River Severn Net Limitation Order and Byelaws 2021

Response to Consultation Representations

May 2021

We are the Environment Agency. We protect and improve the environment.

We help people and wildlife adapt to climate change and reduce its impacts, including flooding, drought, sea level rise and coastal erosion.

We improve the quality of our water, land and air by tackling pollution. We work with businesses to help them comply with environmental regulations. A healthy and diverse environment enhances people's lives and contributes to economic growth.

We can’t do this alone. We work as part of the Defra group (Department for Environment, Food & Rural Affairs), with the rest of government, local councils, businesses, civil society groups and local communities to create a better place for people and wildlife.

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Summary

We have run a consultation on a new Net Limitation Order and updated suite of byelaws for the River Severn to limit the exploitation of salmon by both the net and rod fisheries in order to conserve and improve the salmon stocks and ensure their future sustainability as well as that of the fisheries that depend on them.

The evidence from recent annual salmon stock assessments indicates a recent decline in the status of salmon in the River Severn, with a substantial shortfall in adult numbers. A decline has also been detected in the rivers Wye and Usk which contribute to the Severn estuary fishery, with substantial deficits in the number of spawning adults apparent on all three rivers.

Previous time-limited regulations for salmon and sea trout fishing on the River Severn for both rod and net fisheries need to be renewed and updated to ensure that salmon stocks are adequately protected. This is to ensure that those fisheries that continue to exploit these stocks do so in a sustainable manner to support stock recovery as quickly as possible. New appropriate net and rod fishery regulations are now required to complement the work of the Environment Agency and its partners in trying to protect and improve the Severn, Wye and Usk salmon stocks.

Our guiding principles in developing the new regulations have been focussed around primarily affording the necessary protection for the salmon stock in order to allow its recovery from its current low status while permitting angling (and netting) activity to continue.

The previous Net Limitation Order for Severn estuary net fisheries is also at the point of renewal. The proposed new regulations specify maintaining the current number of lave net fishing licences (22) to be made available in future years, (recognising the heritage status) and requiring the mandatory catch and release of all salmon caught by the rod fishery.

The public consultation on the new proposed regulations ran for a period of 33 days from 5th March to 6th April 2021. The consultation resulted in 111 representations being made directly to the Environment Agency and Defra. In response to the online consultation (99) 67% agreed that additional protection was required to ensure future sustainability. Of all 111 representations 40 fully supported all the proposed measures, while 58[1] objected to one or more elements of the proposed measures. We also received 10 “Don’t know” and 2 “not answered” to all elements, these are not included as either objection or support.

We are very grateful for all responses received to the consultation.

[1] An objection response was received through the online consultation and as a written objection this will count as 1 objection overall.

Summary of the consultation

The specific targeting of notification of the consultation via text messaging and email or letter directly to 337 anglers and 28 netsmen who have submitted catch returns from the Severn in recent years, provided a direct and immediate means of alerting relevant anglers to the consultation exercise. Additionally we notified more than 40 angling clubs, associations, MPs, NGOs and Parish Councils, and provided with them with information to forward, including posters to place in public areas and at fisheries. There was also an extensive press release which was taken up by regional and national media, as well a section in the Rod Licence Newsletter which was circulated to 7,000 salmon and sea trout licence holders.

The online consultation questions provided the opportunity for the 99 respondents to enter free text responses if they so wished. Alternative means of responding, either by email or letter, were also available if respondents were not satisfied with the online response tool or wished to raise any other issue or objection in relation to the consultation, proposed byelaw measures or technical case that considered the stock assessment.

In addition to the responses submitted via the online consultation tool, 12 representations were made directly to Defra and / or the Environment Agency.

8 submissions were from individuals; 3 from angling clubs and 1 from an angler's representative organisation.

The concerns, objections and suggestions in those submissions have been addressed alongside the comments made to the online consultation – and are examined together below

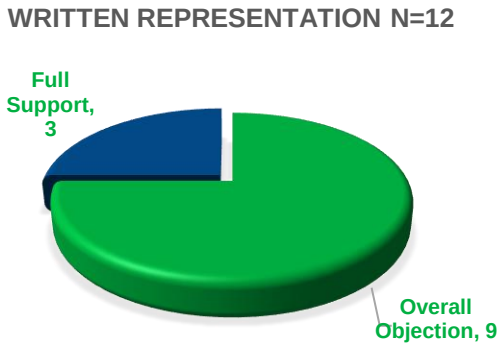
The consultation exercise was aimed at seeking consultee views on the fishery management measures that have been advertised by the Environment Agency. If there was an objection, there was an opportunity for the consultee to provide an alternative option or object but in doing so, it was entirely reasonably expected that an objection be supported by justification for that position and if necessary, supporting evidence.

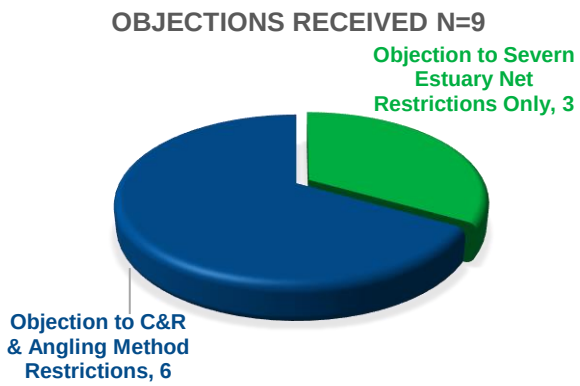
This document provides a summary of the results from the online consultation, and summarises the written responses that were received. This has been done in three parts. The first provides breakdown of the online questions and some of the main responses either in support or objection to the questions that have been received.

We have also provided a broad summary responding to additional information that respondents provided to these questions. The second part, are the response statements relating to points of objection that have been made in the written and online responses received. These are presented in the order of frequency with which they were raised as matters of concern by respondents to the consultation, and categorised under six main themes. The final part deals with statements to respondents relating to proposals or alternative management options which are collated into 5 general themes.

Summary of the written consultation responses

12 representations were made in writing directly to Defra and / or the Environment Agency. 8 submissions were from individuals; 3 from angling associations and 1 from an angler's representative organisation.





For those who made and provided a detailed written objection, responses were typically because:

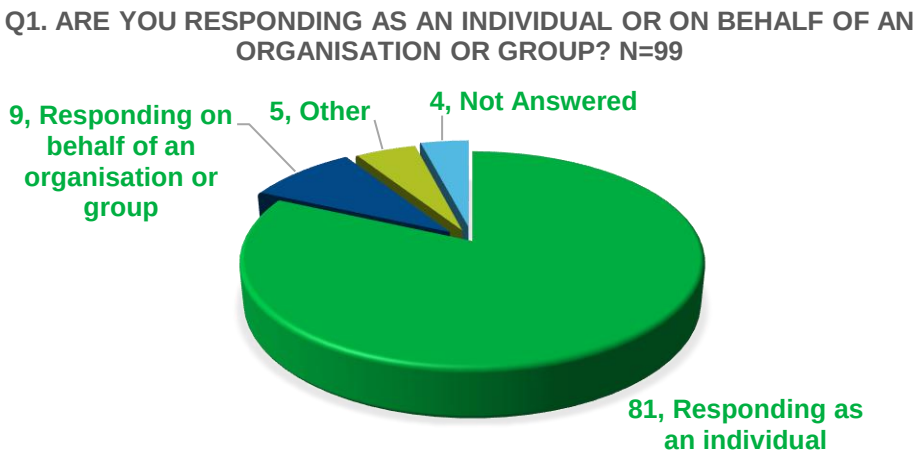
- They do not agree with salmon stock assessment methodology and do not agree with the current Conservation Limit status.
- Introduction of statutory C&R and method restrictions will drive legitimate game anglers off the river. A game angling exodus will remove the Agency's gamefish-sensitive eyes and ears and create a massive opportunity for increased poaching and subsequent salmon stock depletion.
- The ability of the Environment Agency to enforce any byelaws without the buy in and cooperation of local angling groups, including the expansion of the Angling Trust's Voluntary Bailiff Service to cover migratory fish species.
- For the net fishery they object to the lengthy restrictions that already have been imposed over recent years without parity with the rod fisheries and ultimately urgent need to protect the heritage and historic practices of the net fisheries.
- The exploitation by estuary nets and netsmen are not responsible for the decline, although they acknowledge "There is very little doubt that these are challenging times for salmon stocks across the North Atlantic. Climate change, habitat degradation, pollution, migration barriers, aquaculture, as well as over-exploitation and many other factors have undoubtedly damaged salmon stocks and it is vital that all stakeholders play their part in reversing this decline.

For those who made a written submission in support, they provided the following reasons:

- My fishing club is asking to sign against these new bylaws which seems to me a very selfish outlook demonstrating a reluctance to change, showing more concern for fisherman than for the struggling salmon.
- Having read their [angling club] submission I feel it is beyond farcical and I urge you to pay no attention to a club that has no thought of the future of salmon and proceed to enact the bylaws.

Summary of the online consultation responses

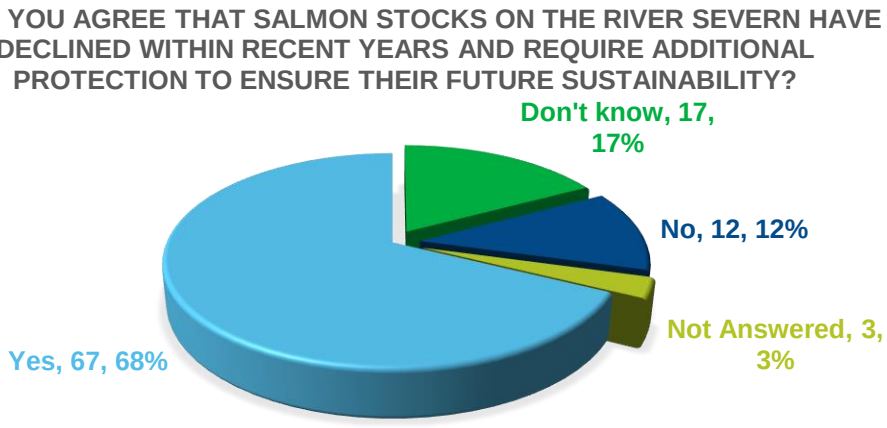
Responses as an individual or on behalf of an organisation or group:



How respondents found out about this consultation:

Option	Total	Percent
From the Environment Agency	51	51.52%
From another organisation	7	7.07%
Through an organisation you're a member of	17	17.17%
Press article	6	6.06%
Social media e.g. Facebook, Twitter	7	7.07%
Through a meeting you attended	1	1.01%
Other	6	6.06%
Not Answered	4	4.04%

Respondents were asked whether they agreed that the salmon stocks on the River Severn have declined within recent years and if they considered that additional protection was required to ensure their future sustainability based on the evidence presented in the technical case document:

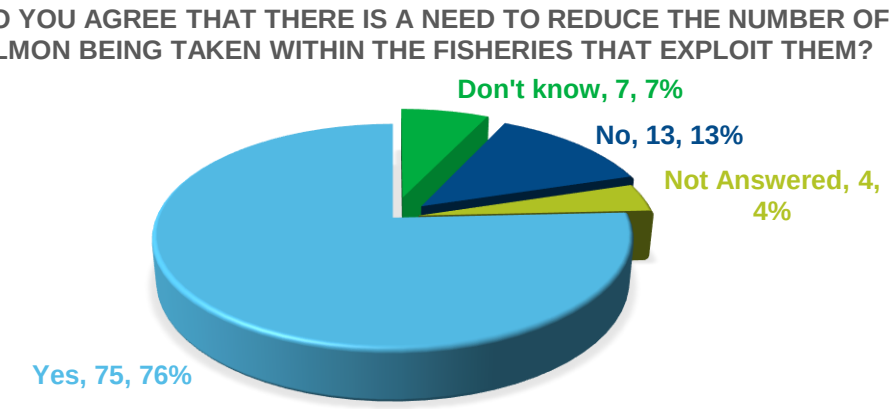


The majority of respondents to the online consultation agreed with the current assessment that salmon stocks had declined as presented in the technical case. For those who said they did not know or did not agree, and provided a written response this was typically because:

- They have concerns about the accuracy of the salmon stock assessment, in particular as it relies on rod catch returns and the numbers of anglers fishing have reduced.

- They felt that exploitation by rods and nets was not responsible for any decline, whereas the expansion of fish farms, salmon survival at sea, illegal fishing activity, pollution, predation and the closing of hatcheries were all highlighted by a number of respondents as having greater impacts on salmon stocks.

Respondents were asked if there was a need to reduce the number of salmon being taken within the fisheries that exploit them:

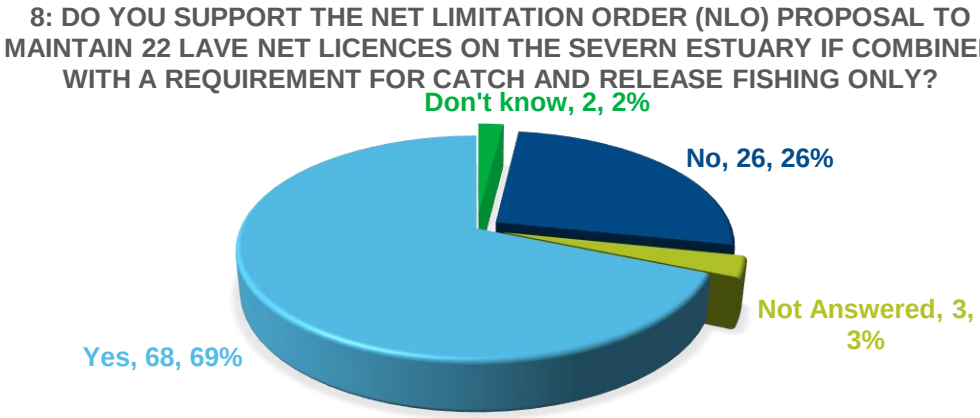


For those answering "no" to this question, in general they considered that further restrictions would do little to improve salmon stock deficits or reduce exploitation.

For those that did provide a written response, some felt:

- Further byelaws will reduce angler numbers, illegal activities and pollution will go unreported.
- Anglers provide a deterrent for predators, less anglers more predators.
- Anglers already do enough by catch and release and fishing is restricted mainly to weir pools and not full length of the river.
- Alternative measures such as issuing of carcass tags or allowing one fish per person would reduce exploitation.
- Further restrictions should be limited to commercial net fisheries only, rod fishermen do not exploit salmon stocks.
- Any salmon killed in any one season by anglers will obviously lead to a reduction in numbers in the river in that particular season.

Respondents were asked if they supported the Net Limitation Order (NLO) proposal to maintain 22 lave net licences on the Severn Estuary if combined with a requirement for catch and release fishing only:



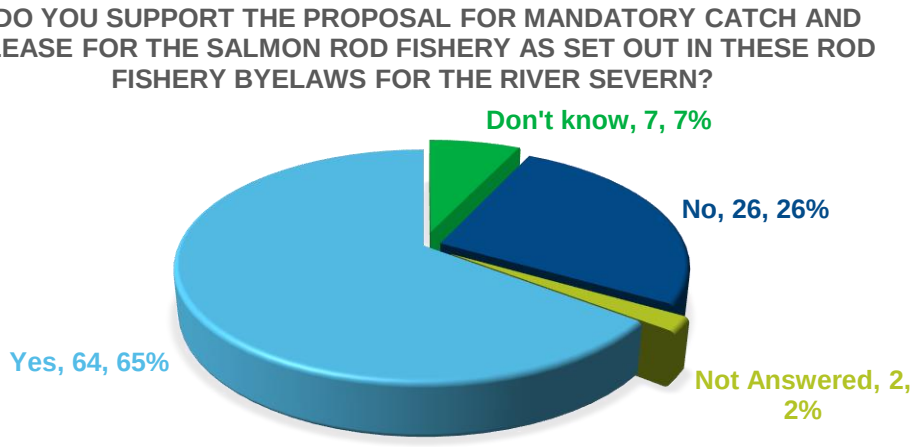
The majority of responses generally supported this proposal, with responses that included the following written support:

- The lave nets had important cultural and heritage values and should be maintained.
- If compulsory catch and release is introduced, I would ask that the full season (Feb 2nd - Aug 31st) is reinstated and that the weekend close time for fishing is revoked.
- To reduce potential damage nets should be knotless for catch and release equal to rod anglers, who are required by byelaw to use knotless landing nets.

Those that answered "no" or objected in writing included some of the following written responses:

- More support should be given to the historic lave net fishermen to keep this historic craft alive, time is running out for to save this ancient heritage.
- All netting is a commercial activity and is not sporting like angling
- Salmon will not survive being caught and released in lave nets.
- All forms of commercial netting activities should be stopped.
- The fishermen of the estuary have 'played their part'- the season was shortened, net limitation orders imposed, catch limits introduced, catch limits reduced, catch and release implemented.
- Proposals to return all salmon & sea trout will effectively bring the operation of the 22 lave nets to close.

Respondents were asked did they support the proposal for mandatory catch and release for the salmon rod fishery as set out in the proposed rod fishery byelaws for the River Severn:



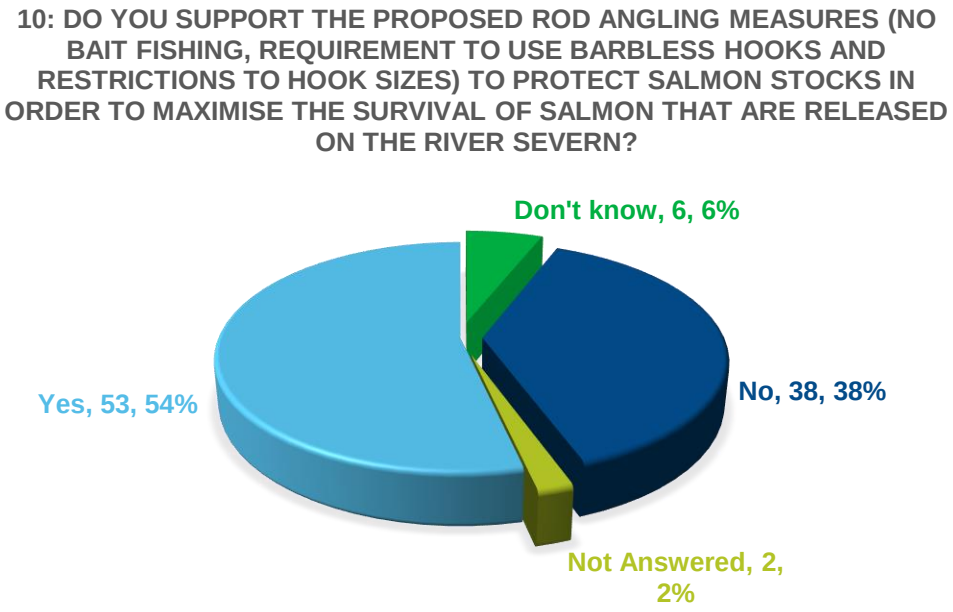
The majority of responses generally supported this proposal, with responses that included the following written support:

- Improving the chances the fish entering the catchment reaching the headwaters and successfully spawning has got to be welcomed.
- There are simply not enough fish to kill one.
- Anyone wanting to kill salmon has no interest in their future.

Those who raised objection with a "no" response made some following suggestions:

- There was preference for voluntary 90% release arrangement coupled with an action plan to rebuild stocks, agreed between the EA, NRW and anglers.
- The regulations will only serve to alienate the people who care about salmon and sea trout.
- The unintended consequences of measures will result in a reduction in angler numbers rendering the rod based catch estimates for stock assessment unviable.

Respondents were asked if they supported the proposed rod angling measures that included no bait fishing, requirement to use barbless hooks and restrictions to hook sizes, to protect salmon stocks in order to maximise the survival of salmon that are released on the River Severn:



Whilst the majority of respondents have answered "yes" in support of additional measures, there was a stronger objection to the method restrictions compared to other measures.

The typical written "no" responses provided to this question were:

- No bait fishing requirement is pointless as coarse and trout anglers can bait fish, so is completely unenforceable.
- Devon minnow used in spring won't work with a single hook.
- Survival of salmon in the river Severn is not about angling it is about water quality which has deteriorated greatly over the last 40 years. Also the loss of spawning grounds and the introduction of barbel to the river.
- The use of a barbless hooks requires the angler to maintain pressure on the line over a longer time in order to land the fish. In essence when landed the fish can be so exhausted that it does not recover and dies within a few minutes of release.
- Any fishing method used badly will harm fish. As will any method used in low, warm water. Under such conditions mortality attributed to the worm may well be a proxy for temperature.
- It is unclear on a mixed coarse and game river how any restrictions could be reasonably enforced post June 16th.
- This will kill angling even more in the Severn and open up to more poaching as there is no visible EA presence on Severn other than in towns. The club members are the eyes and ears on the river.

- Adversely effects elderly and disabled anglers.
- These measures will be difficult to enforce in many cases will just antagonise many anglers.

A number of responses indicated although they could not agree with all measures and responded "no" they did however agree in part.

Some examples of those responses were:

- I can agree that the use of certain baits should be looked at as these are taken deeply by salmon and can cause fish damage or death, but cannot see why treble hooks as long as they were barbless cannot be used on spinners as they work on that type of lure and are not taken as deeply as natural baits are, as regards of total catch and release - Yes can agree on this action.
- 100% on bait fishing ban. Barbed hooks should be allowed.
- In times of reduced flow, bait fishing is the only way you realistically have a chance of catching a salmon on a lowland river like the Severn. However, to allow the release of most fish without harm the use of circle bait hooks should be made compulsory.
- So a treble hook on a fly is ok but not on a spinner this is outrageous and a back door ban on spinning. No bait I agree Barbless I agree
- I broadly support the measures, except that they are too complex in their detail. A simple single barbless hook rule for all methods would be preferable.
- I support barbless hooks but I think that they should only be singles: no trebles or doubles. I only fish singles, barbless and my experience leads me to believe that the single hook format doesn't hinder catches but makes release much easier.
- Rather than ban everything, just have a window it can be used in, agree on barbless hooks and anything that increases fish welfare. Is there enough science on just using circle hooks to prevent deep hooking?

This response document has drawn on all representations received and is intended to clarify specific data used and decisions taken in formulating the proposed new regulations.

We are confident that the killing of salmon by the Severn fisheries is not the main cause for the decline in salmon. However, managing and regulating exploitation must form part of the solution to ensure that numbers of salmon remain at levels that will allow populations to recover. The bigger issue is to understand and improve marine survival, though this is unlikely to be straightforward. Work is ongoing with NASCO (North Atlantic Salmon Conservation Organisation), other European countries and partners, such as the Atlantic Salmon Trust, to help us understand why fewer salmon are returning from the marine part of their lifecycle.

Improving water quality and river flows are also important parts of our work locally and under the National multi-agency Salmon Five Point Approach to maximise the freshwater production of salmon smolts. This work is happening as part of wider water quality improvements from the Water Framework Directive legislative priorities. It is also part of water company improvements, and better regulatory legislation on contaminated land and waste. The recent launch of the Government's 25 year plan, and Defra's commitment to regulate farming to ensure greater environmental protection, particularly with respect to soil management, will also help to improve water quality and river flows.

Whilst we have made progress with the Salmon Five Point Approach, there are some areas that still need further consideration at a national level. There is no short term fix to improve salmon populations and we will continue to improve our understanding and deliver improvements for this valuable and iconic species.

We will commit to produce a Severn action plan to deliver further improvements across the catchment for the benefit of salmon, this will be progressed in the coming months.

How this document addresses your views

This document aims to respond to the objections and representations raised throughout the public consultation process on our proposed measures.

We would be grateful if you would consider the information below and whether you wish to withdraw your objection, or part of your objection. If this is the case, then please contact us using the details below by Friday 28th May 2021.

If you do not wish to withdraw your objection, you do not need to do anything. If we do not hear from you, we will assume that your objection stands, and will be forwarded to Defra.

Email: SevernSalmon@environment-agency.gov.uk

Postal: **Severn Salmon, Riversmeet House, Newtown Industrial Estate, Northway Lane, Tewkesbury GL20 8JG**

Introduction

Salmon stocks are declining across the entire North Atlantic with recent stock assessments being amongst the lowest levels on record. Spawning escapement in 2019 was estimated to be below the conservation limit (CL) in 50 of the 64 principal salmon rivers in England and Wales (78%), including the Severn. This is amongst the lowest level of CL compliance in the time series, although it should be noted that 2020 has seen some degree of improvement over recent low levels.

There are multiple issues which impact on salmon throughout their lives in freshwater and at sea, including those from predation, water quality, exploitation by fisheries, barriers to migration to name but a few. Action is needed to address all relevant issues in order to be able to improve salmon stocks from their current low levels. A variety of international, national and local initiatives are already happening to highlight the plight of both Atlantic and Pacific salmon and improve their populations, such as The International Year of the Salmon, The Missing Salmon Alliance and the Salmon Five Point Approach. A local action plans to help improve the Severn salmon population will be drafted between the Environment Agency and partner organisations, and will be further developed in the coming months.

Following the review of evidence on the status of the Severn salmon stock, and in order to address the need to reduce exploitation on the stock, the Environment Agency has proposed mandatory catch and release and angling method restriction byelaws for salmon and sea trout on the Severn rod fishery, to allow as many salmon as possible to escape the fishery to spawn and therefore boost the abundance of juvenile salmon. The proposed new NLO will maintain the current number of available lave net fishing licences (22) for the Severn estuary fisheries, the byelaws will prevent the draft nets and putcher ranks from fishing and apply mandatory catch and release for the lave nets for salmon and sea trout.

Mandatory catch and release regulations and method restrictions have been applied in other jurisdictions to reduce the exploitation of the weakest salmon stocks. For the 2021 fishing seasons, 60% of Scottish rivers will apply mandatory catch and release regulations and 60% of Irish rivers will apply either mandatory catch and release regulations or will be totally closed to fishing. Regulations in Ireland also include prohibition of worm as bait, and hook size restrictions on approximately 60% of their rivers. Wales, which uses the same salmon stock assessment methodology as England, has applied mandatory catch and release and method restriction regulations on all of its salmon rivers in 2021.

Key clarifications around main points of objection are presented in this document.

Statements relating to points of objection are presented here in the order of frequency with which they were raised as matters of concern by respondents to the consultation, and categorised under six main themes.

Theme
1. **Compulsory C&R and Method restrictions are not the solution - voluntary measures / limited take** Anglers are not the cause of the decline, method restrictions are unenforceable, coarse angler can continue to bait fish, bait is the best method, alienate and discourage angler participation, less anglers more poachers, no bait fishing will impact older anglers, increased bait mortality is incorrect, basis for hook size unclear as to benefit, salmon saved will make no difference.
2. Challenges on the data used and EA stock assessment process Do not agree with the use of declared rod catch data to assess stock levels, disagree with the estimated saving and deficit numbers, fish lost due to method proposal will skew future stock assessments, disagree that rod and net exploitation has any significant impact, angler observations of plenty fish at weirs and on redds, lack of counter data, improper use of juvenile data, no redd counting considered, missing information on sea trout decline.
3. Estuary Net Fishery Strong feeling from angling lobby to decrease net fishing (reduce NLO further) especially regards impact to Wye and Usk, C&R of lave nets damaging to fish, strong feeling from nets they are already heavily restricted, overall catch of the lave nets insignificant against three rivers, enforcement poor, perception nets take more fish.
4. Environmental factors are of more concerns Environmental impact factors should be addressed before restrictions measures on angling, the declines are confined and due to impacts in the marine environment, water quality resulting from sewage and agricultural run-off has a greater impact, illegal in channel works and degradation of spawning habitat, water resource and over abstraction, loss of the eyes and ears (anglers reporting pollution/incidents), impacts from fish farms.
5. Predation Impacts of predation not sufficiently covered / accounted for - i.e. piscivorous birds, seals, otters, predators are responsible for declines.
6. Other issues Should implement a renewed stocking programme (open hatcheries), the current Spring salmon byelaw isn't working, removal of barriers, economic impacts to shops and B&Bs, consultation process was biased.

Theme 1 – Compulsory C&R and Method restrictions are not the solution

Issue raised: Angling is not the cause of the decline

EA Response: Salmon stocks are undoubtedly impacted by a wide range of factors throughout their lifecycle and migrations. We are confident, and in agreement however that rod angling exploitation is not the primary cause of the decline of salmon stocks. The biggest issue is very likely to be marine survival. Research into this is underway, with NASCO (North Atlantic Salmon Conservation Organisation), and other European countries and partners, such as the Atlantic Salmon Trust (The Missing Salmon Alliance), to help us understand why fewer salmon are returning from the marine part of their lifecycle.

However, this does not negate the fact that regulation of salmon exploitation will make a positive difference to a failing stock. The approach that we are taking is in line with our international obligation to NASCO that the UK is now aligned to as an independent member state. This requires us to take a precautionary approach to salmon fisheries management particularly where stocks are below their Conservation Limits.

Rod angling exploitation removes returning adult salmon from the river. These returning adults are ultimately the key to future populations, and if we are to reverse the decline in salmon, then quite simply we need as many returning adult salmon to spawn as is possible.

It is acknowledged that anglers are increasingly returning fish to the river alive. However, even with this improved voluntary catch and release rate, adult fish are still lost to direct kill as well as a mortality that is associated with catch and release fishing. With salmon stocks below minimum safe spawning levels, any loss of adult fish will negatively impact the sustainability and recovery potential of that stock.

We understand that some respondents feel that these measures target angling and/or net fisheries disproportionately. However significantly reducing the number of salmon killed via rod or net fisheries is only one element of fisheries management work designed to support salmon stock recovery and is in line with the multi-organisation Salmon Five Point Approach and our guidance for stocks below their Conservation Limits. Examples of such work are described later in this document.

We believe the evidence of Severn salmon stock decline is clear and significant and that we must collectively act to reverse this decline.

Issue Raised: Methods Restrictions are unenforceable

EA Response: Fishing method restrictions are not unenforceable, and are already in place, in part, through National Spring Salmon byelaws, as well as more comprehensively on other rivers such as the nearby River Wye, and also commonly applied in other countries such as Ireland. The restriction of certain fishing equipment and methods for catching salmon and sea trout and subsequently releasing them back into the river, will improve their chances of survival and further increase numbers that can successfully spawn improving the opportunity for recovery and longer term sustainability of stocks.

When there is a conservation concern for a wild salmon population each fish is valuable for its potential contribution to recovery of the population. We are seeking to maximise that contribution with proposed method restrictions that will lead to increased fish survival and spawning success. We have considered these methods will help in minimising handling time when releasing fish, and reduce the physical damage associated with capture, especially to reduce the amount deeply hooked fish and injury from handling as well as exposure to the air.

Having those methods restriction byelaws in place will provide a fair and consistent approach to the whole Severn catchment reducing any ambiguity across national boundaries, with ability to enforce and to engage with anglers. We would expect that enforcement of any new byelaws would be interpreted by Fisheries Enforcement Officers (FEO) in the same way as all fisheries byelaws. As with the implementation of any new regulation these will be considered fully regarding resources available and will be implemented through an enforcement plan. We consider that these plans will enable us to engage with anglers, to educate and integrate these new methods as normal fishing activity and good practice over time. We will achieve this through advice and guidance and where we come against noncompliance, we will agree solutions and require the implementation of improvements with individuals e.g. hooks that are found to be barbed the FEO will advise the barb should be immediately crushed down flat with pliers or the hook replaced by a barbless one.

Where non-compliance is persistent then formal sanctions and enforcement powers leading to formal cautions or prosecution will be applied.

Unintentional capture of salmon by coarse and trout anglers is not currently a significant issue, especially considering the angler participation and effort of the coarse fishing on the Severn, but reports are not uncommon, in most circumstances fish are returned unharmed. Occasionally there will be instances where compliance may be deliberately flouted. Our FEO teams are skilled in observation of angling techniques and will dedicate enforcement resources to this, such as targeted patrols, overt and covert evidence gathering. These are currently the techniques used to enforce the cross border byelaws on the Rivers Wye and Dee in England.

We are also increasing the use of intelligence-led work, and improved technology and surveillance, on identified hot spots, which is improving our ability to prevent and deter illegal activity. We will work alongside angling clubs, landowners and partner organisations

to maximise our resources on the ground. In particular, the intelligence that we use to target our enforcement activity relies on the close relationship that we have with our customers and partner organisations, such as the Angling Trust and the Police. This gives our enforcement officers, who are fully trained and compliant under the Police and Criminal Evidence Act, time to tackle illegal activity that has been identified.

Issue raised: Voluntary measures

EA Response: We recognise that voluntary restrictions would typically be more acceptable to anglers than mandatory restrictions, but based on the information available, further and continued voluntary restrictions (i.e. a greater than 90% C&R) would not go far enough in the Environment Agency's view for this failing salmon stock. We recognise the efforts already made by individual anglers in their desire to help with the Severn salmon stock recovery, as recent catch & release rates have increased from around 40% in 2010/2011 to around 63% prior to the implementation of the emergency byelaws in 2019.

As noted in the technical document that accompanied the consultation, the Severn salmon stock is now classified as “Probably At Risk” (now and in 5 years' time), and therefore based on our Decision Structure guidance the Environment Agency is required to reduce the exploitation as quickly as possible. We accept that the proposal to place a new regulatory controls may be unpopular to some anglers, but we believe it is proportionate, reasonable and a consistent measure over the length of the whole Severn fishery that can be enforced, which we believe necessary for the recovery of the Severn salmon stocks at this time.

Rod catches have been at their lowest levels in recent years and some respondents argue that regulation is not necessary as anglers do not kill many salmon when stocks are lower. It is certainly clear that individual anglers are already voluntarily returning a larger proportion of their catch. Also a small number of associations and public fisheries have implemented their own restrictions (e.g. bag limits (tags) or method restrictions) in recognition of these concerns and in an effort increase spawning escapement which should be applauded. But generally the willingness by clubs is sporadic and slow in the implementation of this approach, and significantly these have not been applied in areas where catches are the highest.

The majority of salmon being killed at the present time, are taken by anglers who are only killing one salmon per year, although a small number of anglers are killing more than one salmon per season. Therefore the most effective means of ensuring that more salmon escape the rod fishery to spawn, is through reducing both the number of anglers who are killing one salmon each and the few who kill more than one salmon each.

Further promotion of voluntary >90% catch and release is suggested as an alternative before the imposition of mandatory catch and release. The Severn rod fishery records one of the lowest voluntary C&R rates of any of the principal salmon rivers in England and

Wales, despite attempts by the Environment Agency over a number of years to encourage voluntary restraint in the taking of salmon from the rod fishery when more stringent measures were being applied to the net fishery. This voluntary C&R rate varied between 40 and 63% from 2010 to 2018.

The weakness of the voluntary catch and release approach lies in the reality that any individual angler cannot know, when fishing, how many salmon have already been killed or might yet be killed through the remainder of the fishing season over the whole river. The perception that they are only killing one salmon is taken in isolation of the knowledge of how many other anglers are doing the same thing. When that amounts to another 20 to 30 anglers or more, as well as the 6 to 18 anglers that have killed more than 1 salmon each as has been the case in recent years (2017 & 2018), then that accumulated total killed, becomes more appreciable. In this situation the proposed mandatory catch and release byelaw provides the best protection from exploitation for this stock, by giving all individual anglers the unambiguous and enforceable criteria that all salmon should be released.

The potential application of byelaws for a ten year period is considered by some respondents as being too long. Time limited byelaws, such as those being proposed here, must be applied for a defined time period and the most common application for such fishery regulations is for a ten year period. In practice, the Environment Agency reviews stock assessments every spring, based on the previous year's data, and that affords an opportunity to review stock status and appropriate regulations on an annual basis. If there was an obvious sustained improvement in Severn salmon stocks, above the conservation limit before the end of a ten-year time limited regulation, then there are certainly opportunities to potentially relax or even remove regulations before the ten year expiry date, if that was considered appropriate and there was considered to be enough of a harvestable surplus of salmon to allow such a relaxation for both net and rod fisheries.

Issue raised: Anglers should not be required to return damaged or dying fish

EA Response: Some respondents have stated that it would be wrong to force anglers to return damaged or dying salmon following capture, as would be required by the proposed by mandatory catch and release. The survival of rod caught salmon after release can be high, typically 80 to 90% or more, provided that the capture and handling are done sympathetically. Indeed we consider that more needs to be done in this area, as supported by a number of respondents, hence fishing methods and fish handling practices should be improved to maximise the survival of released salmon. The application of method restrictions as proposed here would mean a very low likelihood of salmon dying following more sympathetic capture, handling and release practice.

As part of their commitment to the Salmon Five Point Approach, The Atlantic Salmon Trust, FishPal and the Angling Trust have produced an excellent step by step instructional video on how to play, handle and release an Atlantic salmon:

https://www.youtube.com/watch?v=g7uoXk_hFOk

A number of respondents have expressed concern of the potential criminalisation of anglers who inadvertently deep hook a salmon meaning that a live release is no longer possible. We do not intend to criminalise anglers through the implementation of rod and net fishery control measures that seek to protect wild salmon stocks. The method restrictions proposed here would make the incidence of deep hooking less prevalent than at present. However, allowing anglers to take such fish makes catch and release unenforceable – some, a minority of anglers, might use this as an excuse for taking fish that might otherwise survive on being returned. Mandatory catch and release has been widely applied as an appropriate regulation for the protection of salmon and other fished species, not just in England and Wales, but in most other countries where salmon are present.

Fishing methods such as bait fishing, and specifically worm fishing, tends to be associated with more frequent deep hooking and bleeding, and therefore higher mortalities. Lure fishing tends to be less damaging than bait, but it is recognised and raised by respondents that Flying C type lures in particular can be associated with deep hooking. Fly fishing tends to be the least damaging of all methods and generally accounts for the lowest mortalities of released fish. The adoption of best catch and release practice, such as avoiding deep hooking fishing methods or using single barbless hooks, means that released fish are much more likely to survive, and any handling mortality will be minimised. Potentially allowing anglers to take damaged or bleeding fish makes a catch and release byelaw unenforceable.

Issue raised: Impact of proposed measures will drive anglers away from the river.

EA Response: We are aware that the proposed controls may lead to a reduction in salmon fishing activity and recognise similar experience from other rivers where mandatory catch and release has been applied over the last 20 years. It is however important to emphasise it is the killing of salmon and sea trout we are seeking to prevent, and not complete cessation of fishing.

Specifically, on the River Wye, where mandatory catch and release was introduced in 2012, both fishing effort and rod catches initially declined slightly but then actually appeared to increase in subsequent years following the introduction of the byelaw. Recent NRW Local Angler Group meetings for the rivers Wye and Usk have discussed renewal of those byelaws due in 2022, and the initial feedback suggests overwhelming support to continue those regulations. More recently on the River Eden where a mandatory catch and release byelaw was introduced for the 2018 season, declared catches declined by around 20% and declared fishing effort by around 33% from the previous 5-year averages. In 2017, a survey that included anglers from North West quoted a likely 22% reduction in fishing effort, if mandatory catch and release were to be introduced.

Several respondents state that the impact of the proposed regulations on EA income through potentially reduced rod licence sales, is not adequately considered. The primary purpose of the proposed regulations is to protect and recover the Severn salmon stock from its current declining status. Maintaining the socio-economic benefit of salmon angling is secondary to the imperative to protect and recover failing stocks. If salmon stocks continue to decline, then the economic benefits from angling will also continue to decline as has already been evidenced over the last decade or more.

Issue raised: Prohibition of bait fishing.

EA Response: The most notable angling method restriction that is being proposed is the restriction to bait fishing which primarily includes worm fishing. Our experience from elsewhere in England, supported by other salmon management jurisdictions in Europe, consider worm fishing to be particularly damaging as salmon tend to swallow the bait deeply and, if released, are more likely to die shortly afterwards. The use of worm as a salmon angling bait is therefore not compatible with the over-riding objective to stabilise and enable salmon stock recovery as quickly as possible.

Bait fishing with the worm was highlighted by several respondents as the best and ‘only’ method based on a number of reasons e.g. difficult to access for fly or spinner fishing, steepness of banks and “muddy languid” nature of the river, to name a few. Worm fishing typically accounts for about 30% of the Severn salmon catch whilst spinning and fly fishing methods take approximately 70% of the fish caught, although spinning is by far the dominant of these two methods. Anglers are more likely to kill a bait-caught salmon, with worm fishing accounting for 60% of those salmon that are killed in the period 2009 to 2018. The benefits from these measures, while small initially, would be expected to accumulate and increase as stocks rebuild.

Further challenge from some respondents has suggested that the removal of bait fishing for salmon and sea trout may discriminate against elderly or disabled anglers. We are confident that our measures do not discriminate, we are addressing a balance for the need to protect and improve the current fish stocks and maintain sustainable levels of fishing for salmon to continue into the future. Allowing anglers the freedom to continue to intentionally kill salmon would further risk the dwindling stock, and would introduce inequality between those who voluntarily practice catch and release and those who do not. The byelaws would require this effort to be made by all members of the angling community as a contribution to the solution of depleted salmon stocks. We have considered that a full bait ban might have a differential impact on anglers who may be elderly or disabled and potentially less able to practice other fishing techniques. However the proposed bait ban is only for two fish species and therefore will not restrict from the enjoyment of angling, and does not fully prohibit these groups from fishing for other freshwater fish species with bait. It has been observed on the Severn that with the practice of salmon fishing with spinners and Devon minnows, anglers can participate from a more sedentary position compared to fly fishing e.g. seated position as practised by some bait anglers on those parts of the river that are easy to access.

There are many salmon and sea trout fisheries throughout the UK where method restrictions apply (such as no bait fishing) and alternative options for less abled and disabled anglers has been provided e.g. the Tweed Foundation in association with the Wheelyboat Trust. We have considered that some of the favoured prime fishing locations on the Severn for salmon fishing are fortunate that they provide easier access and a level hardstanding platform to fish from, making this more accessible to less able anglers. We would welcome an opportunity to work with clubs and associations such as the Severn Fisheries Group to look at further provisions for the less able anglers and can access funding from the rod licence revenue to make this happen.

Theme 2 - Challenge of data used / Environment Agency assessment

Issue raised: Accuracy of data

EA Response: The accuracy of various sources of data is questioned by a number of respondents to the consultation, arguing that this makes those data and our subsequent stock assessments and byelaw proposal invalid. No single source of data is perfect, but that does not mean that it is unreliable or should be discounted. A number of responses accuse the Environment Agency technical document of selectively presenting only the data that portrays the Severn salmon stock in the worst possible light, thereby justifying the proposed mandatory catch and release byelaw. This is not the case, and the validity of each dataset is further described in the following sections. It should be remembered that the NASCO guidelines for the management of salmon fisheries state that:

Managers should demonstrate that they are being more cautious when information is uncertain, unreliable or inadequate, and the absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures.

Issue raised: Rod catch data

EA Response: A number of respondents state that rod catch data is an unreliable means to assess salmon stocks, often citing changing fishing effort and/or variable weather and flow conditions as reasons to discount this data.

A particular challenge around the exploitation rate that is estimated for the Severn was examined, and is explained here. Our stock assessments are based on an estimated overall exploitation rate of 11% for the Severn, that is to say that the rod catch is estimated

to represent 11% of the total run of salmon into the Severn. The way that this overall exploitation rate is split into the separate exploitation rates for 1SW and MSW salmon causes an inadvertent increase in that overall exploitation rate. To address this we have re-calculated the Severn stock assessment based on a lower 9% overall exploitation rate, with the result being that the salmon stock remains in the Probably At Risk category, still with a substantial shortfall from the Conservation Limit.

Several respondents argue that a lower exploitation rate should be applied to the specific 2018 Severn stock assessment, because the early summer drought conditions meant that very little fishing effort was expended in this part of the year. Lower exploitation rates were recorded in 2018 on the monitored rivers Dee and Tamar, but exploitation rates on the monitored rivers Fowey and Teifi were broadly similar to previous records. While we agree that fishing effort was reduced in 2018, so too the run of salmon was reduced in this year.

Declared rod catch statistics have typically been recognised as representing roughly 90% of the total catch because of an element of under-reporting of catches by anglers. Prior to 2015 declared catch data have therefore been multiplied by 1.1 to ascertain the likely total rod catch. Since 2015, larger raising factors ranging from 1.28 to 1.51 have been applied to the declared catch data to reflect larger discrepancies seen between catches declared to the EA and catches reported to some local Fisheries Associations. Those raising factors have been used in the 2015 to 2018 stock assessment data that the technical document and byelaw proposal are based on.

Issue raised: Fish Counter data

EA Response: A number of respondents have stated that the lack of counter data makes the annual stock assessments unreliable. The majority of rivers, not just within England and Wales but also in Scotland and Ireland, rely on rod catch statistics as the basic index of the size of the returning adult stocks. The EA fish counter at Carreghofa on the Tanat, which is third order tributary of the Severn, provides reliable data about this specific tributary.

A number of responses make particular challenges around the Tanat fish counter data that has been collected prior to 2010 not being presented in the technical report. The pre-2010 data collected from this counter was not validated with concurrent video recordings to independently confirm the counter recordings. As such, this pre-2010 data cannot be considered to be an accurate count of salmon in this tributary, and cannot be compared with the validated data collected since 2010. This is explained in the technical document.

Issue raised: Out of season salmon runs

EA Response: Some respondents consider that the direct observations of salmon jumping at weirs after the end of the fishing season means that the actual salmon run is underestimated. Realistically, those leaping salmon observed are well coloured, indicating that they have been in freshwater for weeks, if not months, and are unlikely to have been

recent entrants into freshwater from the sea. In addition, it has been recently observed that leaping fish may often be the same individuals jumping repeatedly, possibly giving the appearance of a larger number of fish than are there in reality.

Evidence from the Tanat fish counter has demonstrated a clear and marked decline in the number of salmon entering that tributary in October and November in 2017 and 2018, suggesting a much reduced late-season, pre-spawning run.

This pattern of declining autumn runs is seen not just on the Severn but throughout the salmon rivers of Europe.

Issue raised: Juvenile survey data

EA Response: Our juvenile monitoring surveys provide snapshots of the numbers of juvenile salmon and trout at relatively small survey sites, over several different scales of space and time. A small number of sites are monitored more-or-less annually in the Welsh part of the upper Severn and these are typically targeted at key salmon and trout spawning areas. This provides a picture of how juvenile numbers change from year to year. The examples of annually monitored sites are presented in figures 19 (page 38) and 24 (page 42) of the technical report. The changing profile of juvenile salmon and trout numbers from these annual surveys, expressed as grades, is presented in figures 19 (page 38) and 24 (page 42) of the technical report.

In brief summary here, the 2019 survey presents one of the poorest records of the distribution and abundance of juvenile salmon for this catchment.

Issue raised: Salmon stock assessment method

EA Response: Several detailed challenges are made around the calculations used in the annual stock assessment method.

Extended discussions and challenges around the stock assessment method have gone on for a number of years now between EA and fisheries representatives. There are a number of particular areas where we do not agree and specific data is challenged. The EA stands by the data and calculations that are used in the annual assessments. While some revised calculations have been made in some particular annual assessments, those have had relatively minor effects on the final egg deposition calculations and have not fundamentally resulted in any change of risk categories. Recent revisions of the Severn data have resulted in some increases in egg deposition calculations, but the stock remains in the Probably At Risk category, with a substantial shortfall in spawner numbers from the Conservation Limit level.

While 2020 has seen some improvement in salmon stocks, the recent poor state of stocks is very real and widespread, affecting all countries. It is this poor state that drives the poor current assessment categories, in this case the Probably At Risk categorisation of the Severn salmon stock.

In recognising the complexity of the assessment calculations the Environment Agency is committed to reviewing the stock assessment method, and this work is currently underway, and expected to be completed in 2022. Whatever revisions that method might bring, it will not fundamentally change the recent poor stock levels seen in the Severn, as well as the Wye and Usk

The conservation limit is defined as the point where the population is capable of replacing itself numerically, while also allowing a harvest to be taken by the net and rod fisheries. Specifically, the Severn stock is considered to be well below its conservation limit at present - reflected in the current year stock assessment that is below the conservation limit, and the forward projected Probably At Risk likelihood of failing the Management Objective in 5 years' time, if the current prevailing trend continues. This means that the current salmon stock is unlikely to be able to replace itself numerically in the next generation if all current life-cycle impacts remain similar.

Issue raised: No Sea Trout data presented

EA Response: Response was made that no detailed sea trout data was presented and it was unclear why sea trout have been included in these byelaw proposals. The limited information we have with regards to sea trout and reference to the poor Upper River Severn juvenile trout densities were presented in the technical case. The sea trout stock of the Severn appears to be relatively small, with no historic records of substantially higher abundance, and no targeted fisheries for this species. Catches of sea trout by the estuary net and fixed engine fisheries are uncommon and, typically, those sea trout declared by anglers are caught as a by-catch by those who are targeting salmon or the more common freshwater resident trout.

Juvenile trout numbers are especially low in upper Severn surveys and again support the view that sea trout numbers within the Severn are low and insignificant in fishery terms. Such a low stock is unlikely to be able to sustain any targeted exploitation.

Sea trout are a designated interest feature of the Severn Estuary Ramsar Site and also feature as part of the wider fish assemblage of the Severn Estuary SAC. However, as there is no current formal assessment for these EMS (European Marine Sites), the status of the sea trout stock is unknown.

Notwithstanding this apparent low stock level, following the habitats directive precautionary approach we would not wish to see any increased exploitation of sea trout by the Severn net or rod fisheries in the future. For this reason, and also to avoid any possible mistaken identification between species, sea trout have been included in the proposed regulations.

Theme 4 – Severn Estuary Net Fishery

Issue raised: Commercial fishing at sea

EA Response: With regards to high seas fisheries, the Environment Agency has a regulatory role for fisheries in freshwater and the sea out to 6 nautical miles. We do not regulate high seas fisheries, but through Defra and the International Council for the Exploration of the Seas (or ICES), we advise the North Atlantic Salmon Conservation Organisation (NASCO) which negotiates quotas for high seas salmon fisheries, principally the Faroese and Greenland fisheries. The Faroese fishery has not operated since the early 1990's and the Greenland fishery has operated on a much reduced quota in recent years as a subsistence fishery that can only take what will be consumed locally. The Greenland fishery is known to predominantly catch salmon that originate from and are destined to return to North American and Canadian rivers. Salmon have certainly been detected in the bycatch of some pelagic trawlers through the screening of environmental DNA (e-DNA) as reported recently by the Atlantic Salmon Trust (https://atlanticsalmontrust.org/knowledge/research/edna-project/), but the extent of bycatch has never been quantified.

A number of respondents claim that netting at sea has a greater impact on returning adult salmon stocks than freshwater rod fisheries. The Severn salmon will have mainly been caught in the drift net fisheries off the North West coast of Ireland but that fishery was closed in 2007.

Issue raised: Net Fishing - salmon

EA Response: Some respondents to the consultation stated that it was unacceptable to propose a mandatory catch and release byelaw for the rods while the Severn estuary nets were still allowed to fish. Since 2012, we have been applying limits on the number of salmon that can be retained by salmon net fisheries operating within the Severn estuary, to meet our obligations to protect the Wye and Usk salmon stocks under the Habitats Regulations. This reflected the fact that the Severn estuary net fishery also exploits salmon destined for both the River Usk and Wye which are also both designated Special Areas (SACs) for Atlantic salmon. The Severn Estuary SAC also includes Atlantic salmon as a listed interest feature. This places a legal requirement on the Environment Agency to ensure that these designated sites are maintained in a favourable condition or where this is failing, for us to introduce measures that seek to restore these populations back into a favourable condition as quickly as possible.

In light of the recent deterioration in stock status on all of the three major rivers (Wye, Usk and Severn) which contribute adult salmon to the River Severn estuary net fisheries, the catch limit allocation method no longer offers sufficient protection for fish stocks and any

continued harvesting of salmon by the estuary net fisheries is likely to be detrimental to stock recovery. We are therefore proposing here that the putcher and draft net fisheries will be prohibited by byelaw.

The lave nets are to be allowed to fish for salmon and sea trout and when caught they must be returned alive. We have considered that the nature of this netting technique means that any fish caught can be quickly and safely returned alive unharmed, giving catch and release parity with the rod fisheries.

The Net Limitation Order and Byelaws are separate pieces of legislation. The Net Limitation Order simply defines how many lave net licences will be made available for the net fisheries, while the byelaws define the conditions around the use of those licences.

Conversely the netsmen have made representation over the years that they have been restricted, although equality has not been applied to the rod fisheries and in a view of fairness their acceptance that there was a need to further protect stock, then parity with rods and nets should be sought.

Theme 5 - Environmental factors are of more concerns.

Issue raised: Water Quality

EA Response: A number of respondents are concerned that water quality is a much greater issue and should be regulated more intently and vigorously before restrictions are made to angling.

We recognise there are still far too many serious pollution incidents that impact fish stocks. Unacceptable levels of phosphorus in over half of English rivers, usually due to sewage effluent and pollution from farm land, this can lead to impacts such as algal blooms which destabilise oxygen levels which can impact salmon and sea trout through all life stages.

Our ambition is a cleaner, healthier and better managed water environment. Defra's 25-year environment plan challenges us to improve at least three quarters of our waters to be close to their natural state. Everyone has a part to play, we need to lead by example with restraints to protect declining salmon stocks and apply pressure to the wider public and industry on their duties. Water companies must continue reducing pollution incidents from sewer systems and sewage treatment works. Farmers must manage their land responsibly, using fertilisers and pesticides with much greater care, all the more so as the government considers new payments that increasingly reward environmental benefits. We will work closely with others to make this happen, but we won't hesitate to prosecute when necessary. We will put things right quickly through voluntary Enforcement Undertakings for

minor breaches, but the size of fines for more serious offending needs to be proportionate to turnover and consistently applied by the courts.

Soil and nutrients washing off agricultural land is the single most common reason for our rivers and streams not being as healthy as they should be. This has the greatest potential to impact salmon and trout spawning and juvenile nursery habitats. One example is our work with many catchment based partnerships such as the Severn River Trusts and Shropshire wildlife trust's through the Middle Severn Catchment Partnership who have collaborated with landowners and farmers to make improvements to land management that reduces run-off, improved buffer zones, tree planting and natural flood risk management to slow the flow. All along with removal of small barriers to migration which are improving the access and availability to improved spawning and nursery habitats.

The Sewage (Inland Waters) Bill, introduced by the Ludlow MP Mr Dunne to Parliament last year, has raised awareness of a number of issues associated with storm overflows. The Government has committed to continuing to work on the best way to make progress in reducing the harm caused by sewage spilling into our rivers.

The Storm Overflows Taskforce – made up of Defra, the Environment Agency, Ofwat, Consumer Council for Water, Blueprint for Water and Water UK – has agreed to set a long term goal to eliminate harm from storm overflows. Following recommendations from the Taskforce, water companies will also increase transparency around when and how storm overflows are used. Water companies will also accelerate work to install monitoring devices to create a complete picture of their activity by 2023.

Issue raised: Salmon Farm Impacts

EA Response: There is evidence that salmon farms can affect wild salmon and sea trout stocks that are in close proximity to the aquaculture areas, however there have been no studies around the main aquaculture areas of Europe that can demonstrate the impacts of aquaculture on distant salmon or sea trout stocks. At present we don't know if smolts from the Severn migrate near, or close enough to, salmon farms to potentially be impacted.

There are no open cage marine salmon farms in English waters and we fully support North Atlantic Salmon Conservation Organisation's (NASCO) efforts to ensure that regulatory regimes protect wild salmon and sea trout stocks. The UK Government has signed up to NASCO's international goals for the protection of wild Atlantic salmon, including the 'Williamsburg Resolution'.

Issue raised: The Marine Environment is the Issue

EA Response: It is quite correct that survival within the marine phase of the Atlantic salmon's lifecycle has declined markedly in recent decades. This is very likely to be a key cause of the decline of salmon across its home range, and is believed to be linked to changing climate, sea surface temperatures and prey availability.

The impacts of climate change and changing oceanic conditions are a huge issue, and one which the Environment Agency has comparatively little influence over. Indeed, climate change is an issue for us all.

However, we support work which is ongoing with NASCO (North Atlantic Salmon Conservation Organisation), other European countries and partners, such as the Atlantic Salmon Trust, to help us understand why fewer salmon are returning from the marine part of their lifecycle. We hope that this will help us manage our coastal development and marine fishing pressures to further improve returning numbers of salmon.

Furthermore, we are committed to innovate where we can, to expand our knowledge and thus management of the marine phase of the salmon's lifecycle. For example, the Environment Agency in the North West region has recently facilitated a pioneering study by the University of Glasgow to acoustically track salmon smolts in the River Derwent through the river system and at sea.

It is suggested that the proposed catch and release measures only focus on one part of the picture. This is true. Specifically, these byelaws aim to reduce exploitation of salmon in the Severn Estuary and River Severn catchment, to provide more spawning potential to aid stock recovery. However, this proposal is part of a much wider package of measures to improve stocks, focusing on other factors besides exploitation, that we know negatively affect salmon. These areas of focus are given in our Salmon Five Point Approach and include water quality and quantity, habitat, barriers to migration, and marine survival. These areas of work make up a far greater proportion of our day to day work, than regulation of rod fisheries does. An action plan for the wider improvement of the Severn catchment will be completed annually.

Theme 5 - Predation

Issue raised: Predation - otters, seals, cormorants, goosanders are responsible for declines

EA Response: We recognise that there is considerable concern raised by many anglers and fisheries interests, that both cormorants and goosanders are damaging our fish stocks through unsustainable predation.

The scaring and control of piscivorous birds, seals or other predatory mammals can only be undertaken within the law, and we fund the Angling Trust to employ two Fisheries Management Advisors that provide advice to angling clubs and landowners around the scaring and control of cormorants and goosanders, and management of predators within the legal framework. The Angling Trust has presented options to Severn angling clubs on the implementation of Area Based Licences to reduce the bureaucracy of multiple licence applications by individual fishery owners, and to co-ordinate shooting to scare across parts catchment. The evidence around impacts of piscivorous birds on fisheries is regularly

reviewed by Defra, including relevant regulators and stakeholders such as the Angling Trust.

Theme 6 – Other Issues

Issue raised: Hatchery production should be re-instated

EA Response: The Environment Agency took the decision in the late 1990's to not spend public money on hatcheries as the evidence grew at that time around the low rate of return of stocked salmon. We do allow some limited hatchery operations to run where they are resourced privately, although not on protected rivers where salmon are a designated species. We also have clear guidance that such operations must adhere to, in order to minimise potential negative impacts of domestication and stocking. Amongst other controls, this guidance aims to ensure any privately driven hatchery effort contributes no more than 1% of any component of the rivers salmon stock.

Evidence has grown significantly since the late 1990's, demonstrating that hatchery salmon have marine and freshwater poorer survival, adaption ability and lifetime reproductive fitness than wild-spawned salmon. There is increasing evidence that these disadvantages persist through subsequent generations. Evidence from salmonid stocking investigations shows that where hatchery origin fish (even from native broodstock) breed with wild fish, the resulting progeny can suffer from the same disadvantages, potentially over a number of generations.

Ultimately, this can create a situation where a hatchery effort can increasingly negatively impact overall wild stocks, suppressing their natural productivity and adaption. Our position on any fisheries management tool such as stocking, is that it must be evidence based. We cannot afford to make decisions that might negatively affect salmon stocks. Given the very significant weight of evidence indicating that stocking is not likely to be beneficial, and may have negative impacts, we do not propose to implement it further on the River Severn. Much of this evidence is publicly available online, and we encourage those interested to read it.

This position is reinforced by other fisheries managing organisations. For example, in 2014 Natural Resources Wales requested a review of evidence in regard to their own hatchery and stocking efforts. This concluded with recommendations that these programmes should be brought to an end, and that a realistic timetable should also be considered for bringing third party stocking efforts to an end.

Calls for increased hatchery effort are seldom supported by evidence that such measures have positive impacts on salmon population recovery. Indeed, there is minimal evidence of this. Typically, support for hatcheries draws on rivers that have them, inferring that rod catch on these rivers is attributable to the hatchery. The example that is regularly highlighted is that of the River Tyne, North East England. Indeed, a number of objections in this consultation process mention this catchment.

The third party funded salmon hatchery programme on the Tyne catchment is in place providing statutory mitigation for large scale habitat loss due to the construction of Kielder reservoir. This construction led to the permanent loss of significant section of spawning and juvenile habitat on the Tyne catchment.

Whilst it is suggested by some that the high rod catch of the Tyne is demonstrative of the effectiveness of hatcheries, research in 2004 clearly concludes that the dominant process leading to the recovery of the Tyne salmon was wild reproduction.

Our position on hatchery and stocking programmes is rooted in the significant weight of evidence. We do not propose to introduce or expand any hatchery capacity. We believe it is better, safer and more effective to support and protect natural salmon production in the river through a range of measures.

Issue raised: Spring Salmon mandatory catch and release byelaws

EA Response: Some respondents argued that the catch and release regulations in force since 1999 to protect spring salmon, have not been effective, as spring salmon stocks have continued to decline, and further catch and release regulations should not therefore be considered here as an effective management option. While spring salmon numbers have certainly not increased to pre-1990s levels, there has nonetheless been some increase in spring salmon numbers in recent years across the UK.

It is not readily possible to attribute this increase solely to the National Spring Salmon Byelaws, given that salmon stocks are affected by so many factors, but the prevention of killing spring salmon by nets and the mandatory release of thousands of spring salmon by rods over the last 20 years will have at least contributed to some extent to the evident improvement in spring salmon stocks.

Issue raised: Policy is misguided and is not tackling the real issues

EA Response: Several respondents to the consultation object to the mandatory catch and release and method restrictions byelaw proposals on the basis that it does not tackle key impacts on the salmon life cycle – specifically marine survival, predation, pollution and barriers to migration. These proposed byelaws are not intended to address those issues, it is just intended to allow more adult salmon to escape the rod and net fisheries to be able to spawn and therefore boost the juvenile production in the next generation. This is one specific element of an overall action plan that is needed to improve all aspects of the survival of salmon in freshwater and at sea.

Issue raised: Decision is already made regarding byelaw for salmon and sea trout

EA Response: We would like to assure all interested parties that the proposed regulations have not been implemented.

The procedure for reviewing and making fisheries byelaws and net limitation orders (NLOs) requires us to make the regulations that are the most appropriate to the stock status that is explained in the technical document. We then advertise those proposed regulations and accompanying technical document through the consultation process.

On the strength of the range of evidence presented in the technical document, we have defined the proposed byelaws as the best option to:-

1. limit the impact of the rod fishery on the salmon stock;
2. follow our Decision Structure guidance;
3. and to fulfil our obligations to NASCO.

The technical document and the proposed regulations, along with all of the consultation responses will be sent to Defra for final determination. Proposed regulations do not become law until approved by Defra and signed by the Fisheries Minister, once they are satisfied that the proposals are proportionate and necessary.

Issue raised: Salmon 5-Point Approach

EA Response: Some objections have centred on a perceived lack of action by the Environment Agency in areas outside of salmon exploitation, suggesting that the proposed measures disproportionately target anglers and net fisheries, with limited focus on other key factors. These factors include predation (see separate section earlier in this document), but also pollution issues, habitat loss, and other areas set out in our national 5 point approach.

The Environment Agency and its partners are absolutely committed to a range of measures to improve salmon stocks. These proposed regulations are simply a part of suite of measures and actions, not the mainstay.

Our national Salmon 5-Point Approach sets out a framework for delivery of these measures. Actions are undertaken and delivered on this day in, day out. For example, our environment officers inspect farms and businesses, respond to pollution reports 24 hours a day, and use enforcement powers to drive improvements in water quality, punishing and deterring poor performance and environmental harm. They also regulate and protect flows through abstraction licencing, inspection, and incident response and enforcement.

Our fisheries enforcement officers target illegal activity, and our wider teams work closely with local partners (including anglers and angling clubs) to remove barriers to migration and deliver habitat improvement projects. Much of this work goes on unseen and

unrecognised. In many cases due to sensitivities around enforcement and confidentiality, we are not able to publicise works and actions undertaken. As a consequence, some perceive that our work in areas outside exploitation regulation is minimal. This is not the case.

Some of the greatest opportunities are achieved in collaboration with partners such as the Severn Rivers Trust, Canal and River Trust, Wildlife Trusts and Natural England. The Unlocking the Severn project is a prime example of a large scale collaboration project to improve fish passage at six substantial barriers to migration on the lower River Severn and River Teme. The Unlocking the Severn project secured funding of £21M , mainly from Heritage Lottery Fund and EU Life Programme to improve fish passage. Not all funds were for fish pass construction; for example the project delivered education and engagement programmes to reconnect communities with the river. The primary driver of this project is to safeguard the UK breeding population the endangered Twaite shad and reconnect 253km of historic spawning grounds. This improvement in passage will open up migration routes and access to more spawning grounds to many more fish species and will be hugely beneficial to salmon and salmon anglers upstream.

Statements from respondents relating to proposals or alternative management options are presented here and collated into 5 general themes.

Theme
1. **Angler Alternatives** Increase enforcement and licence checking, issue tags to take one fish (bag limit), consider micro barbs and circle hooks, voluntary >90% C&R, prawn shrimp should be considered, no fishing above19oC, restrict coarse fishing baits, complex methods simplify to single barbless hooks only, non-club members restricted to C&R, better returns and records from clubs, clubs to enforce voluntary rules, maggot ban to protect parr, better riparian and club catch record keeping and sharing.
2. **Net Fishery Alternatives** Increase restrictions on the net fisheries, nets damage fish nets should be knotless, extend lave net season.
3. **Environmental** More focus on abstraction and pollution to increase stocks, increase and improve spawning habitat, reduce barriers to migration
4. **Hatcheries and Stocking** Introduce stocking and hatcheries, double rod licence fee use money to pay for hatchery, lave nets to collect broodstock
5. **Predation** Greater control of fish eating birds
6. **Data/ Stock assessment** Need more fish counters, Redd counting, more juvenile monitoring especially regards smolts

Angler Restrictions

Alternative option: Fishing method restrictions

EA Response:

While there is a recognised mortality associated with catch and release fishing that can be minimised through good practice, so the impact of catch and release angling will be relatively minor

Banning of all bait fishing has been supported by a number of respondents, as is the banning of all methods apart from fly-fishing. Fishing method restrictions we have considered within the technical report, we believe to be balanced. If poor fishing practice persists and catch and release mortality remains high from these methods then we would certainly consider byelaws to prescribe the use of barbless hooks.

A number of suggestions supporting the continuation of voluntary catch and release are put forward. The voluntary catch and release option is considered within the technical document, and also in this response document.

Alternative option: Stop fishing at high temperatures.

EA Response: A number of respondents suggested that we should implement either advice or emergency measures to stop fishing when river temperatures are high. We strongly agree that anglers need to takes extra precautions and this is advocated in all the catch and release advice issued.

Close links have been found between water temperature and survival in C&R salmonid species, with elevated temperatures causing increased rates of delayed mortality. To minimise the impact of high water temperatures on salmonid species, fishing restrictions are encouraged and should implemented by fisheries on river systems when water temperatures surpass a set threshold. Given that the diel variation in water temperature can be high, it is recommended that C&R fishing is not practised when the water temperatures exceeds 18^{o}C in the mid-morning (*EA report Impact of catch and release angling practices on survival of salmon. 2017)*

Without mandatory restrictions we rely entirely on the cooperation of clubs and individual anglers. It is of great concern that evidence suggests despite high temperatures occurring on the River Severn, some salmon anglers give little consideration to taking additional precautions. The latest declared salmon catch data reveals 72% of the salmon caught in 2020 coincided with the highest river temperatures i.e. above 19oC, with 37% of those fish being bait caught in the lower river, where salmon were held up due to the high temperatures and low flows.

We want to be working proactively with groups linked to the Severn Fisheries Group on this, we can and will provide equipment and training where we have willing volunteers. This has been successful with a number of coarse angling clubs where they have concerns and now can offer advice specifically for barbel fishing and match fishing during the summer on the River Severn.

Alternative option: Introduce the use of micro barbed and circle hooks for worm fishing.

Micro Barbed Hooks for Worm Fishing

EA Response: Some respondents have suggested worm fishing with micro barbed hooks as an alternative to traditional barbed “j” hooks. The available evidence and fisheries management experience of worm fishing for salmon both in England and elsewhere, indicates that worm fishing can be particularly damaging as salmon tend to swallow the bait deeply. This is more likely to cause fatal internal injuries either immediately or shortly after release whether the hook is either barbed or barbless. Therefore, we consider that worm fishing is not complimentary to the overall objective of maximising salmon survival following catch and release.

We do agree that for other fishing methods, which are less likely to hook salmon deeply, barbless or de-barbed hooks are likely to be beneficial as they inflict less damage and reduce unhooking time leading to less handling and the time that the fish has been removed from the water. This follows recognised best practice recommendations to maximise survival of rod caught and release salmon and sea trout that have been fully endorsed by the Angling Trust and many other salmon angling organisations. .

Circle Hooks for Worm Fishing

EA Response: Some respondents have suggested worm fishing with circle hooks as an alternative option. We had considered the possibility of using barbless circle hooks for worm fishing for salmon. However, experience from other areas where this has been trialled has indicated that hooking location is dependent upon angler ability with some anglers still waiting a long time to set the hooks once the fish has taken the bait. Consequently, this still results in the deep hooking of salmon and experience has indicated that the removal of deeply hooked circle hooks is extremely difficult and further likely to damage the fish. Cutting the line to avoid hook removal has also been identified as a further cause of delayed mortality following catch and release. Consequently, the effectiveness of circle hooks is dependent upon angler skills and this is not something that we can manage effectively to ensure that best practice occurs. Therefore, whilst the salmon stock is at low levels, the use of worm is unlikely to contribute to salmon stock recovery efforts.

Alternative option: 1 or 2 salmon bag limit per angler

EA Response: A number of respondents have suggested the use of bag limits or carcass tags i.e. that a one fish limit per angler per season bag limit would be a more acceptable catch restriction.

Most anglers who are currently killing salmon, are only killing one salmon per season, very few anglers are killing more than one salmon per season. Specifically, in the 2018 fishing season 28 anglers killed one salmon and 6 anglers killed more than one salmon each;

A bag limit of one salmon per angler would therefore only have restricted 6 individual anglers and would only have saved 15 salmon in this season. A bag limit of two salmon per angler would only have restricted 3 anglers and saved 10 salmon. So the effectiveness of either of these proposed bag limits, in allowing more salmon to escape the fishery to spawn would be very limited. Therefore the greatest benefit, in terms of numbers of salmon saved from the rod fishery, will come from reducing the number of individual anglers who kill one or more salmon in the season. This will be best delivered by the proposed mandatory 100% catch and release byelaw.

The suggested use of bag limits or carcass tags as an alternative to the proposed byelaws are not consider to be appropriate when fish stocks are not able to sustain levels of exploitation (as is currently the case). There is no convincing evidence that bag limits or carcass tags would reduce the level of harvest and exploitation required, we are concerned that they could wrongly endorse and encourage a higher take than current level of harvest.

Alternative option: Restriction on coarse fishing baits

EA Response: We understand occasionally adult salmon are unintentionally caught by coarse fish anglers. Coarse fish angling on the Severn provides more chances for more people to fish, significantly boosts the local economy, and supports many of the largest fishing clubs. Coarse fish anglers provide an important resource through rod licence revenue to improve habitats, fishing facilities and protection for all the Severn fisheries. We will improve on advice and guidance to coarse anglers and will work in partnership with the Angling Trust and Severn Fisheries Group to raise awareness through a ‘fish responsibly’ campaign to educate and engage with all angling groups.

Net Fishing Restrictions

Alternative Option: Nets should not catch and release as nets damage fish

EA Response: Only lave nets are considered to fish at the present time, and these are restricted to catch and release only, with all fish caught being returned alive. The risk to salmon from this method of fishing is low. We will continue to monitor this, as there have been some reports of signs of net damage on some salmon caught in the rod fishery this season. Additionally within the definition of the byelaw there has been a minor change.

"Lave net" means a single sheet of netting of mesh which measures, when wet, not less than 50mm in extension from knot to knot or 200mm round the perimeter for knotted mesh, or not less than 25mm in extension or 100mm round the perimeter for knotless mesh, and which shall be constructed to form a bag or purse attached to a yoke in the shape of a 'V', the widest part of which shall not exceed 3 metres and which shall be fitted with a handstaff to the apex of the yoke.

This change will allow a fine knotless meshed net to be used. This has been done at the request of a group of the fishermen so that they can try fine meshes, it is considered that this may reduce fin splitting and excess scale damage resulting from catch and release. Overall reducing risk of C&R residual mortality.

Further consideration should also be discussed with practising lave net fishermen to adhere during periods of high temperature a cessation of C&R fishing.

Alternative Option: Allow Lave nets to extend season

EA Response: We have not considered this option in the technical document, of opening the Lave net fishing season earlier, to extend the season as the nets men will not harvest. However, at this time we do not want to encourage greater exploitation of salmon, furthermore there would need to be extensive Habitats Regulation assessments to assess whether there could be any significant effect upon other protected features e.g. Twaite shad. We understand that the suggestion for the full season (Feb 2nd - Aug 31st) to be reinstated and the weekend close time for fishing is revoked. This will be for heritage purposes as it would provide greater opportunities for younger generations to be introduced to the river and weekend fishing in particular would enable many more people to see lave netting in action, with the possibility of demonstration events taking place showcasing traditional fishing. The option of opening the Lave net season may be open for consideration.

Alternative Option: Close all net fishing

EA Response: While we have proposed the closure of the Putchers (fixed engine fisheries) and the draft net, we do not consider that closure of the lave net fishery is needed at this time. Ultimately we want to improve the salmon stock so that fishery restrictions can be relaxed or removed, and we do not wish to see greater exploitation of the sea trout stock.

Hatcheries and Stocking

Alternative option: Reopen the Severn Hatchery

EA Response: The issue of stocking and hatchery production is explained on pages 30 & 31 of this document.

Salmon stocking is an inefficient and costly intervention method to restore salmon populations. Improvements in accessibility to salmon and salmon spawning habitats within the catchment is thought to be more effective. For instance, on the River Severn we have worked in collaboration with Canal and Rivers Trust to help deliver the Unlocking the Severn project which will significantly improve fish passage at a number of historic navigation weirs for many migratory fish species including salmon. Further work in partnership with the Severn Rivers Trust has improved passage and habitats on the River Teme for salmon including those in Ludlow

Salmon stocking has the potential to interfere with salmon population genetics with hatchery reared fish being less well adapted to survive at sea and find their way back to their river of origin. This risk increases as the salmon population declines as hatchery fish can represent a greater proportion of the remaining stock. It should only therefore be used to try and recover an extinct stock or where other salmon restoration strategy options have been discounted.

Salmon hatchery schemes in England are now typically reserved for situations where there has been a complete loss of salmon or where there is a need for mitigation due to some other limiting factor that has resulted in loss of spawning habitat. In such cases, these schemes are funded in full by external interest's e.g water companies for loss of spawning habitat when constructing reservoir schemes.

Specifically respondents referenced the hatchery in Mid Wales at Clywedog Reservoir.

Reservoirs such as Clywedog must pass through an Act of Parliament before they can be built, within this act Statutory Mitigation measures should be included e.g. fish hatcheries due to the loss of spawning habitat. Prior to the start of construction in 1963 and completion in 1967 these mitigation measures had not been included within the Act of Parliament for the construction Clywedog, unlike Kielder reservoir where measures were considered and funded. Clywedog hatchery was originally opened in the 1980's part of a

private water authority operation producing trout for stocking, the production of salmon at Clywedog started in early 1990's and was funded from licence revenue and government grant in aid. The hatchery was mothballed in 2013 and ceased operation after the review of hatcheries by NRW in 2014, following that review NRW made the responsible decision to close all salmon hatcheries preferring to rely on habitat improvement programmes.

Data/ Stock assessment

Alternative Option: Redd Counting

EA Response: A number of respondents suggest that we should use redd counting to inform our stock assessment.

Where possible redd counting is an activity we attempt annually, but importantly we have never used redd count data as the measure to inform our formal stock assessments. The technique is not sufficiently reliable to inform formal stock assessments, and most countries do not adopt this as a stock monitoring method. The information we do gather helps identify the use of spawning areas by salmon and some indication of trends in spawning success, which is a useful fishery management tool. However, river conditions can be unfavourable for long periods and monitoring windows missed, or the redds are flattened out by large flow events and confidence in the accuracy of a count is too low. For this reason every effort is made to collect reliable data when river conditions allow but this cannot be relied upon for an indication of total spawning fish numbers. In addition, the redd count data is of great importance when used to monitor the success of recently constructed fish passes such as those constructed on the River Teme. As well as the Environment Agency putting limited resources to this we have worked closely with partners such as the Severn River Trust who have a band volunteers who can get involved in counting redds, mostly all of these volunteers are non-anglers.

Examples of recent redd counting activity.

- Redd counting on the Upper Teme in 2019 started in late November but only 5 salmon redds were counted before the counting had to be abandoned due to elevated river levels and counting did not resume that year.

- Redd counting for 2020 was more successful with extensive areas covered in the upper River Teme around Leintwardine where 60 salmon redds were observed. Further redd counting surveys were conducted through the River Onny where a further 60 redds were also counted (report to be finalised). The River Onny has been chosen locally as our annual sentinel index river for redd counting and juvenile monitoring.

Alternative Option: Fish Counters

We agree that it would be ideal if fishery independent measures of the salmon and sea trout run could be available for the Severn and major tributaries e.g. the use of fish counter data.

We currently have funding to run one fish counter at Carreghofa on the R Tanat tributary of the River Vyrnwy these data are presented in the technical case and provides some important information on recent run trends. Further attempts to use fish counting technology at Shrewsbury weir have been unsuccessful and costly. If funding and resources were available and reasonable we would very much have considered installation of counters on all fish passes on the Severn, but at the moment this is not viable. They require a great deal of resource to manage effectively, currently this is unaffordable, however we do propose to work closely with partners Severn Rivers Trust and Unlocking the Severn Project and where possible we are exploring the sharing of resources to run counters at the newly constructed fish pass at Diglis and at a site on the River Teme.

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