of the pressure bars.

Notes on how bar sizes were worked out are given in [Appendix 1](#).

Figure 9: Bar chart showing pressures on salmon and sea trout relative to each other, presented as 'Estimated Annual Adult Salmon Loss' (illustrative only as data incomplete and each pressure assessed differently).



This bar chart can help to show why we want to focus our work in certain areas.

5.1 Illegal Exploitation*

Illegal Exploitation (the taking of salmon and sea trout without a permit) can have significant consequences for the fishery and salmon conservation. Without a full-time bailiff in the past, the Beaulieu catchment may have been seen as a soft spot for poachers.

BFB has employed a Fisheries Officer and Seasonal bailiff since 2021. They patrol the catchment for 14hrs most days in the season. Their presence acts as a deterrent to potential poachers and their work uncovers illegal fishing throughout the catchment. Improvement to bailiffing is made year on year as knowledge and communication with anglers and locals improves.

How we aim to tackle Illegal Exploitation pressure

*BFB will continue to employ a full-time bailiff to patrol the catchment and work on the recommendations highlighted at the end of each season to improve enforcement effectiveness, and reduce the occurrence of illegal fishing.



Bailiffing photos taken during the 2021 season

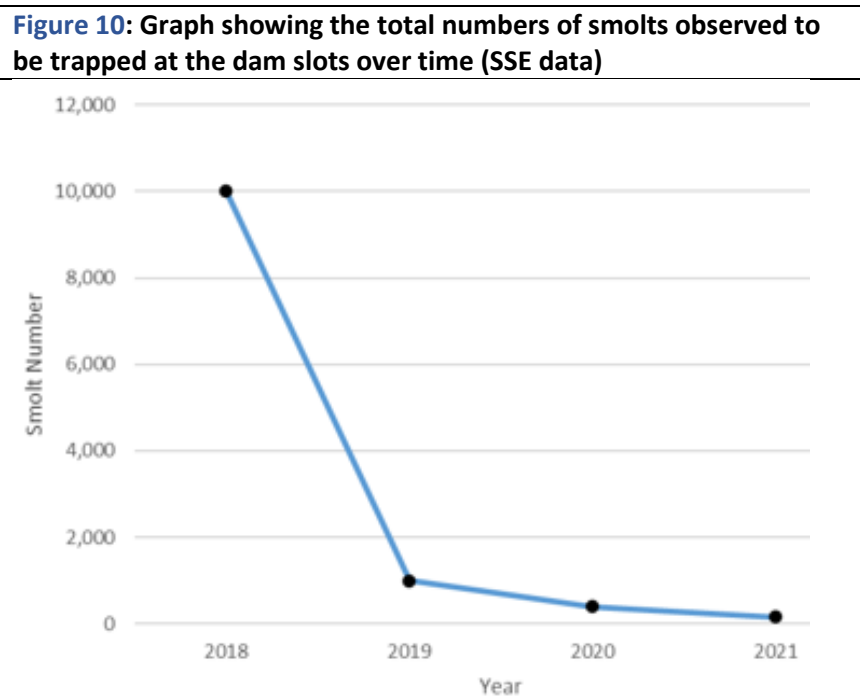
5.2 Smolt passage pressure from hydro dams*

Smolts in the Beaully catchment have to negotiate the hydro dams on their way out to sea. At Beannacharan, smolts go down the fish pass, and at Aigas and Kilmorack they go through the Kaplan turbines.

Apart from negotiating the infrastructure itself, the slack water created behind the dams are host to pike and if smolts struggle to find their way out/ downstream then they could be vulnerable to predation and migration delays.

In 2018 it became apparent that there was a problem with smolt migration through the Aigas and Kilmorack turbines in low flows when **>8,000** smolts (approximately 10% of the smolt run) were rescued by SSE and the Ness and Beaully Fishery Trust. In 2019 SSE installed brushes on the entrance to the G1 gate slots at Aigas and Kilmorack ahead of the smolt run to deter smolts from entering. In 2019 **864** smolts were rescued (with a further 100 found during a dive survey). Further brushes were fitted to the G2 turbines at Aigas and Kilmorack in 2020 ahead of the smolt run. In 2020 a total of **310** smolts were observed by SSE as being trapped at the gate slots. Work done by SSE suggests that Kaplan turbines run at higher load improve smolt survival [14].

Since 2021 BFB have carried out smolt monitoring to pin down the timing of the smolt run in the catchment to enable better flow management by SSE for improved smolt survival. For more information see our [2024 smolt report](#) [19]. So far trap efficiency at various locations throughout the catchment has been low, so the focus for 2025 onwards will be to improve trapping efficiency at the Erchless site if possible using a 6ft rotary screw trap and carry out a smolt study.



How we aim to tackle the pressure on smolt passage from the hydro dams

This pressure appears to be declining at Aigas and Kilmorack dams due to the mitigation put in by SSE and work being done by SSE and BFB. It is currently unknown how Beannacharan dam on the Farrar may impact smolt survival during the smolt run.

*BFB will continue to work with SSE and SEPA to agree an updated smolt protection protocol ahead of each smolt season. This currently includes a two-stage regime:

1) April-May: “where reasonably practicable, only the G1 machines shall be run if the load is less than 10MW”.

2) During the smolt run as identified by the board: “where reasonably practicable, if either Culligran or Fasnakyle main machines are generating into the evening then they must maintain generation such that the load at Aigas is not reduced during the hours of darkness”.

* BFB will focus on improving smolt trapping efficiency with the aim of carrying out a study into smolt behaviour and survival in relation to the dams to inform possible future mitigation. Precise study remit/ location will vary with available resource.

-BFB will continue to request a national project through FMS and SSE to look at the physiological stress, disorientation, and resultant survival of smolts going through Kaplan turbines.

-BFB will improve the monitoring and reporting of possible smolt mortality in association with the dams.



Photo collage of 2021 smolt monitoring work

5.3 Lack of Sediment Management at hydro dams (Hydro-morphology- substrate and flows)

Hydro*:

It is widely accepted that large hydro dams impede sediment movement and unless managed (with flows), can have detrimental impacts on fish habitat.

Flow regimes originally agreed when the hydro dams went in, in the mid 1950s-60s were set up for angling purposes however as time has gone by the effects of the lack of sediment management in the catchment is becoming apparent. Walkovers assessing fish habitat and substrate distribution have been conducted along the rivers Cannich (2022), Affric (2022), Farrar (2023) and Beauly (2023) in relation to the large hydro dams. Combined with a review of historic photos, these surveys highlighted a lack of spawning substrate below Beannacharan dam on the Farrar and compaction of substrate below Kilmorack dam, with a lack of spawning substrate below Kilmorack dam to Belladrum burn.

Additionally there is now suitable guidance and expertise to come up with solutions to rectify the problems (e.g. [CREW 2025 Environmentally effective and cost-efficient sediment management at impoundments report](#)). Our neighbours at Kyle of Sutherland and at the Conon have completed their own sediment management projects in relation to large hydro dams.

See our [R. Farrar \[23\]](#) and [R. Beauly \[24\]](#) Hydromorphology reports for further detail.

East Deanie burn (Farrar tributary) has historically had low-no fry present, this is thought to be due to a lack of attraction flow at the bottom due to realignment during Beannacharan dam construction/ large silty alluvial fan. There are also a couple of tributaries of the Farrar that are dry and re-watering may be an option if useful fish habitat will be created.

Other human hydro-morphology pressure:

The old Cruives structure on the R. Beauly appears to hold back valuable spawning substrate. Sediment management here may help improve substrate composition further downstream.

How we aim to tackle the hydro-morphology pressure

*Based on the recommendations in the Farrar and Beauly hydromorphology reports, and recommendations given by SEPA and SSE, BFB will commission a hydro-morphology consultant to provide advice on appropriate sediment management options for the R. Farrar and R. Beauly. Ideally getting sediment management planning into the CAR licences would be the answer, although delivering a sediment management project on each river would be the first step. Further along the line, reviewing the flow regimes currently in place and making changes to benefit fish and fish habitat could also be beneficial.

- Continue requesting sediment management from SSE at the spout and other intakes on the Farrar.
- Electro-fish E Deanie burn to see if fry distribution has improved. Assess if hydro-morphology is the root cause for lack of/ few fry (past invertebrate sampling showed invertebrates were good).
- Assess if any of the Farrar tributaries would benefit fish significantly from their re-watering and discuss a way forward with SSE.
- Investigate if sediment management could be worthwhile and implemented at Cruives.



The base of Mullardoch dam with compensation flow, Glen Cannich

5.4 Predation*

Predation is a natural part of the ecology of the Moray Firth, however with the decline of salmon stocks, and predation being exacerbated by human impacts (i.e. manmade barriers, climate change, a lack of other prey items) predator management may be justified to Marine Directorate if supported by evidence.

Mammals

Mammals are natural predators of salmon and sea trout and are an important part of the ecosystem. For example dolphins predate salmon in the Moray Firth, especially at Channonry point where the geographical bottle neck makes salmon easier to catch.

Overall, seal numbers counted in the Moray Firth were similar in 2017 compared to 1996 although the proportion of common: grey seals has changed over time [4]. Common seals' main food is sand eels, which have declined in the Moray Firth [18] this is likely due to climate change, where-as grey seals have increased in number and are more generalist feeders.

Seals haul out at the bottom of the R. Beaully in the estuary, however sightings of specialist seals predated on salmon and sea trout in the river up to Kilmorack dam is becoming a frequent sight when river levels allow. Despite there being a Borland fish lift in operation three times a day at Kilmorack dam, the dam acts as a fish barrier most of the time, and this makes salmon and sea trout vulnerable. Monitoring of seal pressure by those on the river has improved greatly since 2021 via the use of [FMS's Seal reporting app](#). Analysis of the data has shown considerable pressure from seals on salmon, especially during the spring run and during spawning. Various methods to deter seals have been used but to little/ no effect (e.g. Acoustic Deterrent Device and paintball gun). The board will continue to utilise non-lethal methods, but given the significant impact seal predation is having on endangered Atlantic salmon (now an IUCN red listed species), the board applied for a seal management licence in January 2025. If granted, the board may have to resort to lethal management as a last resort.

Fish-eating Birds (Goosander, Merganser, Cormorant)

Fish-eating birds such as mergansers, goosanders and cormorants are generalist feeders. They feed on whatever prey is available including on juvenile salmonids. Man-made barriers (including the three hydro dams in the accessible reach) are likely to exacerbate salmon parr and smolt vulnerability to predators. In winter, parr are especially vulnerable as their mobility is mostly determined by temperature.

Historically the populations of sawbill ducks have been monitored annually on the Beaully. Currently monitoring is done 2-3 times a year when a full catchment count of the mainstem is done (down from Plodda at the top of the Abhainn Deabhag, R. Glass, and down from the Midge confluence on the R. Farrar). Ad-hoc sightings are also recorded by staff on patrol and from ghillies.

Count data is submitted as part of a licence application to scare and control sawbills especially during the spring when smolts are migrating.

Fish (Pike, Trout)

Little information is available on the impact of large trout and pike on salmon and trout in the catchment, however pike are known to occur in the slack areas behind the dams, in the slow-flowing parts of the Glass, and in lochs. Large trout are known to occur below Kilmorack dam.

How we aim to tackle the predation pressure

Predation management is just one tool in the toolbox alongside all the other measures BFB take to conserve salmon in the river. It is not the standalone answer to protect salmon and should always be a last resort.

Seals

*It has been established that specialist seals are having a significant impact on Atlantic salmon and sea trout in the R. Beaully. It is important that BFB continue to encourage the recording seal presence in the river via the FMS seal sighting app. Data gathered will help improve BFB's assessment of this pressure and support future seal licence applications if necessary.

*BFB will continue to use non-lethal seal deterrent methods (Acoustic Deterrent Device and paintball gun) and ensure that relevant personnel in LBFS are trained.

-Liaise with FMS to review any changes to seal legislation, and the reporting app.

Birds

*Continue bird count monitoring (winter and spring) to support bird licence applications whilst this is an efficient use of time.

-Explore and implement scaring techniques with a range of proprietors.

Fish

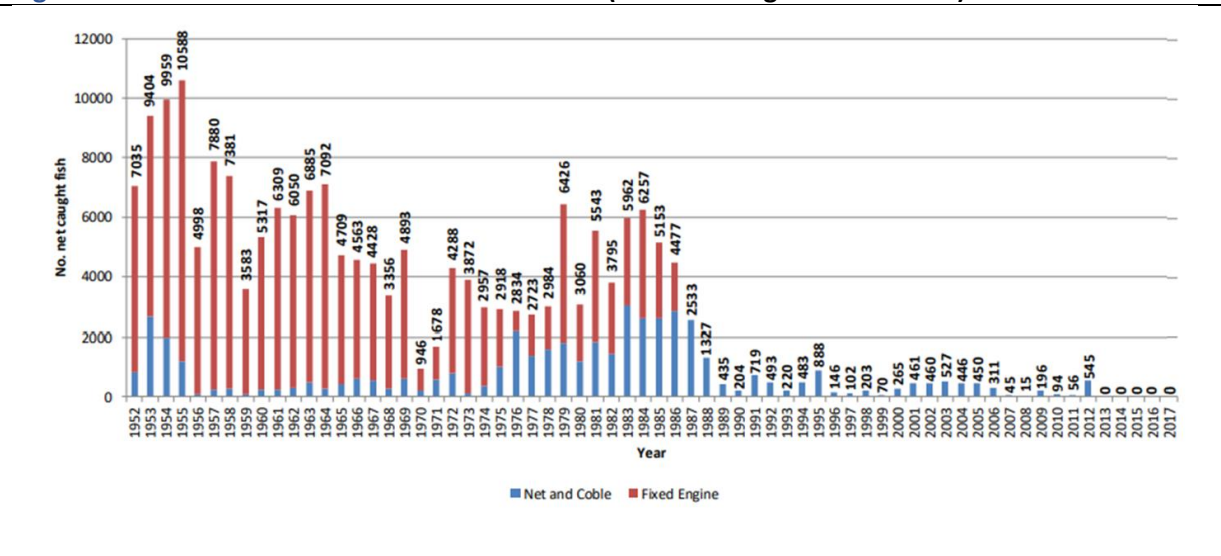
-Collect information on pike fisheries (e.g. Loch Beannacharan, Farrar).

5.5 Estuarine netting

Many of the original salmon netting stations in the Beaully district were bought out by the Atlantic Salmon Conservation Trust in the 1980s. These and several others are no longer operational, resulting in a significant reduction in the total numbers of net caught salmon reported. The fixed engine or 'bag net' fishery closed in 1986. Those remaining are net and coble fisheries, which use a sweep net paid out from a boat and worked from the shore. Longman station was bought out through Ness and Beaully Fishery Trust (with funds raised from BFB and Ness Fishery Board) in 2024. The key remaining operational sweep netting stations are located at Rosemarkie and Alturly Point and are currently under the jurisdiction of the Ness DSFB.

Conservation agreements (both voluntary and mandatory) have been in place in recent years to stop the taking of salmon. At Rosemarkie, agreements were in place 2007-2011 and 2013-2018. In 2012 when no agreement was in place, 545 fish were captured. Generally the netting stations are not operated as the numbers of salmon have dropped to levels that make it unworthwhile to fish for them using this method. See [Figure 11](#).

Figure 11: Total Ness District net salmon catches (salmon and grilse combined)



Partnership work including the Ness and Beaully Fishery Trust was carried out in 2018-19. Acoustic tagging including tagging fish at Chanonry point (and at the netting stations) with receivers at the mouths of several rivers has shown that fish head to various Moray Firth rivers and suggests the greatest proportion end up in the River Beaully [25].

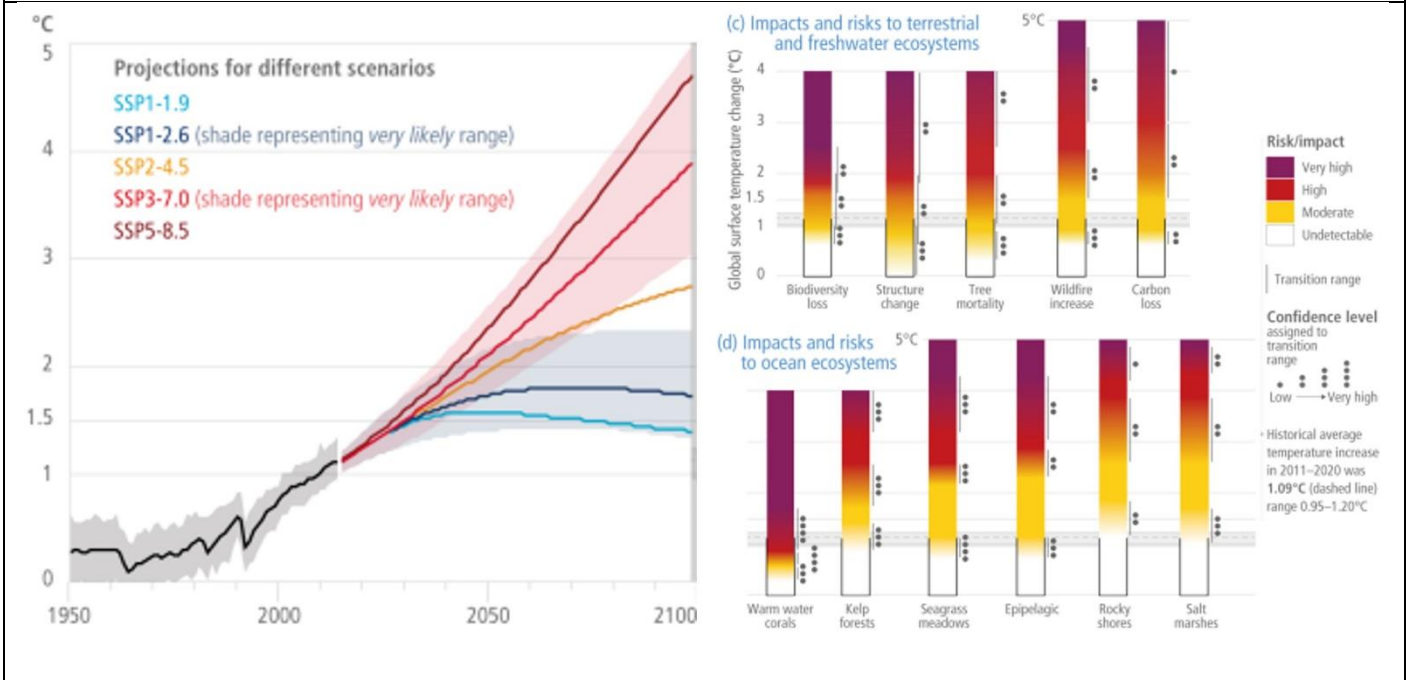
How we aim to tackle the Estuarine Netting pressure

Having bought out one of the netting stations to protect salmon from potential commercial exploitation in 2024, we are yet to see if the other netting stations are to be fished in the future. As the estuarine netting stations have the potential to catch fish from various river stocks (not just the Ness) we will monitor this situation closely. It may be possible to update the jurisdiction of these netting stations and implement conservation agreements to stop the taking of fish (apart from for scientific research purposes) with help from Marine Directorate and Ness Fishery Board.

5.6 Climate Change

Climate change is happening and we are seeing the impacts of this around the world. The latest [IPCC report](#) highlights how the environment is changing more quickly than originally predicted as we approach various tipping points. Our behaviour as a species **now** will determine the fate of many others, including that of the Atlantic salmon.

Figure 12: Global surface temperature change. Increase relative to the period 1850-1900. Extract from ‘Summary for Policy makers’ p16. IPCC February 2022.



Climate change is already affecting marine survival of salmon and sea trout through changes in ocean currents (for example warmer water temperature in the North Atlantic is reducing food availability, and fish are having to spend longer at sea before reaching a suitable return size [26]) but changing climate is also affecting the freshwater environment too through increased redd wash-out, increased thermal stress and disease, lower dissolved oxygen levels, water scarcity, and changes to invertebrate lifecycles etc.

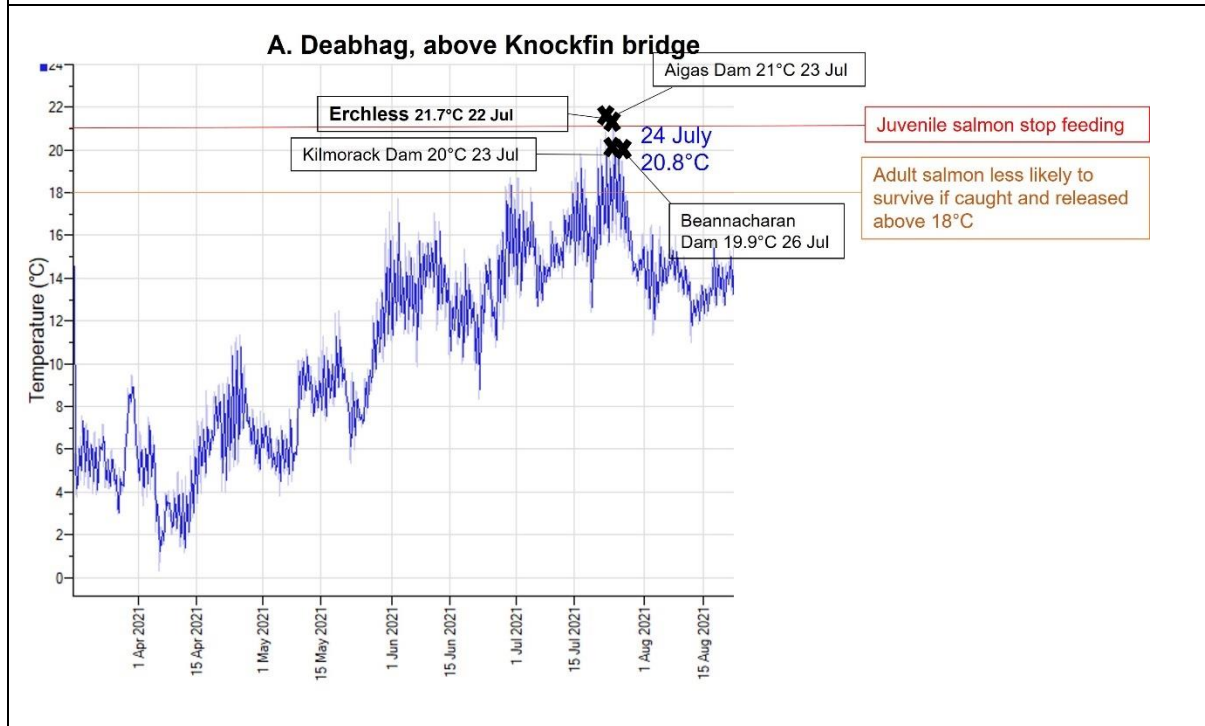
Fish and invertebrates like it cold, however recent years have seen high river temperatures in the catchment and water scarcity across Scotland, see [Figure 13](#).

Historical drainage of moorland has increased the volume and speed of run-off, leading to more erosive spates and loss of peat, soil, and reduced water retention.

The MDS led Scottish River Temperature Monitoring Network (SRTMN) programme of research has allowed a model of river temperatures in Scottish rivers to be developed which identifies where rivers are most sensitive to climatic change and rising temperatures [8].

BFB run three calibrated temperature loggers, one on the U. Misge near the top of the R. Farrar, one on the A. Deabhag, near the top of the R. Glass, and another downstream of Cruives on the R. Beaully. All are in the accessible reach to salmon and sea trout. Other temperature data is recorded at the dams and at SEPA gauging stations.

Figure 13: Graph showing 2021 highest temperatures in the catchment (at monitoring sites only). Temperatures will have been higher than this further up the catchment in small burns, and are on the increase.



How we aim to tackle the Climate change pressure

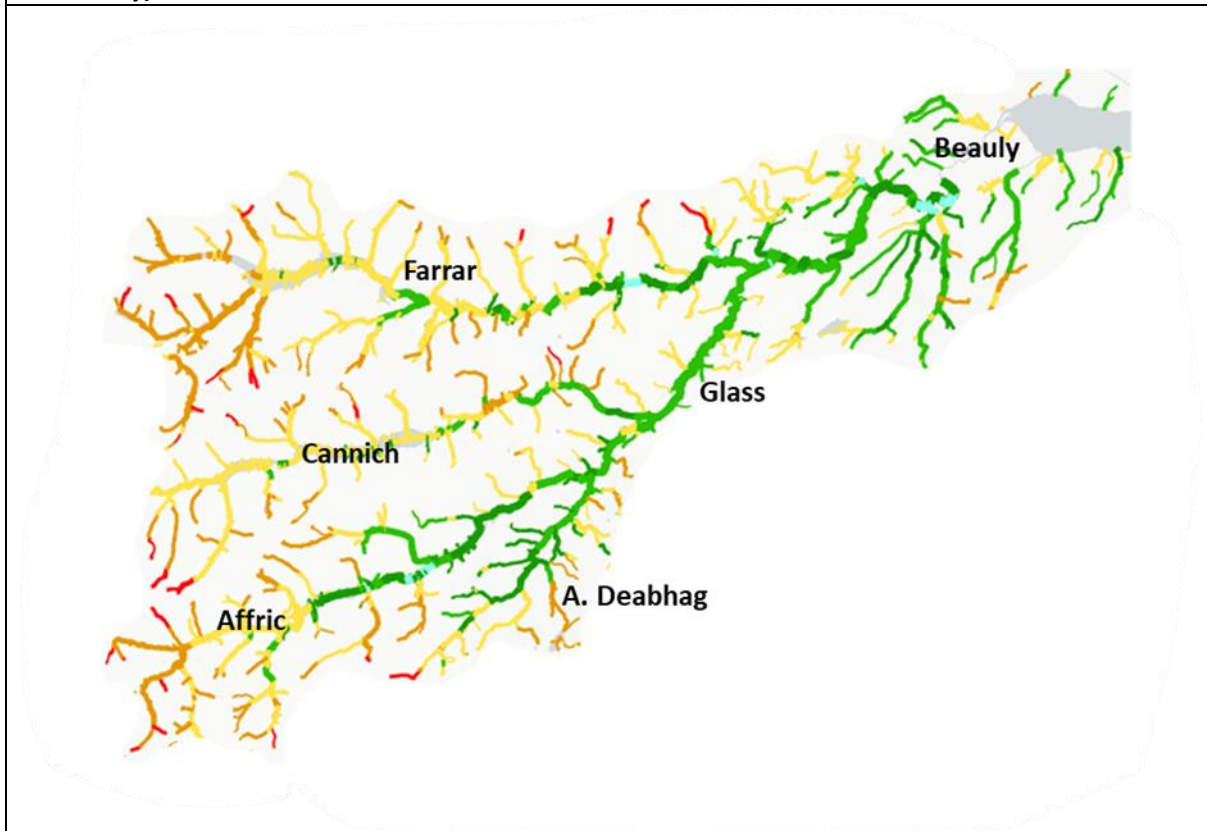
-Our Conservation Policy for anglers includes a temperature element. Anglers should stop fishing if water temperature reaches or goes above 18°C.

-Riparian Tree Planting. Native, deciduous riparian trees (of local origin) can help to keep rivers cool as well as bringing multiple benefits if planted in the right place:

- 1) Shade helps keep water cool for salmon and sea trout. Marine Directorate have published maps of forecast temperature on the river network which highlights priority areas (especially at the top of the catchment) where we should be encouraging natural regeneration and/ or riparian tree planting.
- 2) Trees can help improve fish productivity in rivers, where salmon numbers have declined.
- 3) Root systems and large woody debris can alter flows and improve habitat for fish.
- 4) Wider biodiversity benefits.

BFB aim to encourage riparian tree planting by engaging with landowners and linking them up with sources of funding and support. BFB hope to continue working with Trees for Life and Riverwoods to help landowners plant trees and will use the SRTMN map to guide prioritisation of this work.

Figure 14: Map showing the Scottish River Temperature Monitoring Network (SRTMN), Management Priority Areas. **Red**=highest priority (high river temperature with high climate sensitivity).



- Continue temperature monitoring**, and gathering data from SEPA and SSE.
- Work with SSE, FMS and SEPA for **better strategic management of the water** resource.
- Encourage landowners to carry out peatland restoration i.e. drain blocking.
- Reduce the Board's carbon footprint**. Leading by example may encourage behaviour change in others. E.g. being conscientious when procuring kit and planning work activities to make trips efficient and worthwhile.

5.7 Lack of Nutrients?

Phosphorous is the limiting nutrient when it comes to freshwater productivity. The balance of this in relation to Nitrogen is important in determining what ecological community exists in the river.

Apart from natural processes, changes to land-use and vegetation since the last ice age (especially at the top of catchments where high deer numbers are prevalent and natural tree regen has been suppressed) is a cause of less nutrients in the freshwater environment [15].

Salmon are key vectors in transferring marine nutrients to the freshwater (and wider) environment when they die after spawning. As adult salmon numbers have declined, it is thought that nutrient levels in the upper catchments of rivers has dropped.

The reduction in nutrients over time has been shown to be the case using diatom cores from lochs e.g. Loch Ness.

Deciduous, riparian trees are ultimately the best way of ensuring fish have enough food to eat, and restoring nutrients to more **natural** levels, however it may be the case that nutrient levels may need further restoration to improve productivity. Work done on the Conon [9] shows that artificial nutrient input can increase growth rates and reduce the time it takes for juvenile salmon to smolt, however there are other consequences associated with this type of work which would need to be considered carefully (e.g. resultant marine survival of smolts).

The water samples taken as part of NEPS in 2021 and 2023 were analysed for a wide range of determinants including pH, Nitrate and Phosphate and will make a useful starting point for looking at nutrient levels.

How we aim to tackle the Loss of Riparian Vegetation (lack of nutrients) pressure

-BFB will encourage deciduous, riparian tree planting or natural regeneration where possible in the upper catchment. This ties in with existing plans to tackle rising water temperatures in small burns.

-BFB hope to continue invertebrate monitoring (and possibly other monitoring e.g. diatoms or algae) at historic sites to look at nutrient and food availability to fish.

-BFB can look at existing information including the NEPS water sampling results (Nitrate and Phosphate) and see if any sediment core work has been done in the Beaully catchment, as a start to seeing what nutrient levels could be aimed for.



The R. Farrar at Neaty burn confluence, riparian tree cover providing shade and invertebrate prey

5.8 Angling

Angling funds Atlantic salmon and sea trout conservation in the catchment through the levy issued to proprietors. Angling is also important to the local economy. Angling, although an essential part of salmon and sea trout conservation can impact the survival of the fish once released back to the river if not done responsibly.

Angling pressure on fish in the Beaully catchment is thought to be relatively high when compared to other catchments due to the relative location of Kilmorack dam in relation to the catchment's biggest rod fishery, the Lower Beaully Fishing Syndicate (below the dam).

FMS produced updated Catch and Release guidance in 2025 which is available on our website.

How we aim to tackle angling pressure

BFB produce an updated Conservation Policy at the beginning of each season to encourage best practice in anglers to protect fish (see [website \[1\]](#)).

The policy promotes:

- Catch and release where possible. In 2023 the recorded release rate was 97%. The Conservation Policy aims to protect spring fish and female fish in particular.
- Fish handling in the water only
- The use of barbless hooks and other fish friendly tackle
- The cessation of fishing if water temperatures reach 18°C to protect fish from undue stress (introduced in 2022).
- Work with SSE to ensure fish passage is maintained throughout the migration period.



Beaully Angling club anglers

5.9 Other pressures

Diffuse pollution

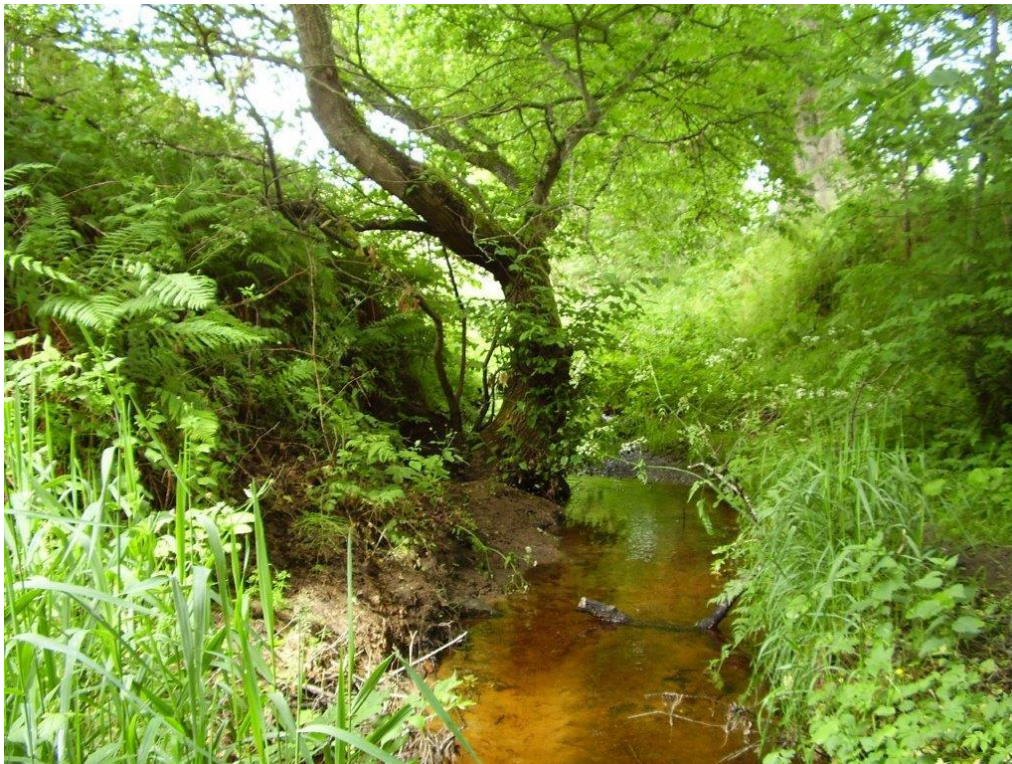
Diffuse pollution refers to low level pollution across a wide area i.e. elevated nutrient levels, silt release etc. Water quality is generally of a high standard in the catchment however there are a few areas where cattle and sheep are eroding the banks of the river and small watercourses. The silt released has the potential to clog and cause compaction of spawning gravels in the long term. When significant, poached banks are in breach of SEPA's General Binding Rules [12].

During the high flow event at the end of December 2024 it was noted that the mainstem river Beaully was running like 'hot chocolate' (i.e. cloudy rather than clear) below where Belladrum burn comes in. This is an unusual occurrence but highlights the particular problem of diffuse pollution in the Belladrum sub-catchment.

How we aim to tackle the Diffuse Pollution pressure

-BFB aim to work with farmers to encourage fencing off of riverbank in key areas, or alternative stock feeding/ watering regimes. BFB want to encourage participation in Agri-Environment schemes or changes in land-use e.g. R. Glass above Cannich, Kilmorack, Belladrum sub-catchment, Bridgend burn, Tomich burn and Redcastle burn.

-BFB aim to carry out a walkover of the Belladrum sub-catchment to highlight problem areas and talk to farmers. A funding application may then be submitted to fund specific fencing or other mitigation (e.g. solar powered water pumps to reduce direct livestock access to the burns) as existing funding schemes are very limited.



Sand deposition on Bridgend burn (historically a sea trout burn)

Point source pollution

Overall water quality is good in the catchment however pollution incidents do occasionally occur due to accidents.

How we aim to tackle the Point Source pressure

BFB have fish monitoring sites up and downstream of key operations in the catchment (e.g. Sewage treatment works) so that the impact of any accidents can be assessed appropriately. BFB continue to add to these. All pollution events involving dead fish are reported to SEPA and investigated.

If significant point source pollution is found then BFB contact the person responsible to make them aware of the potential impact they are having on fish.

Development*

Development (e.g. windfarms, hydro-schemes, Over-head lines, forestry) in the wrong place or constructed badly can have severe consequences for salmon and sea trout, through the pollution of water courses. The potential impact of **off-shore windfarms** on adult salmon and sea trout migration routes is currently unknown due to a lack of baseline information and the construction of Beatrice windfarm (operational since June 2019) and further planned windfarms ('Moray East' and 'Moray West') on the Smith bank (feeding ground) in the Moray Firth is a concern. Impacts are likely to include changes in currents and tidal flow, changes in benthic sediment composition and loss of nursery habitat (with impact on prey fish- sand eels, sprat, herring), noise and vibration effects, electro-magnetic changes from cabling with potential impact on salmon navigation.

The catchment is host to several commercial **forests**. Bad forestry practice can result in negative impacts on fish through the silting of riverbeds, overshading, and acidification.

How we aim to tackle the Development pressure

-BFB will continue to respond to planning applications when consulted and provide advice to developers and consultants to help protect salmon and sea trout.

-Work with FMS to channel funding from off-shore wind-farm development to fund research on the potential impact of off-shore windfarms on salmon and sea trout.

-BFB aim to tackle **Forestry** pressure by inputting into the planning process and stipulating that foresters should adhere to the [UK Forestry Standard \[5\]](#) on water quality and biodiversity. BFB generally have a good relationship with [Forestry Land Scotland](#) and engage with them when it comes to invasives control or requesting access to survey sites.

-Riparian, deciduous, native trees can have positive impacts on fish through shading (to buffer rising river temperatures) and nutrient input so it is important to engage with local Long Term Forest Planning to see if any improvements can be made for the river at the start of the process.

Trawling- OurSeas

Trawling of the Moray Firth damages the seabed and nursery habitats of salmon and sea trout prey. Many coastal fish stocks have collapsed leaving less food for sea trout (and salmon).

How we aim to tackle the Trawling pressure

We are an official supporter of the [#Ourseas](#) initiative who work to get the 3 mile limit re-instated to protect the inshore fisheries across Scotland.

Invasive Non-Native Species (INNS) and Biosecurity

Increased mobilisation of people has led to the increased probability of invasive non-native species (INNS) being accidentally (and intentionally) introduced to the catchment. INNS damage the environment, the economy, health and ways of life.

Although the presence of INNS plants does not appear to have resulted in silting up of spawning areas yet, INNS are an emerging pressure and action to eradicate them now will mean that we do not face an impossible (and very expensive) task in the future. BFB is in a fortunate position where invasives CAN be eradicated before it's too late. Having set up the Beaully Balsam Bashers in 2021, we are seeing a reduction in the distribution of Himalayan balsam and Japanese knotweed across the catchment, however Skunk cabbage distribution is increasing.

BFB are dealing with Mink and Invasive plants through the help of the [SISI project](#) and our SISI Project Officer however BFB also need to be vigilant about other invasives and fish diseases that are not necessarily visible e.g. *Gyrodactylus salaris*.

Originally from E Russia, and introduced to W Russia, Pink salmon in Norway experienced a sharp increase in numbers and were recorded on the Beaully for the first time in 2021. Although seeming to have a preference for larger river systems, and with no evidence of homing behaviour, they are likely to become more frequent summer visitors to the River Beaully in the future.

How we aim to tackle the INNS and Biosecurity pressure

-BFB works to our [Biosecurity plan \[20\]](#). This includes working with anglers and kayak companies to encourage the proper drying and disinfection of kit if previously used in other catchments.

-All Invasives work is currently funded by the Scottish Invasive Species Initiative which is due to end in March 2026. BFB intend to participate in any future national invasive projects. BFB aim to tackle invasive plants from the top of the catchment to the bottom, and BFB aim to include local volunteers to help carry out this work. i.e. by supporting the Beaully Balsam Bashers. A key part of delivering this work involves having staff and volunteers trained in herbicide application.

-BFB also aims to keep records of all known locations of invasive plants and monitor progress of the work being undertaken (through kayak surveys, drone work and fixed-point photography).

-Work to remove Pink salmon (under licence) if spotted in the Beaully.

- Encourage landowners to control rhododendron adjacent to riverbanks through Forestry Grant Scheme etc. e.g. Erchless and Beaufort.

See [Appendix 2](#) for known Japanese knotweed, Himalayan Balsam and Skunk Cabbage locations.

Barriers

Access to suitable habitat is a key requirement for salmon and sea trout to complete their lifecycle. BFB and SEPA keep a record of known fish barriers in the catchment. The high impact, man-made barriers identified do not seem viable for remediation in a cost: benefit analysis (cost: habitat area opened up). None of the known barriers come close to blocking >1.5km of habitat and so would not qualify for [Water Environment Funding](#). An alternative funding stream may be through [OpenRivers](#).

Temporary debris blockages occur across the catchment and it is important that these are dealt with ahead of spawning time especially in the Belladrum sub-catchment.

The three hydro dams in the catchment are fitted with Borland Lift fish passes. Since 2021 they have operated 3 times daily (up from the 2 per day prior) and this is written into the CAR licences, but there are occasional breakdowns caused by mechanical faults (e.g. August 2020). SSE are generally quick to respond to any fish passage issues. Based on temperature monitoring and general observations, it does not seem that extending the period the fish passes are active would provide any further benefit to fish.

The effect of the dams on the migration of other species is unknown, although there have been a few observations in relation to silver eels in the autumn that have evidently gone through the turbines and not survived. The passage of glass eels, elvers and eels is important for the overall function of the freshwater environment. A lack of these native fish may put increased pressure on juvenile salmon from predation etc.

How we aim to tackle the Barriers pressure

- Investigate if night time lifts for sea trout is necessary at the hydro dams.
- Carry out debris clearing ahead of spawning time in the catchment tributaries (e.g. Bridgend, Belladrum sub-catchment, Erchless, Eskadale, Home burn) with relevant proprietors (e.g. LBFS ghillies).
- Assess the bridge apron at Bunchrew to see if sea trout passage could be improved using soft engineering/ wooden structures.
- There is a bridge apron (low impact barrier) on the Allt na h-Innse Creagaich (tributary of the Farrar) which could be eased. Despite salmon spotted spawning in past years, 250m could be more easily accessed with simple improvements. Highlighted in the previous FMP.
- Continue identifying and assessing barriers using SNIFFER2 methodology as they are discovered.
- Signpost landowners to appropriate funding, support barrier removal work through fish surveys.
- Continue gathering eel data during electro-fishing surveys and observations in the autumn. Analyse fish pass photos. If a problem is suspected then mitigation could be implemented e.g. explore options of improving upstream glass eel/ elver passage through the Borland fish lifts, explore options of improving downstream eel passage above the dams e.g. floating rafts could be installed upstream of dams to then transport the eels downstream but this might not be effective due to adult eel behaviour during migration.

Beavers

The Beaully catchment is identified as a priority catchment for beaver release by the Scottish Government and so NatureScot are likely to receive licence applications to release beavers into the catchment over the coming years. The first was received in January 2025 and was an application by Forestry Land Scotland to release beavers into G. Affric. The second is anticipated to be in February 2025 by the Abriachan Forest Trust. The proposed site sits at the top of Moniack coastal burn and near the head of Belladrum burn.

Although not strictly a pressure (Atlantic salmon and beavers [*Castor fiber*] co-evolved, with beavers and their predators being a natural part of the ecosystem prior to them being hunted to extinction before the 16th century), our perception of what constitutes a 'healthy' river system is influenced by what we are used to witnessing in current times. Although there are beavers living in the catchment already, we are not used to seeing their broad effects on the landscape. Conversely, we are accustomed to the current status and distribution of salmon and sea trout populations. The planned translocation of beavers into the catchment (as a wider governmental tool to reduce the impacts of national biodiversity loss, under the [Beaver Management Strategy](#)) may affect the distribution of salmon and sea trout in the catchment.

The [Glen Affric, River Glass and Beaully Catchment Feasibility study](#) (2022) highlights areas of beaver habitat and suitable gradient for damming in the Beaully catchment. Based on the available evidence, we may experience various conflict in relation to salmon and sea trout, specifically:

- A loss of riparian trees
- A loss of spawning and fry habitat caused by damming and creation of wetland
- Undermining and erosion of riverbanks with possible silting of salmonid spawning substrate
- Possible fish migration issues

We anticipate the main interaction to be between beavers and sea trout as damming can occur in burns <6m wide of low gradient. Through consultation, we have highlighted Black burn (tributary of Culburnie burn, and the Allt Coillte (a key substrate provider to the R. Cannich) as areas we would wish to see protected by licence conditions. Brown trout are likely to benefit from the presence of beavers. An expected increase in abundance of invertebrates due to the creation of wetland may have indirect benefits to salmon but this is yet to be documented in Scotland.

Advice and [mitigation](#) measures are available on a case-by-case basis through NatureScot, and Trees for Life employ a Beaver Officer to implement mitigation. Please see [Briefing note: Beavers, Atlantic salmon and Sea trout](#) for more information.

How we aim to work with Beavers in the catchment

We aim to work with proprietors and the Beaver Officer to keep burns clear/ remove dams in the lower-middle reaches of burns ahead of the fish migration period in line with NatureScot mitigation guidance.

- We will work with external bodies (e.g. NatureScot, The Beaver Trust, Trees for Life, UHI, Forestry Land Scotland, Abriachan Forest Trust) to better understand the interaction between beavers and fish.
- We will provide comments on local consultations/ beaver translocation applications. We will engage with national consultations on the Beaver Management Strategy through FMS.

6. BEAULY FISHERY BOARD PRINCIPLES

The BFB have a set of principles to guide their work, they include:

- Putting wild fish first.** Without fish there is no fishing, and less funding to carry out our work.
- Aligning with national guidance and best practice.** Working with the system will allow BFB to get more work done whilst getting the best for the Beaully catchment. It also gives BFB an opportunity to influence the national agenda, through FMS. Looking outward (as well as inward) also allows BFB to tap into a wealth of resource that can help inform our work and may lead to more research being done in the Beaully catchment.
- **Long term thinking.** Management decisions BFB make now will affect the future viability of Atlantic salmon and sea trout in the catchment, so we have to be responsible.
- **Putting fish in the wider context** of river ecology and landscape. Fish do not live isolated from their environment, they are inter-connected and affected by the surrounding land-use and in-river processes.
- Working with operators** (and other partners) to get the best for the river and fish. There is much to be gained from good working relationships, especially as we are a small organisation.
- Making evidence-based decisions.**



Ex- Chair of the board with SSE staff at Loch Monar 2020

7. PEOPLE: COMMUNITY ENGAGEMENT, PARTICIPATION AND HERITAGE

BFB recognise the large part that local **people** can play in securing the future of the river, fish and fisheries, the necessity to foster future generations' connection with the river, and that the river sits in the wider landscape rich in history and cultural heritage. BFB also benefits the local community as fishing contributes significantly to the local economy and we have an opportunity to help upskill local people (e.g. through traineeships etc).

As a key part of the board's funding is through angling which is in itself in decline, BFB needs to encourage responsible angling in the next generation so we can continue to protect salmon and sea trout in the catchment and foster future stewards of the river.

In 2022 the board hosted a Working with Rivers Trainee and carried out an Oral History Project to tap into the wealth of local knowledge on the river. Recordings are accessible and archived with Am Baile, and the [Oral history report](#) is available on our website.

The emerging pressures on the river are often too big for just BFB to deal with alone so volunteers and the local community can help us achieve our objectives whilst everyone benefits from a broad range of positives e.g. sense of community, well being etc.

We aim to continue promoting community engagement, participation and link to the catchment's heritage through:

- Involving volunteers in BFB's work (e.g. smolt trapping, electro-fishing, invasive species control).
- Supporting our Scottish Invasive Species volunteers (including the Beauly Balsam Bashers and Mink volunteers).
- Annual Public Meetings to ensure the public and those working on the river (e.g. ghillies) have the opportunity to engage with the board's work.
- Ensure good communication between board members, proprietors, anglers and the local community. i.e. regular meetings, email updates, webpage and Facebook page updates.
- Work in schools/ with youth development.
- Support youth angling (e.g. BAC youth anglers)
- Encourage better connection between locals and the river e.g. there is potential for opening up the river near to the Priory and putting in interpretation and better access.
- Exploring the future of the Ness and Beauly Fishery Trust.



Beauly Balsam Basher volunteers 2021

8. MONITORING METHODS

Monitoring is important so that BFB has evidence on which to base management decisions. Ideally monitoring is linked to an improved management outcome.

Fish Counts continue to be a key source of information regarding the number of adult returners and **BFB will continue to work alongside SSE as they improve the accuracy of their fish counts.**

Rod catch in combination with angling effort provide data on adult salmon number, size and behaviour. This data (along with fish counts) is used by Marine Directorate to set the conservation grading for the river. Scales taken by anglers can tell us the life history and age of fish compared to their size. Since 2021, in conjunction with the Lower Beaully Fishing Syndicate ghillies, scales are collected as part of the National Adult Sampling Project and analysed by Marine Directorate (MD). **BFB will continue to collect scales from anglers and analyse as time permits.**

Electro-fishing can show us where spawning is occurring and how parr numbers (related to smolt output) are changing over time. This data is crucial in highlighting potential issues, monitoring any management changes and giving us evidence to base conversations on. **BFB will continue engaging with the National Electro-fishing Programme for Scotland whilst this leaves capacity for other more focused electro-fishing to be carried out.**

Smolt monitoring Whilst this helps improve the management of the river (flows for smolts, improved mitigation at dams) and dependent on staff resource **we shall aim to continue smolt trapping.** BFB aim to increase trap efficiency at Erchless with the aim of designing a smolt study. BFB will review temperature monitoring data to see if this can be used to predict smolt run timing on the Glass and Farrar. BFB will work with LBFS ghillies to improve the reporting and monitoring of possible smolt mortality in relation to the dams.

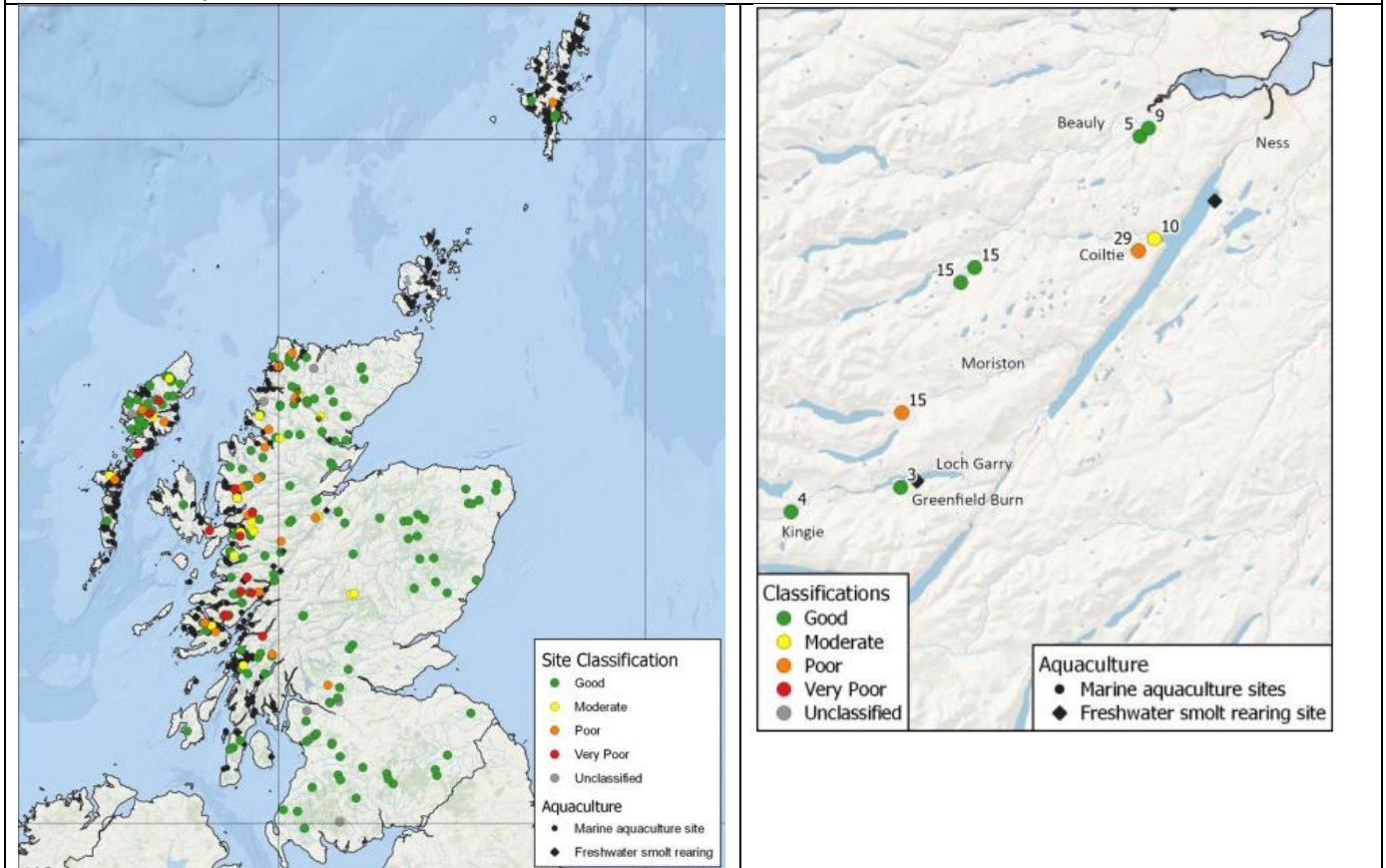
Increasingly, genetics are proving to be useful as more genetic markers are used to identify various inherited life-history traits of fish e.g. temperature resilience. Genetics can reveal areas we need to focus our efforts and the true diversity of fish present that require protection e.g. location of multi-sea-winter or spring fish spawning.

The Farrar genetics project ran 2021-2024 and showed there to be at least >243-272 inferred parents, no genetic sub-structuring, and an increase in early migrating fish at the top of the Farrar relative to the bottom.

Recently, genetics samples have been used to identify the fate of Beaully smolts out at sea (Matt Newton, MSD fish tracking project)!

The National Introgression Programme for Scotland (NIPs [6]) sampling (carried out whilst undertaking NEPs work) has shown that the Beaully catchment is less affected by genetic introgression from aquaculture than the west coast (no individual sampled fish were classified as a hybrid).

Figure 15a: Site classification of the genetic status of sampled wild salmon across Scotland in relation to aquaculture production facilities in the marine and freshwater environments. **Figure 15b:** Genetic status in the Ness and Beaully catchments [6].



Drone work is also developing. Both staff are now legal to fly drones in the catchment and survey work will aim to include substrate surveys in relation to hydro dams, redd counts, as well as invasive plant surveys. Ultimately a drone could be used to aid bailiffing (with thermal imaging) and a wide range of other things e.g. illustrating the changes to tree cover in the upper catchment, thermal mapping, smolt migration etc.

Predator monitoring will continue to inform licence applications where this is an efficient use of time. (See 'Predation' Section).

Wider ecology monitoring. Invertebrate monitoring can give BFB an insight into what food is available to fish. This may in future inform any potential nutrient restoration or tree planting work. Algae can be useful indicators of nutrients and other pressures, and identification will be done on an ad-hoc basis.

BFB will generally support and encourage external research to be conducted in the catchment to gain useful insight into the ecology of the river and will aim to maximise the value of any data gathered. **Generally, BFB will aim to participate in national and wider projects where possible.**

Beaully Catchment Fishery Management Plan v2
2022-2027

9. WORK PLAN

The following tables show the actions planned to be carried out by BFB over the next 5 or so years in order of priority. Please note that the work programme may change based on work opportunities and developments that may arise so a degree of flexibility is essential.

Title	Description	Pressure	Prior	Objective
Effective Bailiffing across the catchment	Bailiffing has found evidence of illegal fishing throughout the catchment. At the end of each season a review is conducted, highlighting areas to work on	Illegal Exploitation	High	Continue employing at least one bailiff over the season (and a Seasonal bailiff if necessary/ budget allows). Work on implementing the recommendations highlighted at the end of each season. Work with Marine Directorate Compliance and FMS.
Improve smolt survival at Aigas and Kilmorack dams	If the G1 turbines stop running during the smolt run then smolts may get trapped in the gate slots, so working with SSE on an agreed flow protocol, and monitoring smolt run timing can improve smolt survival during this sensitive period.	Obstacles to Fish Passage	High	Continue to review and improve the smolt flows and rescue protocol with SSE and SEPA on an annual basis or as necessary. Monitor smolt run timing and water temperature to aid prediction of when smolts will run as staffing allows. Mark-recapture work to be done where possible to assess trap efficiency. Adapt smolt monitoring as knowledge improves. Work with LBFS ghillies and anglers to improve reporting of possible smolt mortality in association with the dams.
Smolt study in relation to hydro dams	Currently smolt behaviour and survival in relation to all dams in the catchment is unknown. Sub-lethal mortality at different turbine loads is also unknown.	Obstacles to Fish Passage	High	Assess smolt behaviour and survival in relation to the dams using acoustic tagging OR use PIT tagging to assess sub lethal mortality by looking at adult return rates.
Sediment management in relation to hydro dams	Spawning habitat has been found to be poor downstream of Beannacharan and Kilmorack dams due to a lack of sediment management. There is a need to develop sediment management plans or projects to ensure good habitat exists downstream of dams in the long term.	Instream and Riparian Habitat	High	Complete sediment management projects on the R. Farrar and R. Beaully in liaison with SSE and SEPA and/ or get mandatory sediment management in the hydro CAR licences.
Reduce predation pressure from birds	The presence of goosanders, mergansers and cormorants is natural, although their predation impact may be exacerbated by climate change, at the dams, or where fish habitat is poor.	Predation	High	Continue bird monitoring to support the bird licence application if this is an efficient use of time. Support proprietors to implement scaring. Continue to work with SSE on improved mitigation at dams to reduce the impact of man-made barriers on predation of smolts.
Reduce predation from seals	Kilmorack dam exacerbates pressure from specialist seals. Continue deterring and reporting seals to aid future licence applications.	Predation	High	Reduce predation of salmon and sea trout from specialist seals. Understand the impact seals are having.
Respond to planning consultations to protect the river from inappropriate development	Poor development can pollute watercourses and affect the behaviour of fish. Development in the Beaully catchment may include: Forestry, hydro-schemes, on-shore and offshore wind farms etc	Multiple	High	Respond to new Planning consultations, using best practice guidance, GIS information and local knowledge and data
Ensure adult fish passage- beavers	Access to suitable habitat is a key requirement for fish to complete their life-cycle. Beavers are native, however mitigation may be necessary if they come into conflict with sea trout and salmon. We will respond to translocation consultations.	Obstacles to Fish Passage	High	Work with proprietors to deal with debris blockages on tributaries ahead of spawning time in line with Naturescot and SEPA guidance. Provide comments on consultations/ beaver translocation applications.
Ensure continued sediment management at SSE infrastructure	Sediment management is required to ensure there is suitable fish habitat further downstream	Instream and Riparian Habitat	High	Continued liaison with SSE is required for sediment management at the spout and intakes

Beauly Catchment Fishery Management Plan v2
2022-2027

Title ▼	Description ▼	Pressure ▼	Prior ▼↑	Objective ▼
Report pollution incidents to SEPA	Report pollution incidents to SEPA	Water Quality	High	Continue reporting incidents to SEPA and providing advice to those responsible for polluting.
Improve adult fish passage-SSE	Access to suitable habitat is a key requirement of fish to complete their life-cycle and delays can impact spawning success.	Obstacles to Fish Passage	High	Request an extension to the Borland fish lift operation period if water temperatures are sufficient (>5°C) for adult salmon and sea trout migration. Investigate if night time lifts for sea trout are necessary.
Carry out Electrofishing surveys	Electro-fishing tells us about how fish are using the catchment and highlights problems we can investigate and fix.	Multiple	High	Continue participating in the National Electro-fishing Programme for Scotland. Also carry out more focused investigative electro-fishing in the catchment. If NEPs does not get funded then continue catchment wide monitoring. Re-visit historic sites as work programme permits.
Collate annual fish counts	Accurate fish counts provide valuable information about adult return, and are useful for proprietors.	Multiple	High	Continue working alongside SSE whilst they improve the accuracy of the fish counters.
Collate annual rod catch	Rod catch with angling effort can provide useful information on salmon size and behaviour.	Multiple	High	Continue collecting rod catch from proprietors (including angling effort) and liaising with MS when setting the Conservation Limit for the river.
Fish habitat relative to hydro dams	At various locations downstream of hydro dams throughout the catchment there appears to be a lack of spawning substrate and stable/ compacted conditions (e.g. R. Affric, R. Cannich, R. Farrar, Lower Beauly). Currently there are no sediment management plans in place at the dams. The function of other structures on the river in terms of sediment movement would also need to be considered (e.g. Cruives structure, Lower Beauly).	Instream and Riparian Habitat	High	Complete the reporting of the 2022 Cannich and Affric walkover. Carry out walkovers of the R. Farrar and Lower Beauly (2023-2024) and produce report. Review old (pre-dam) photos and aerial photos of substrate. Gather electro-fishing data and run this through NEPs tool to do a statistically sound hydro Vs non-hydro comparison. Discuss findings with SEPA hydro-morphology team. If a problem with sediment management at the dams is likely discuss options with SSE and SEPA.
Tree planting or regen in upper catchment	Water temperatures are predicted to increase, especially in small, high altitude burns. We can encourage landowners in the high priority management areas (SRTMN map) to plant riparian trees (native, deciduous, of local origin) or allow natural regeneration	Water Temperature	Medium	Having hosted a landowner engagement evening (Feb 2022) with Riverwoods to highlight funding and support for landowners in the area, build on this through exploring further sources of local funding e.g. Erchless windfarm, SSEN community fund. Speak to all landowners in the high risk areas and link them up with funding where possible. Work with TFL project Officer to get tree plans and FGS applications submitted.
Strategic flow management	SSE have the opportunity to control river flows in the catchment, not just for hydro power generation but for wider ecological benefits (e.g. keeping spawning substrate uncompacted, smolt passage, adult passage and access to fish spawning habitat etc) to ease the pressure on fish. This is in line with SSE's biodiversity agenda.	Multiple	Medium	Work with SSE to help ease the pressures on fish and wider biodiversity through flow alteration.
Promote responsible angling	Angling supports the conservation of salmon and sea trout but must be responsibly done to avoid negative impacts on fish	Other	Medium	Ensure the Conservation Policy is updated each year to encourage responsible angling
Fence off river banks to reduce diffuse pollution	There are a few areas where eroded banks are releasing silt to burns and the river and diminishing habitat.	Instream and Riparian Habitat	Medium	Work with farmers to encourage fencing off river banks or alternative sheep and cattle management in key areas, including participation in Agri-environment schemes e.g. R. Glass above Cannich, Kilmorack, Belladrum sub catchment, Bridgend burn, Tomich burn, Redcastle burn.

Beaully Catchment Fishery Management Plan v2
2022-2027

Title ▼	Description ▼	Pressure ▼	Prior ▼↑	Objective ▼
Eradicate Japanese knotweed, Himalayan balsam and Skunk cabbage	Invasive plants occur throughout our catchment, we need to monitor and control them so they don't spread, as they could reduce riparian biodiversity and affect fish habitat.	Invasive Non-native Species	Medium	Treat Japanese knotweed and Skunk cabbage, and pull Himalayan balsam in a top-down direction in the catchment.
Eradicate Mink from the catchment	Mink occur throughout the catchment and damage biodiversity and eat juvenile salmon and trout.	Invasive Non-native Species	Medium	Eradicate mink from the catchment
Remove Pink salmon from the river	The interaction between non-native Pink Salmon and native Atlantic Salmon is little known. Pink salmon were first recorded on the R. Beaully in 2021.	Invasive Non-native Species	Medium	Work to improve reporting and remove Pink salmon (under licence) if spotted in the Beaully.
Improve biosecurity	We need to be vigilant of fish diseases and invasives we can't see (e.g. Gyrodactylus salaris)	Invasive Non-native Species	Medium	Maintain disinfection kits at the fishing huts. Encourage proper drying and disinfection of kit by anglers, kayakers and businesses.
Investigate the status of E Deanie burn	East Deanie burn has historically had low-no fry present, this is likely due to a lack of attraction flow due to realignment/ large silty alluvial fan, and there not being enough regulated flow in the burn.	Other	Medium	Electro-fish this burn to see if fry distribution has improved. Assess if hydro-morphology is the root cause for lack of few fry (past invertebrate sampling showed invertebrates were good)
Investigate if re-watering of the Farrar tributaries would increase area of fish habitat	Many tributaries of the Farrar are impounded for hydro, would any have the right gradient or habitat if re-watered?	Water Quantity	Medium	Assess if any of the Farrar tributaries would benefit fish significantly from their re-watering and discuss a way forward with SSE if necessary.
Ease Allt na h-Innse Creagaich bridge apron fish barrier	Allt na h-Innse Creagaich bridge apron maybe passable to fish in some flows but could be improved.	Obstacles to Fish Passage	Medium	Electro-fish u/s of bridge apron to confirm passability. If a problem is found ask SSE to ease through the installation of baffles or notched lip.
Buy out estuarine netting stations if they become available	Currently estuarine nets in the Inner Moray firth come under the jurisdiction of the Ness board although salmon caught at these fisheries include a majority of Beaully fish. Although these netting stations are not operated regularly, if a commercial interest were to take them over, hundreds of salmon may be caught. Longman station bought out in 2024 by NBFT.	Other	Medium	Buy out the netting stations in partnership with NBFT, Ness board and other parties.
Support 3 mile offshore trawling ban	Trawling damages the sea bed and key nursery areas of salmon and sea trout prey, e.g. Herring, pollack, sprats etc, also sea trout (especially) may be caught as by-catch. Although trawling does not occur in the Beaully Firth it does occur in the wider Moray Firth (E of Findhorn)	Other	Medium	Continue supporting the #OurSeas initiative to bring back the 3 mile offshore trawling ban.
Participate in National adult sampling	Accurate adult data and scale reading improves our knowledge of the life histories of fish returning to the river and can help answer questions such as "Do we have any repeat spawners?"	Multiple	Medium	Continue scale collection and analysis through the National Adult Sampling Project.

Beaulieu Catchment Fishery Management Plan v2
2022-2027

Title ▼	Description ▼	Pressure ▼	Prior ▼	Objective ▼
Water temperature monitoring	Useful for predicting smolt run timing, adult migration period, and peak summer temperatures	Water Temperature	Medium	Review whether temperature monitoring can aid smolt run timing prediction, inform fish lift operation period, inform our understanding of how hydro affects the temperature regime of the river, highlight if the current temperature regime could have adverse effects on fish.
Develop Drone monitoring	We aim to develop this over the next 5 years to support various work areas (e.g. bailiffing, invasives species monitoring, fish habitat, redd counting etc).	Multiple	Medium	Explore the use of drone survey work and mapping in the catchment, including: Substrate and redd distribution in relation to hydro-dams and sediment management, smolt migration, bailiffing/ thermal imaging of the Firth, water temperature mapping, Invasive non-native species (e.g. Pink salmon, Himalayan balsam, Japanese knotweed).
Ensure local engagement	Local people are important in securing the future of the river, and BFB are well placed to encourage engagement and to foster future stewards. We can learn from others.	N/A	Medium	Provide opportunities for volunteering (smolt trapping, electro-fishing, invasive species control). Supporting our SSSI volunteers (i.e. Beaulieu Balsam Bashers and Mink vols). Annual Public meetings to ensure the public have an opportunity to engage with the board's work. Ensure good communication between the board, proprietors, anglers and local community. Encourage angling.
Peatland Restoration	Healthy peatlands store carbon. Drained and damaged peatland release carbon and can cause poor water quality.	Water Quality	Low	Encourage landowners to carry out peatland restoration
Reduce our carbon footprint	As climate change is a main cause of salmon decline, we have a duty to work conscientiously and in line with our Environmental policy.	Multiple	Low	Work to reduce BFB's carbon footprint through responsible procurement, efficient work journeys, using the correct vehicle for the job, recycling etc
Explore what natural nutrient levels should look like	The decline in adult spawner numbers and land-use practice may have resulted in there being less nutrients compared to natural levels in the freshwater environment, and less productivity than previous	Water Quality	Low	Explore how present nutrient levels in the upper catchment compare to historic nutrient levels (pre-industrial). Look at relevant core sample info and NEPS water sampling results (Nitrate and Phosphate).
Invertebrate monitoring	The decline in adult spawner numbers and land-use practice may have resulted in there being less nutrients compared to natural levels in the freshwater environment, and less productivity than previous	Instream and Riparian Habitat	Low	Assess the current availability of food to juvenile fish through invertebrate monitoring.
Assess predation pressure from fish	Currently little is known about the predation pressure from fish. Man-made alterations to the river may exacerbate this pressure. i.e. above hydro-dams.	Predation	Low	Collect information on Pike fisheries and large trout in the catchment e.g. Braulien estate.
Rhododendron control	Rhododendron can smother out native vegetation, and overshadow river banks	Invasive Non-native Species	Low	Encourage landowners to control rhododendron adjacent to river-banks through Forestry Grant Scheme etc. e.g. Erchless and Beaufort. Request in Forestry applications that Rhod is controlled.
Assess eel passage at the dams	It appears that eels can make it up through the lifts, but it is unclear how adult eels fare on their migration to sea through the Kaplan turbines.	Obstacles to Fish Passage	Low	Continue gathering eel data and observations. Assess if there is a problem and consider potential mitigation measures.

Beauly Catchment Fishery Management Plan v2
2022-2027

Title ▼	Description ▼	Pressure ▼	Prior ▼ ↑	Objective ▼
Genetics Monitoring	The Farrar fry genetics project has informed our understanding of how fish are using (and how many fish are spawning in) the river Farrar. Genetics samples taken from smolts at sea have been used to identify the Beauly as their natal river. Genetics are useful for highlighting vulnerable populations of salmon (e.g. spring fish spawning areas) and help inform potential management activities such as potential future restoration stocking.	Multiple	Low	Build on the FASMOF study to highlight if there are any locally evolved traits we should be aware of, or distinct salmon populations. Continue participating in genetics projects (e.g. National Introgression Programme).
Fresh water pearl mussel monitoring and re-invigoration	Currently the location and status of this key species is not well understood, although their lifecycle depends on juvenile salmonids. Re-invigorate population through glochidia harvesting and exposure to salmonid fry gills.	Water Quality	Low	Get access to existing survey data and if necessary/ time allows assess historic EFish sites for presence of Mussels/ wider locations on the Beauly etc. Carry out FWPM re-invigoration project.
Placemaking project to improve local engagement in the	Providing viewpoints along Riverside Drive with benches and interpretation could help the local community engage with their cultural and natural heritage.	N/A	Low	Seek funding and work with Beauly Community Trust to deliver viewpoints, benches and interpretation. This would encourage improved engagement with the river but would need ongoing maintenance to be done by a community group.
Deculvert Bridgend burn	Deculverting would reduce flooding of the Cnoc path and improve sea trout habitat.	Instream and Riparian Habitat	Low	Deculvert Bridgend burn
Ease Cannich Weir for improved trout passage	Liatrie weir prohibits brown trout migration and impacts the amount of available spawning habitat.	Obstacles to Fish Passage	Low	Remove the weir or improve fish passage.
Restoration stocking if appropriate	As adult salmon numbers decline, and other management tools are exhausted, restoration stocking may become an appropriate tool for the future	Multiple	Low	Stay up to date with restoration stocking projects and guidance to inform River Beauly management if necessary.

10. PARTNER ORGANISATIONS AND GROUPS

Thanks to the following organisations and groups for their ongoing support. They have been consulted in the formation of this management Plan and their comments either incorporated or included in [APPENDIX 3](#).

10.1 [Fisheries Management Scotland](#)



and Scottish Fisheries Co-ordination Centre

Fisheries Management Scotland (FMS) represents the interests of Fishery Boards and Trusts across Scotland. Both organisations encourage close collaboration, knowledge sharing, and development of their membership. They co-ordinate national projects on behalf of external bodies (e.g. Marine Directorate) and generally provide support across a wide range of topics relevant to Atlantic salmon and other fish species.

Scottish Fisheries Co-ordination Centre (SFCC) hosts the electro-fishing database, runs training courses, and develops useful tools for members etc.

FMS is the go-to organization for high level discussions about policy with Scottish Government, SEPA etc.

10.2 [SSE](#)



Scottish and Southern Energy (SSE) operate the hydro assets in the catchment. They fund a significant proportion of the board's full-time staff (Senior biologist and Fisheries Officer) which allows the board to carry out its duties in improving the river and protecting the fishery. SSE are also helping with smolt monitoring. The dams will be part of the landscape for years to come so we need to work with SSE to improve operations for the benefit of fish.

Apart from abiding by its duties under the CAR licences set by SEPA, SSE is in a unique position to manage the water resource strategically for fish and for the health of rivers, this is more the case than ever with the backdrop of climate change.

We need to work with SSE through FMS to push for better resource management across Scotland to maximise fish passage for all species (upstream and downstream) and buffer the effects of climate change. We also need to gather information as basis for discussions with SSE and SEPA to continue improving the conditions of the CAR licences.

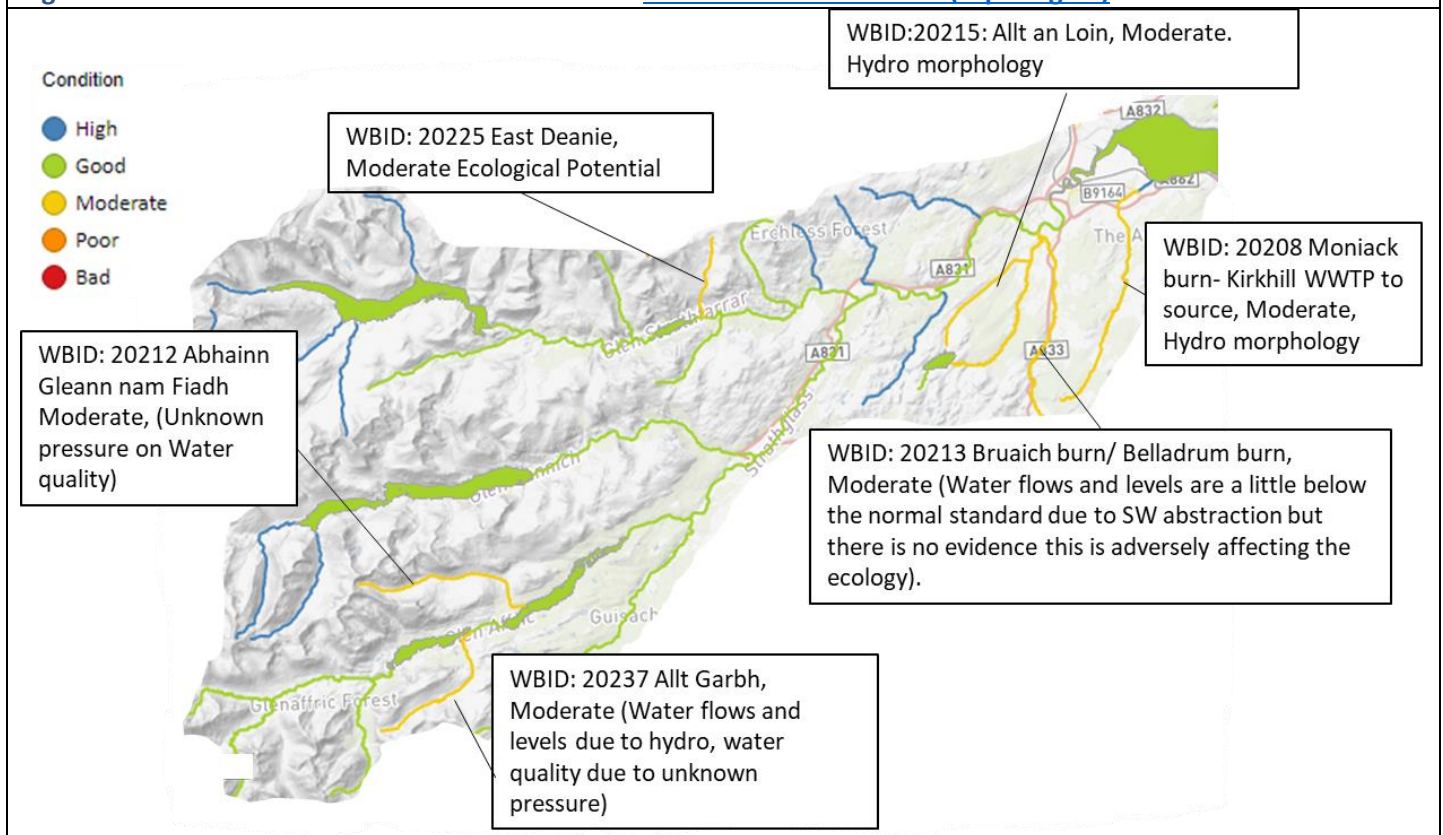
"SSE's hydro-electric assets in the Scottish Highlands means that it has a duty of care to ensure that any negative environmental impacts from its hydro stations are minimised. This duty of care dates back to an Act of Parliament in 1943 which stated: 'the Board should have regard to avoiding as far as possible, injury to fisheries and to the stock of fish in any waters'. 75 years on, this remains SSE's ethos... SSE recognises that to manage the environmental issues on each river effectively, it needs to operate in a collaborative way with the other interested parties on each river. SSE has set up partnerships with the District Salmon Fisheries Boards and Trusts... The Atlantic Salmon is an iconic species and attracts many visitors to Scotland. It justifies its protected species status and the efforts to do all we can to allow safe passage to and from their spawning grounds" ([SSE's 2018 Biodiversity report \[13\]](#)).



10.3 [Scottish Environment Protection Agency](#)

The Scottish Environment Protection Agency (SEPA) work to improve the water environment through the Controlled Activities Regulations and the Water Framework Directive. With the 2027 Water Framework Directive deadline looming, there is no better time to work with SEPA and wider stakeholders to push for improvements to the water environment and get improvements to CAR licences (e.g. fish passage at hydro dams, sediment management etc).

Figure 16: SEPA 2020 classification of water bodies [Water Classification Hub \(sepa.org.uk\)](https://sepa.org.uk)



Most of the high impact man-made barriers in the catchment are just below where burn gradients become steep so in a cost-benefit analysis it would not be worth easing barriers at Teawig (culvert), Black burn (tall weir), or Glass burn (bridge apron). The bridge apron over Bunchrew burn is worth further investigation as this burn could be important for sea trout. The bridge apron at Allt na h-Innse Creagaich (thought to be low impact) may also be eased. Although funding may not be available through the Water Environment Fund there may be other mechanisms to ease these barriers.

10.4 [NatureScot](#) **NatureScot** Scotland's Nature Agency Buidheann Nàdair na h-Alba

NatureScot is a public body who aims to protect and promote Scotland's natural heritage, whilst also encouraging related socio-economic benefits. The Beaully catchment does not contain any Special Areas of Conservation (SAC) for Salmon. NatureScot are the licensing authority for any mitigation in relation to beavers and administer various funds including the Scottish Invasive Species Initiative and Traineeships. NatureScot also fund the Scottish Invasive Species Initiative (SISI project) which BFB (through NBFT) are part of.

10.5 Marine Directorate and [Marine Directorate Science](#)



Marine Directorate are the statutory body responsible for consenting fishery management work in the catchment on behalf of Scottish government. They are also responsible for setting the Conservation Limits/ river gradings.

Marine Directorate Science (MDS) co-ordinate national fish monitoring projects. E.g. The National Electro-fishing Programme for Scotland, The National Adult Sampling Project, The National Introgression Programme etc. Information and other outputs from these projects (e.g. data analysis tools and reports) are useful in putting the Beaully into context with other rivers and the funding provided to carry out these projects enables BFB to carry out a higher standard and quantity of work, enabling us to learn more about what's going on in the catchment.

10.6 Neighbouring Fishery Boards and Trusts

Generally BFB have good working relationships with other Fishery boards and trusts through our engagement with the SFCC and FMS.



The Cromarty Fishery Board on the Conon catchment have a similar remit to us but on the Conon. We work together for effective bailiffing (joint patrols, intelligence), kit sharing, delivering the Scottish Invasive Species Initiative and SANDS angling development.



The Ness board have a similar remit to us but on the Ness catchment. We work closely with them on issues of bailiffing, netting on the firth, matters concerning the Ness and Beaully Fishery Trust, and SANDS angling development.



The Ness and Beaully Fishery Trust (NBFT) employed staff until 2019, and were the main conduit for work on the Beaully up until that point. The future of the Ness and Beaully Fishery Trust will depend on liaison between the two boards (Ness and Beaully) in 2022.

10.7 [Highland Environment Forum](#)



BFB are a partner of the Highland Environment Forum (HEF). HEF is made up of local interest groups who want to improve the environment and biodiversity across Highland in line with the local [Biodiversity Action Plan](#). The group exists to encourage better co-ordination and knowledge sharing between partners as many of us have similar objectives and can achieve more by working together.

10.8 [Our Seas](#)



BFB are a supporter of the Our Seas campaign. OurSeas is made up of a broad range of interest groups who are concerned about the collapse of fish stocks, and the result on coastal communities and businesses in Scotland. The main aim of the group is to improve fisheries across Scotland through the re-instatement of the 3 mile limit (ban trawling within 3 miles of the shore). Although the Inner Moray Firth is not trawled, parts of the Outer Moray Firth are (e.g. prawn trawlers operate past Findhorn and squid trawlers operate out of Fraserburgh). Trawling damages habitat for juvenile marine fish which are the food of sea trout and salmon. It is also possible that sea trout may end up as by catch ([Moray Firth Sea Trout Project Final report](#)).

10.9 [Highland council](#)



BFB's main involvement with Highland Council is through Planning. There is opportunity to engage with the council on a wider variety of issues (e.g. funding for placemaking projects, local policy and local Development Planning).

10.10 [Trees for Life](#)



and [Riverwoods initiative](#)



Trees for Life (TFL) has a vision “of a revitalised wild forest in the Highlands of Scotland, providing space for wildlife to flourish and communities to thrive”. We aim to work in partnership with TFL in delivering some of our riparian tree work in priority areas.

Riverwoods aims to create “a network of thriving riverbank woodlands and healthy river systems across Scotland”. We have already worked with Riverwoods and benefitted from their advice and support when working with landowners.

10.11 Proprietors

There are 14 fishery owners in the catchment, each with their individual interests but connected through fish and the river. The Board is made up of representatives of these proprietors and works with them to protect the fisheries.

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APPENDIX

APPENDIX 1- Data to illustrate relative pressures graph

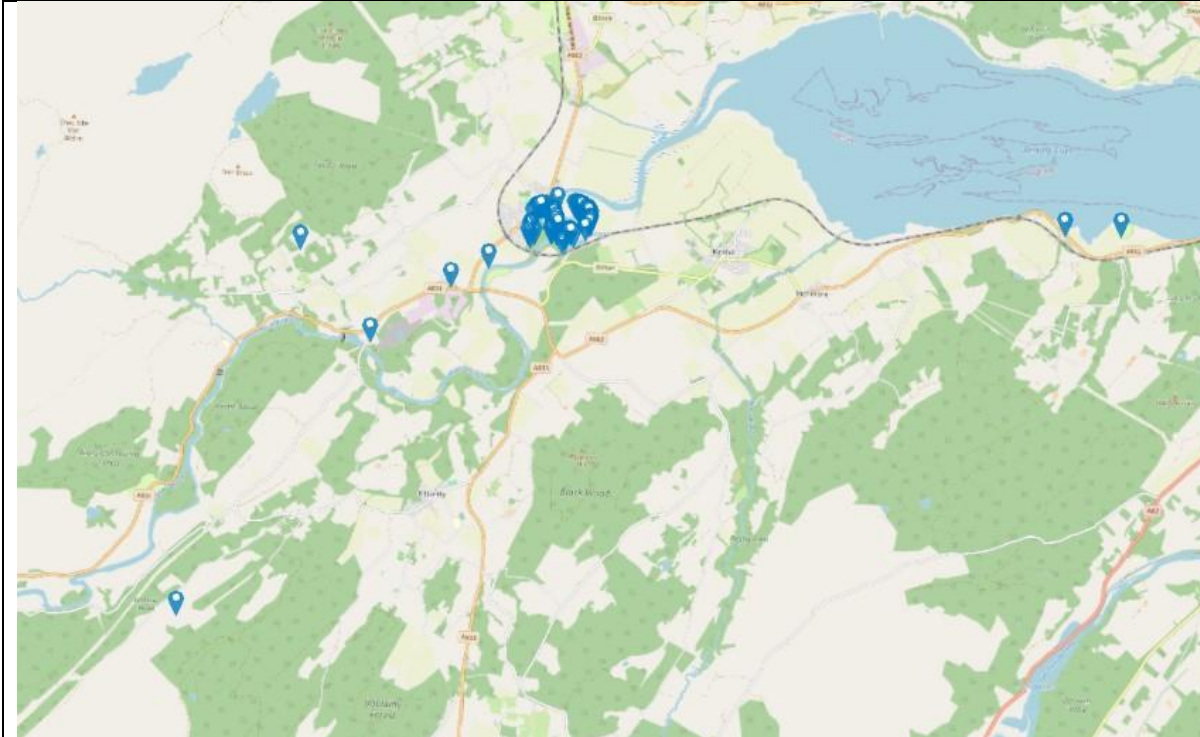
Pressure	Annual egg loss	Overall Comment	Adults in total	Comments
Climate change freshwater	0	Emerging	0	Serious impact forecast (SRTMN map).
Loss of riparian veg	0	Chronic, unknown	0	
Netting	42,340	Overestimate	29	Assume 100 fish could be taken from the last remaining netting station (545 fish last taken from netting stations in Beauly firth in 2012). NBFT found of 55 fish recorded, 16 (29%) ended up being in R. Beauly (Moray Firth Adult Tracking Project 2019). 29% of 100= 29 fish. 105850 eggs x 0.4= 42,340 eggs.
Poaching	43,800	Stable	30	60 incidents recorded in 2024. Assume total of 30 fish. 109,500 eggs x 0.4= 43,800eggs.
Smolt passage	21,900	Stable	15	Average peak number of smolts in gate slots 2020-2024= 297 smolts. Minimum estimate as excludes hold ups at Beannacharan, and just an approximate estimate from operator although smolts do seem to find their way out. Also does not include possible direct smolt mortality of going through the turbines (no observations or records for recent years). 297 smolts, 5% sea survival= 15 adults= 54,750 eggs x 0.4= 21,900 eggs
Hydromorphology	663,380	Emerging. Not reducing parr numbers so far.	332	Walkovers of R. Beauly and R. Farrar suggest Kilmorack- Belladrum burn (147935m2) and Farrar- confluence (280052m2) are depleted of spawning substrate. Electro-fishing surveys suggest parr output does not appear to be affected yet, but action should be taken to maintain resilient salmon populations in the future. Walkovers of Cannich and Affric rivers inconclusive, historic photos required. Beauly: 147935x 3.1/m2 egg requirement= 458,599 eggs. 1% to smolt= 4586 smolts x 5% sea survival= 229 adults. Halve this as there is some useful spawning substrate= 115 adults . Farrar: 280052x3.1/m2 egg requirement= 868,161 eggs, 1% to smolt= 8682 smolts x 5% sea survival= 434 adults. Halve this as there is some useful spawning substrate= 217 adults .
Predation- sawbills	77,672		53	Unnatural pressure when exacerbated by dams. A total of 8 birds seen during bird count during smolt run in 2024 Goosander and Mergansers can eat 19 smolts per day, but unlikely to be able to do this every day. Assume peak smolt run lasts 2 weeks. 8birds x 19smolts= 152 smolts/ day. Eat this every other day so 152x7= 1064 smolts. Assume 5% return rate = 53 adults= 21 hens= 77,672 eggs.
Predation- seals	77,380	Emerging	53	53 predation events by specialist seals recorded in 2024 exacerbated by Kilmorack dam as a barrier. Not all predation events will have resulted in a dead fish but some predation events will have resulted in more than one fish being eaten. 53 fish x 3650= 193,450 eggs x 0.4= 77,380 eggs
Angling	26,280	Decreasing	18	3% of fish reported to have been kept in 2023 out of 602 total catch= 18 fish= 65,700 eggs x 0.4= 26,280 eggs
Diffuse pollution	92,169	Area-based, Approximate	46	Total area affected: 29,732m2 (Tomich burn: 11,253m2, Bridgend: 5711m2, Redcastle: 5000m2, Glass: 6768m2, Belladrum: 1,000m2). 29,732m2 x 3.1MS eggs required per m2= 92,169 eggs. 1% = 921 smolt (salmon pop modeller), 5% marine survival= 46 adults
Point source pollution		Episodic		Y occasional
Development	??	Increasing, unknown	??	Impact of off-shore windfarms etc unknown
Trawling	??	Unknown	??	Impact of trawling in outer Moray Firth on adult salmon food fishes or on sea trout directly unknown
Invasives		Emerging		Present in catchment but not seemingly affecting fish populations yet, whilst
Man-made Barriers	9,626	Area-based, Minimum estimate	5	Approx area affected: 3,105m2 (Allt na h-Innse Creagaich: 750m2, Black burn: 1200m2, Teawig: 975m2, Glassburn: 180m2, excluding Redcastle, excludes debris blockages and possible wider hydro dam passability). 3,105m2 X 3.1MS egg requirement = 9,626 eggs, 1% to smolt= 96 smolts, x 5% sea survival= 4.8 (5 adults).
Assumptions made: Beauly system is similar to Conon system in terms of eggs per hen and sex ratio. 2021 average eggs per hen on the Conon (including for both grilse and MSW) was 3650 eggs. 10 year average sex ratio 40% hen, 60% cock with large annual variation. 5% sea survival assumed. Salmon Population Modeller used for between life-stage survival figures (https://www.onlineintegrity.net/salmon-modeller/). Dam counts suggest a total of 4465 equivalent returning fish at Kilmorack (accounts for counter undercount of 25%).				

APPENDIX 2- Known Locations of Invasive Non-Native plants

Map 1 : Known locations of Japanese knotweed in the catchment, 2021



Map 2: Known locations of Himalayan Balsam in the Catchment, 2021



Map 3: Known locations of Skunk Cabbage in the catchment, 2021

