

Salmon inquiry

Follow up letter from Dr Martin Jaffa, Callander McDowell

10 October 2024

I see that Fisheries Management Scotland (FMS) have made another written submission to the Rural Affairs & Islands Committee's salmon inquiry. This raises more questions than answers and thus has prompted this additional written response to the committee.

In his covering letter, Dr Alan Wells of Chief Executive of FMS includes the key messages that he wishes to highlight to the committee.

He writes that salmon farming is one of several pressures facing wild salmon and sea trout and that FMS are working to address all pressure that they can influence. Yet, salmon farm interactions is the only pressure for which FMS employs a dedicated member of staff, although interestingly this position is not included in the list of staff members on their website.

The current incumbent of this role is the third person to hold this position. Whilst the job title is Salmon Interactions Manager, the previous two post holders did not respond to any request to interact to discuss the issues. Direct contact with the Chief Executive were also met with refusals to meet. It might be expected that if FMS were so concerned about the future of wild fish, they would be willing to listen to anyone who might have a suggestion as to how wild salmon could be helped, but apparently not. This somewhat contradicts their claim to want to work with the salmon farming sector.

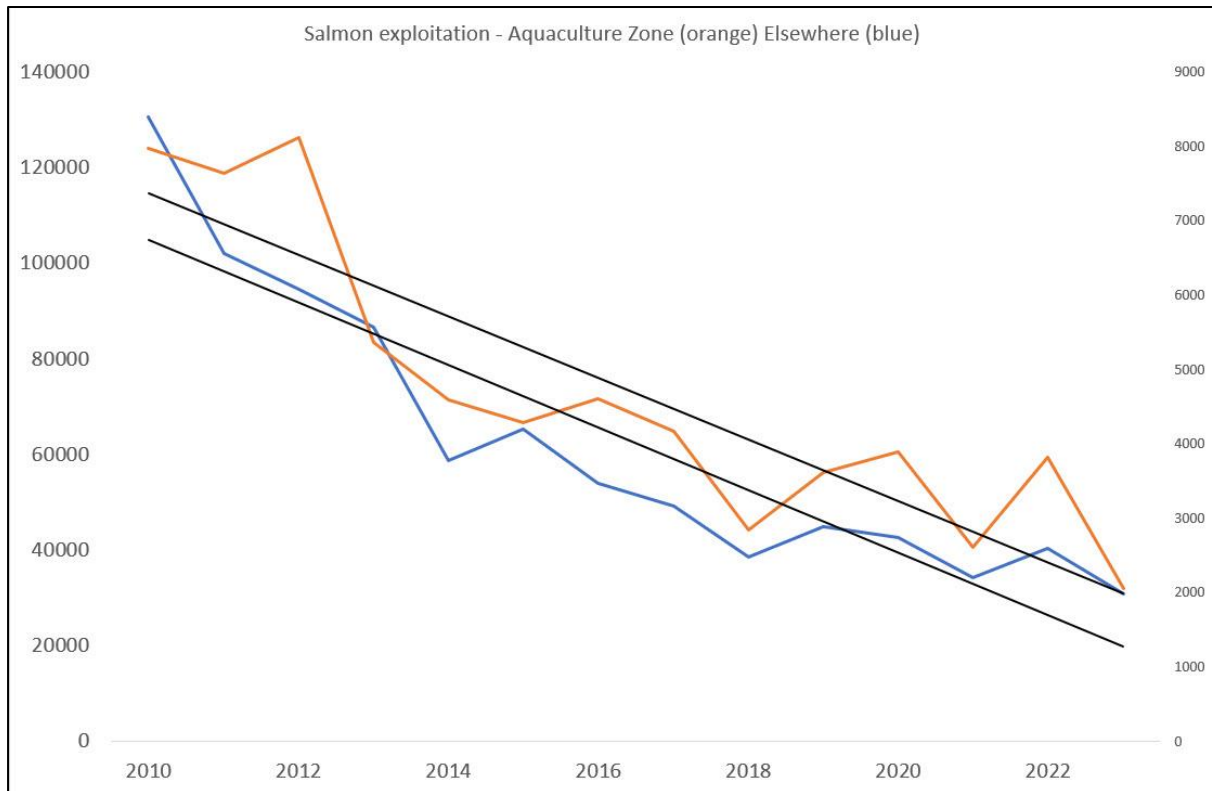
FMS also state that they want effective regulation to be put in place to ensure adequate protection for our endangered salmon and sea trout. They say we cannot wait any longer – 50 years is long enough.

However, it should be clarified that over the last 50 years, FMS have overseen the catching and killing of 3.46 million wild salmon and sea trout by anglers. This consists of 2,284,387 wild salmon and 1,176,021 wild sea trout. Perhaps, if these fish had not been killed in the name of sport, wild salmon and sea trout might not be endangered today. It is worth considering that the wild fish sector including FMS allege that sea lice from salmon farms kill wild salmon smolts as they migrate out to sea, even though they cannot provide a shred of evidence that these young small fish actually die. By comparison, the 3.46 million wild fish killed by anglers are all large adult fish which will have returned to Scottish rivers to breed but were prevented from doing so by their premature deaths. Their loss represents the loss of future generations of fish.

FMS have provided an overview of salmon interactions from their perspective. This response considers their view on sea lice, wild salmon fisheries and escapes.

FMS say that that they do not believe that salmon farming is solely responsible for the decline of wild salmonids in Scotland and that salmon farming and sea lice associated with salmon farming represents one of a number of pressures, yet as stated above salmon farming is the only pressure for which FMS employs a specialist manager. FMS do not have a manager for predation, nor barriers, nor climate change nor any other pressure than salmon farming.

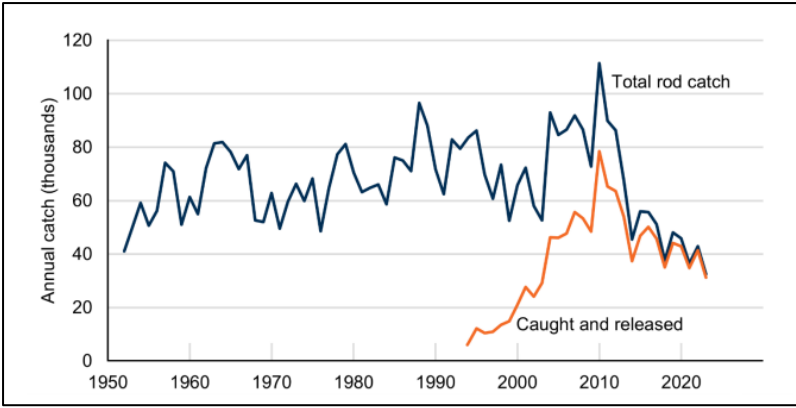
FMS say that whilst there have been declines in wild salmon populations in areas of Scotland with no salmon farming, this does not indicate that salmon farming is not an issue in the areas where it operates. Yet FMS does not provide a shred of evidence to support this claim. In fact, a comparison of wild salmon catches since the rod catch peaked in 2010 shows the rate of decline of catches from rivers within the west coast Aquaculture Zone is almost identical to catches from the east coast rivers and elsewhere where there are no salmon farming operations.



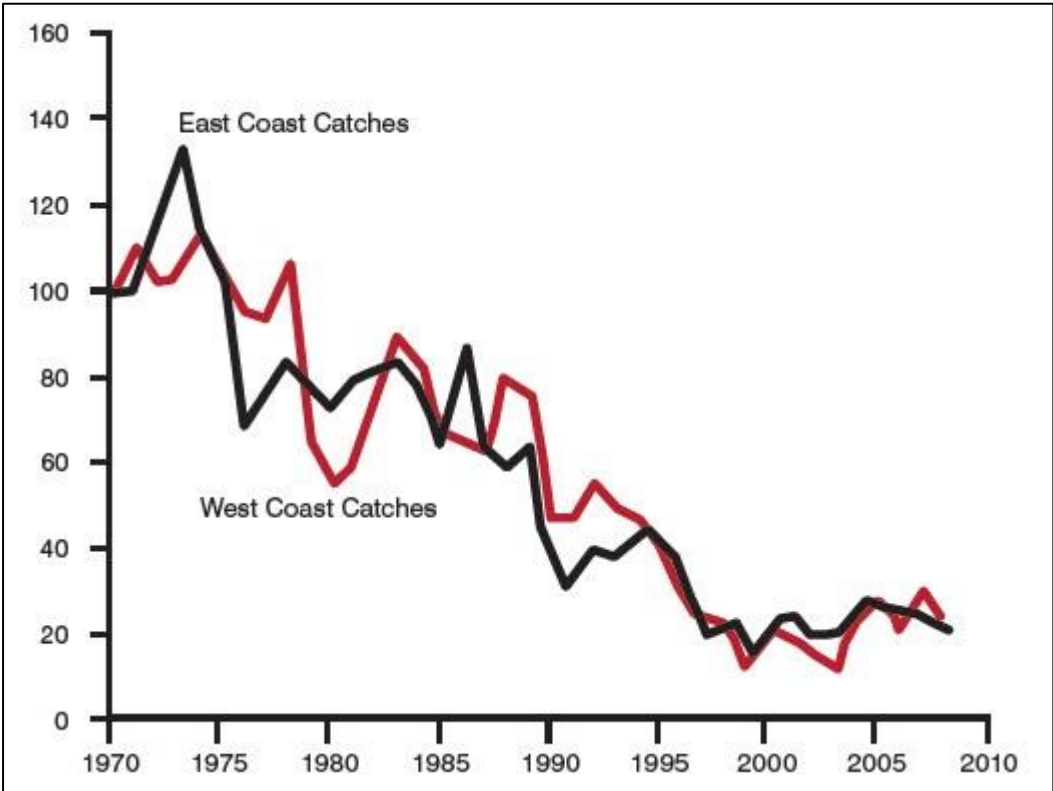
The key question is that if salmon farming, whether sea lice or escape, is at least in part causing the decline of wild salmon catches in the west, then what is causing the almost parallel decline in the east. So far, no-one from the wild fish sector has been able to offer a possible explanation. This question will be considered in more detail later in this submission.

It is worth reminding the Committee that Sir Edward Mountain who has attended the witness session has declared an interest in a wild salmon fishery and has said that he does not believe that it is directly affected by salmon farms as it is on the east coast, not the west coast where the fish farms are located.

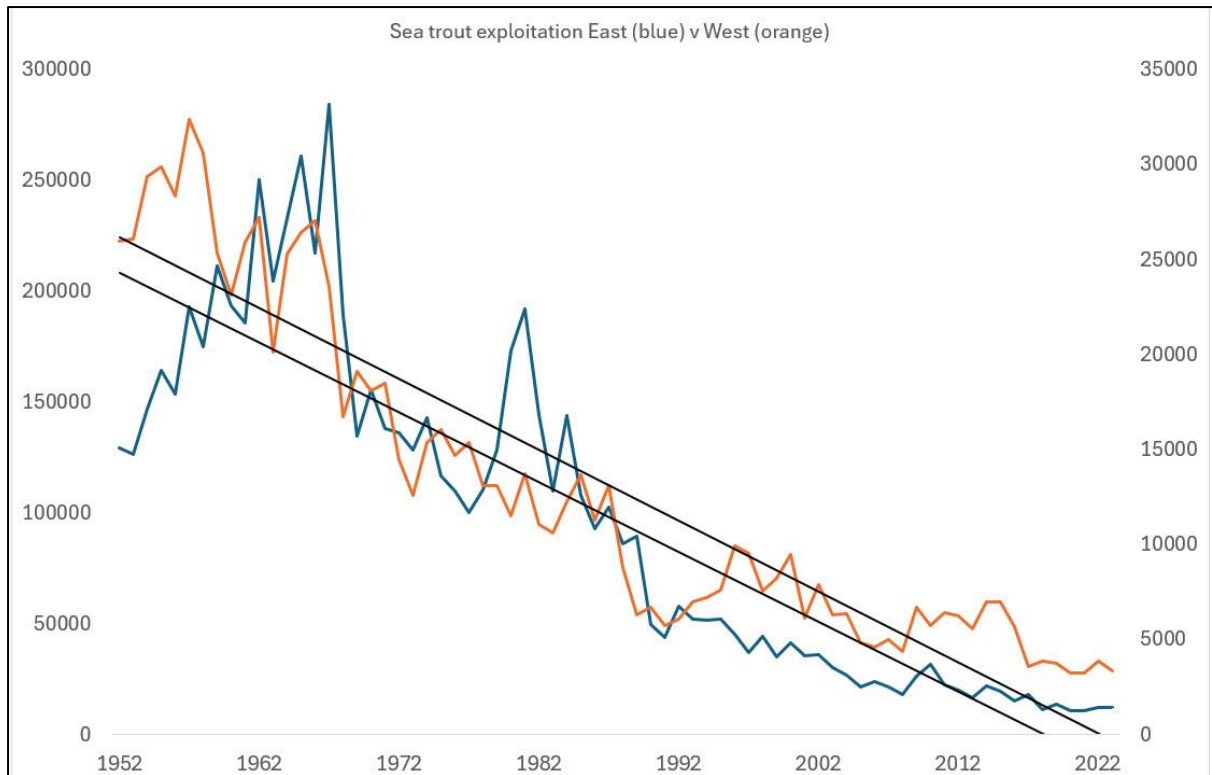
The above graph shows the decline of the wild salmon catch after rod caught salmon catches peaked in 2010 as illustrated by the official Scottish Government graph of catches.



Yet, when all salmon exploitation is considered, it can be seen that wild salmon catches from the salmon farming and non-salmon farming areas have been in decline since the onset of salmon farming in Scotland.



The wild fish sector increasingly claim that whilst salmon migrate away from the Scottish coast to feed, sea trout remain locally and thus the impact of salmon farms on this species is even greater. Yet, the comparison of the rate of decline of sea trout from salmon farming areas and areas where there are no salmon farms shows, like salmon, an almost parallel rate of decline stretching back to the 1950s, long before salmon farming arrived in Scotland.



The obvious conclusion that can be drawn from these graphs is that whatever is causing the decline of wild salmon id fish is probably causing the decline across all of Scotland and that salmon farming has minimal, if no discernible impact on wild fish stocks. Unfortunately, FMS have consistently refused to discuss the wider issues for wild salmon, which accounts for the content of their most recent written submission to the committee.

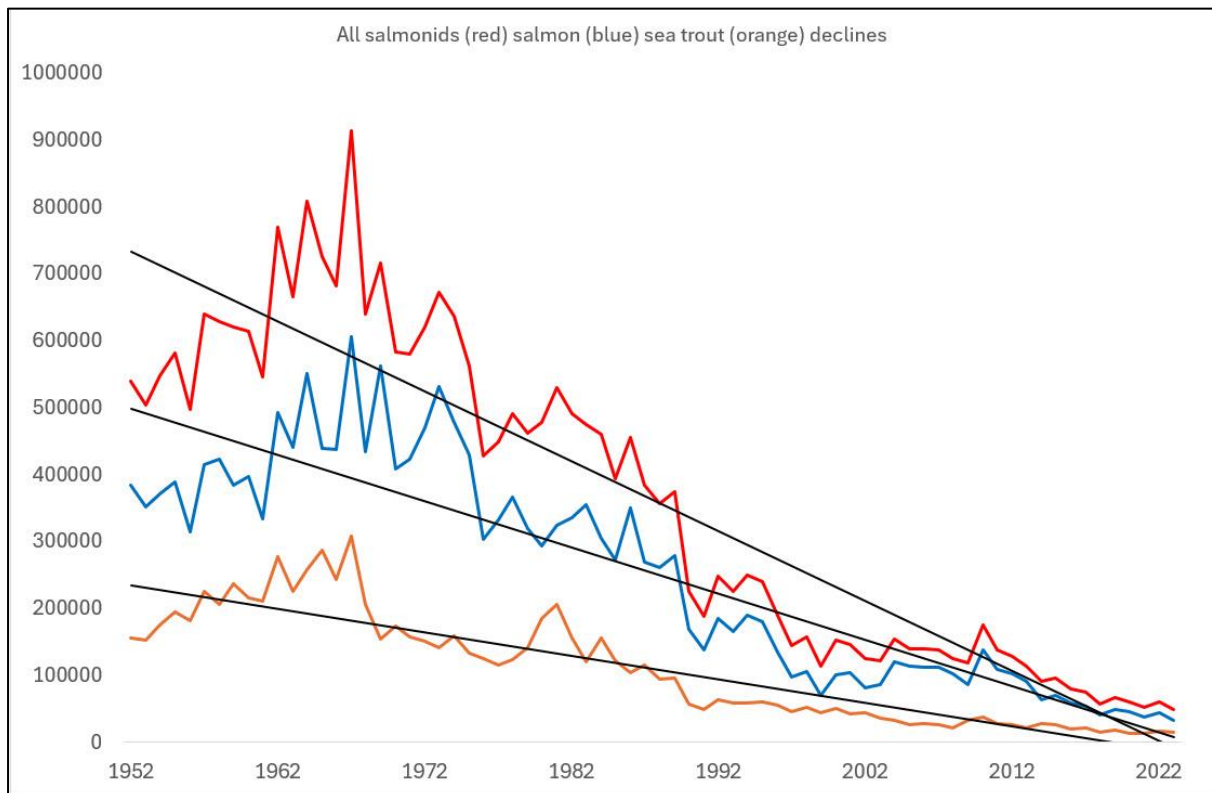
In their submission, FMS highlight in bold that it is abundantly clear that the presence or absence of salmon farming is not the only difference between Scotland’s coastlines. They say east coast rivers face a totally different range and extent of pressures than west coast rivers and are entirely different in their geography and size.

It is certainly true that there are significant differences in the geography and size of rivers between the two coasts. The river Scavaig also known as the river Coruisk on the Isle of Skye is only a few hundred yards long whilst the length of the river Tay is 193 km. Whilst both rivers may face different pressures, the official Scottish Government data shown in the previous graphs highlights that the rate of decline of catches from both coasts is almost identical. If the pressures causing this parallel decline on the east coast are different to pressures on the east coast, then which pressure is causing the decline in the east?

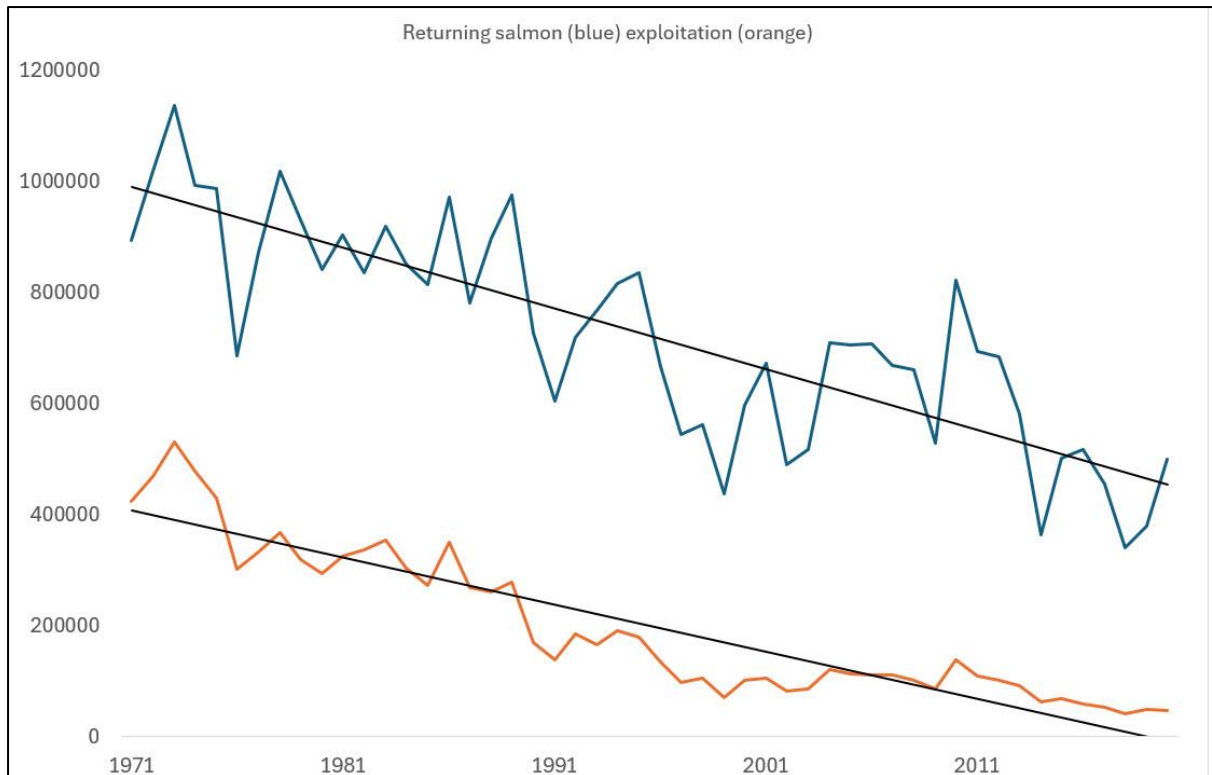
Scottish Government scientists have in the past also said that it is perfectly feasible for there to be differing reasons for the declines in different areas but have so far been unable to offer an explanation as to how two differing pressures can produce an almost identical rate of decline. It is now 14 years since rod caught salmon numbers began to collapse by 70% and yet no explanation has been forthcoming. This is even more surprising given that east coast catches accounts of at least 90% of the total Scottish salmon catch and therefore is clearly the area of most economic importance for salmon fishing. It is puzzling why there is still no clear understanding of why salmon catches in areas where there are no salmon farms continue to decline.

What we do know is that from the early 1970s increasingly fewer salmon have returned to Scottish rivers to breed. In 2017, the future King Charles III spoke at the Atlantic Salmon Trust's 50th Anniversary dinner. He said that in the 1980s, one in four salmon returned whereas now (2017) the number of one in twenty. He added that importantly, we don't know why. Now in 2024, we still don't know why and until we do, we cannot even consider stopping the continued decline of these iconic fish.

Records of all salmon and sea trout catches were first officially recorded in 1952 and the subsequent decline across all of Scotland can be tracked since then as in the following graph. The red line is all wild fish, blue - salmon and orange - sea trout. For reference, in 1982, thirty years after the records began, total salmon farm production for all of Scotland reached just 1,000 tonnes, - not even the production on one modern salmon farm. When salmon farming arrived in Scotland, wild fish were already in trouble, something which is never acknowledged.



As King Charles has highlighted, the number of salmon returning to Scottish rivers is in decline and these can be plotted along with the total numbers of salmon caught and killed in Scottish waters.

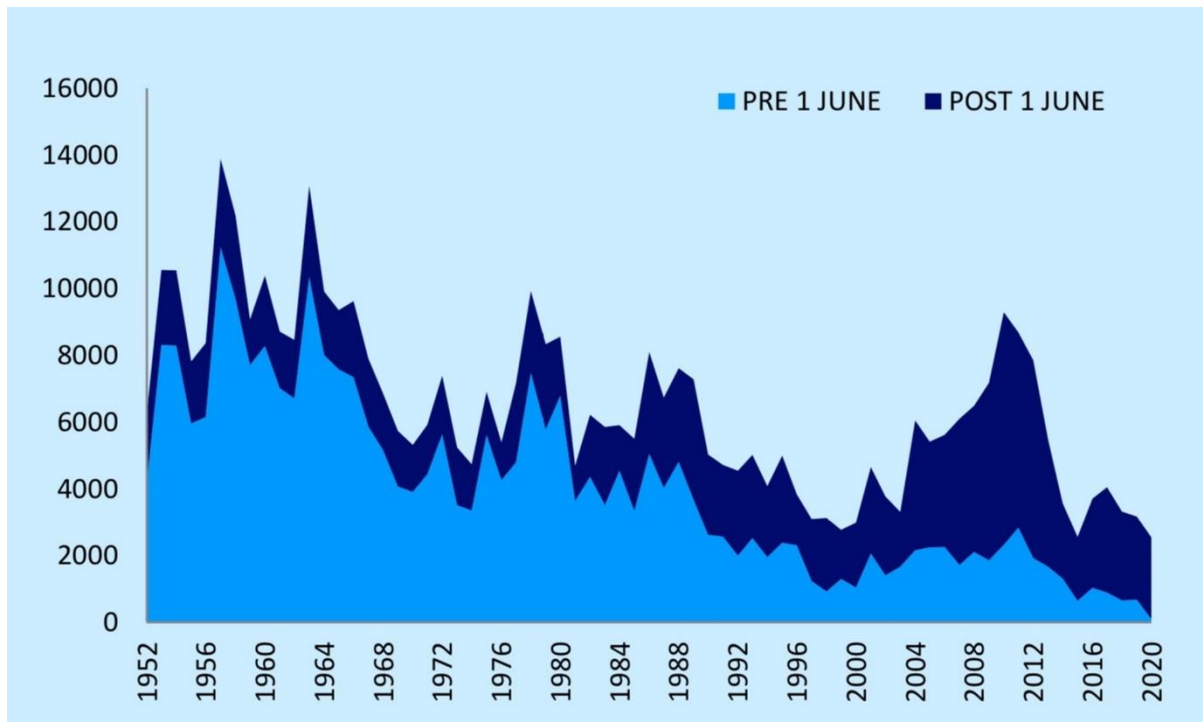


The number of fish returning, and the number of fish caught and killed are in a similar rate of decline.

In their submission, FMS say that exploitation of wild salmon (orange line above) has been reduced because for decades, owners of fishing rights have invested many millions of pounds in buying coastal netting rights in order to reduce exploitation, although they don't say how many millions. This is relevant because the North Atlantic Salmon Funder has been a primary mover of buying out netting rights, yet netting still continues on at least one Scottish river. At the same time, netting continued around the west coast Aquaculture Zone until as recently as 2015 with 8,152 fish killed between 2000 and 2015.

FMS say at the same time exploitation in the rod fishery has been reduced through the increased use of catch and release angling, primarily on a voluntary basis. Yet, since rod catches peaked in 2010, when catch and release was at about 75% until now when it has approached 96%, there has been no noticeable slowing down of the rate of decline of wild fish.

The Aberdeenshire river Dee was one of the first to impose mandatory catch and release on its anglers over twenty years ago. Yet, the impact of this local regulation has not changed the downward trajectory of fish catches seen across all of Scotland.



Although the Scottish Government has placed great faith in catch and release as a way of safeguarding the future of wild salmon, it is known that there can be a significant mortality of fish that die after being returned to the river. Most of the work on this has been carried out in Canada with estimates of around 12%. However, returned fish can die at a much later date from secondary infection after poor handling and associated scale loss. Many anglers still want to remove the fish from the water to ensure a good photographic record of their catch.

FMS also refer to the Scottish Government's conservation measures which demand mandatory catch and release in fisheries of poor conservation status. FMS state that this currently covers 112 rivers out of a total of 173 (65%). However, these numbers are misleading, and the Scottish Government has failed to address this issue despite being in receipt of several submissions on the matter.

It must be stressed that the following comments relating to wild salmon conservation measures are being discussed in this response solely because FMS have brought them to the Committee's attention.

Historically, Scottish Government scientists have been favourable to wild salmon fisheries because the Freshwater Fisheries Laboratory was established to help with their management and because many of the scientists were also keen anglers. By comparison, the wild salmon sector's negative attitude to salmon farming is reflected in the science promoted by the same scientists. This noticeable bias towards the wild salmon sector is apparent in the rather weak conservation measures imposed on wild salmon fisheries and the Draconian measures introduced against the salmon farming sector.

FMS highlight that 112 rivers out of a total of 173 are of poor conservation status. However, the 173 are not representative of Scottish salmon fisheries. In 2015/16 when the Scottish Government finally introduced conservation measures as demanded by NASCO and about twenty years after they had been introduced in England and Wales, they related to the 109 recognised Scottish Fishery districts. The first gradings were all rather precautionary due to a

lack of data, and it should be noted that it was these precautionary gradings that formed the basis of Salmon & Trout Conservation's petition which prompted the 2018 REC salmon inquiry.

After the first conservation grading of rivers had taken place, many anglers complained that the gradings did not represent their own river within their fishery district. Consequently, the Scottish Government scientists began at the request of anglers to sub divide some of the fishery districts into separate assessment areas. In total, the number is now 224 assessment areas, of which eight are not actually assessed due to a lack of data. A further 43 are merged into other adjacent areas with the same conservation grading. This reduces the total to 173 as stated by FMS.

The problem is that these 173 assessment areas are not comparable. They are all different sizes with the smallest Abhainn Eig in the Outer Hebrides being just 4,000 m². By comparison, the River Tweed district is 16,187,000m² in size, some 4,047 times larger than Abhainn Eig. How can these be classified as being equal within the 173 fisheries?

Whilst the river Tweed is still classified as one fishery, Loch Roag (size 881,000m²) is subdivided into ten of the 173 assessment areas.

If the fisheries are graded by area, then, rather than 65% of the stocks being grade as poor the number reduces to 31% with 17% being grade 2 and 52% grade 1. This implies that the over half the salmon fisheries in Scotland are of a healthy conservation status, which they are not.

Whilst the wild fish sector complain about the alleged negative impact of salmon farming on wild fish, it should be noted that a total of 30 fisheries (from the 173) located within the west coast Aquaculture Zone (8 - Grade 1 and 22- Grade 2) have been assessed as of a sufficiently good conservation status that anglers can still kill any fish they catch subject to local regulations. Yet, as discussed later, salmon farmers can have production restricted if the farmed is assessed to have a potential (but unproven) risk to wild salmon and sea trout.

The next problem is that the way the fisheries are assessed based on a theoretical number of eggs laid. This is simply not a realistic way for rivers to be assessed when salmon stocks are in such a perilous state. The current methods enable for anglers to continue to fish for wild salmon and sea trout in rivers where the conservation grading in countries such as Norway and Ireland would have resulted in the river being closed to fishing. Given the rapid decline, almost collapse, of catches from the even the biggest salmon rivers in Scotland, it is questionable how rivers such as the Dee have maintained their Grade 1 status.

Questions over conservation grading would become meaningless if all salmon rivers in Scotland were made mandatory catch and release. FMS say that 96% of salmon caught in Scotland are now returned. Why the remaining 4% cannot be returned too is unclear. A Scottish Government consultation on catch and release found many anglers were against the idea but in the interests of increasing the protection of this fish iconic fish, mandatory catch and release, if not proven to work, would at least send the right message to anglers that every fish now requires protection.

FMS state that anglers and fishery managers are clearly doing their part to address the pressures affecting wild salmon, although the long-term decline in catches suggests that they have so far failed to slow down the decline or even bring it to a halt. Certainly, highlighting salmon farming as a pressure that still needs to be addressed will do nothing to safeguard the future of wild salmon and sea trout in Scottish rivers, especially as it can be shown that salmon farming has minimal if no impact on wild fish stocks.

If FMS would like to discuss these issues rather than refuse to meet, then perhaps maximum effort could be directed at the issues that really do affect the conservation of wild salmon. It is put on record in this submission to the Rural Affairs Committee that the author of this document – Dr Martin Jaffa – is offering to speak at the next FMS annual conference in the spring of 2025 to explain why salmon farming is not the issue that the wild fish sector considers it to be.

In their follow up submission, FMS highlight that they do not believe that salmon farming is responsible for the decline of wild salmonids in Scotland. They say that sea lice are primarily a concern for migrating wild salmon smolts as they move from the river through sea lochs to the high seas. They say that the area around salmon farms has an elevated level of sea lice, and this can lead to smolts being infested with large numbers of sea lice.

Unfortunately, FMS's claims are based on misinformation. FMS and their members might be experts in catching wild salmon, but they have little if any understanding of parasite ecology. Parasites are unique in that they are spread throughout their hosts as an aggregated distribution. The key feature of this distribution is that the majority of hosts (salmon) carry no or very few parasites (sea lice), whilst a few hosts carry very many parasites. A standard parasitology textbook states that infestations of parasites numbering 400 plus are not unusual. Unfortunately, anglers seeing one or two fish with high numbers of sea lice make the assumption that these levels of infestation are typical of all wild fish in areas around salmon farms. Sampling of wild sea trout by Fisheries Trusts over 23 years have identified that around 6% of fish carried lice levels above 50 in number. Questions about the methodology of sampling with just 18% of the samples meeting the sampling protocol suggest that even less fish in the local populations were actually infested with higher lice numbers.

Clearly, if the majority of wild fish sampled are free of lice, then they are not at risk of mortality as claimed

In my previous submission the failure of scientists to identify the infective larval sea lice in the open sea lochs was highlighted. The absence of these infective sea lice is yet further evidence that the established narrative put forward by FMS in their submission is not proven.

FMS highlight the Scottish Government's summary of science claiming it shows that the concentrations of larval lice sampled in areas near farm relates to local farm lice loads. The Summary of Science was first published in 2016, and its science is extremely selective. For example, it does not include any reference to the seminal 2013 paper from researchers at the Irish Marine Institute. This paper found the impact of sea lice on wild salmon populations was just 1%. Unfortunately, as their findings did not fit in with the established narrative a orchestrated campaign was mounted against these researchers. Over ten years later, the those promoting the same narrative have found that it is simplest to ignore this research rather than have to explain why it doesn't fit into the existing sea lice story.

The latest data from Norway from the last eight years has found that in one of the most concentrated farming areas in Norway, the infestation levels of sea lice on wild fish cannot be correlated to the number of fish or lice infestation levels on local salmon farms. Some of years with the highest number of farmed salmon resulted in some of the lowest lice infestations found on wild fish.

FMS also highlight a paper recently published by Marine Directorate scientists (2024) claiming a significant positive association between sea lice abundance on farms and sea lice abundance on wild trout. These scientists have been collecting sea lice data on wild fish since 1997 but

only analysed data from 2013 to 2017. They claimed that this was because the form of reporting changed in these years, but they are the ones that changed it. It is also worth noting that the data set used does not exactly match the data that is still available on the Scottish Government website.

As with FMS, Scottish Government scientist have remained extremely reluctant to discuss the sea lice science that they promote.

FMS refer to the SEPA sea lice risk framework suggesting that it has several positives for wild salmon. However, the science and extensive evidence indicates that the focus on this framework is simply deflecting attention from the real issues affecting wild salmon in Scotland today. At the time of writing, the UK's Environment Agency published their latest report on the state of wild salmon in England and Wales saying that stocks have fallen to their lowest level ever.

Finally, FMS refer to escapes as being another key pressure affecting wild salmon. It is worth considering that:

The 2012 £1 million FASMOP project which aimed to show that different salmon populations around Scotland were genetically different, failed to identify any such differences.

Salmon associated with salmon farming are usually identified as such by genetic markers. These do not have any specific genetic influence and are the same type of markers that allow humans to have come from for example, Viking stock. In the same way that humans with a Viking background do not behave as Vikings, fish with a farmed marker do not make them genetically different to a wild salmon.

Discussion about escapes tends to avoid the question of Darwinian Evolution that says the survival of the fittest. If the small number of hybrids between wild and farmed salmon are weak and inferior as often claimed, they simply will not survive to reproduce again.

The world is changing especially in relation to climate. It may be that Scottish salmon may need to adapt to a new environment and thus those fish with the capability of surviving at higher temperatures may be the ones that at best suited to the future. Protecting existing generic stocks may hasten the road to extinction.

If the Rural Affairs Committee were to make one recommendation in regard to sea lice, it would be to reinstate the Salmon Interactions Working Group to encourage the further discussion of the science of sea lice, which was absent from the agenda the first time around.