



# Severn Fisheries Group

*“Working in partnership for a sustainable future for the River Severn and its fisheries”*

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**River Severn Net Limitation Order and Byelaws Consultation 2021**

**PROPOSAL FOR COLLECTIVE CONSENSUS ACTION**

**FROM  
THE SEVERN FISHERIES GROUP**

**A partnership approach**

**“Cooperation not Confrontation”**

**The Key to a Successful & Sustainable Future  
for the River Severn & its Tributaries**

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## THE PROPOSAL: ITS RATIONALE AND JUSTIFICATIONS

**Proposal** - We are proposing a moratorium for three years on any further byelaws until the current ongoing review of stock assessment has been completed<sup>i</sup> and any necessary subsequent revisions of the assessment methodology and adjustments to Conservation Limits relating to the River Severn have taken place.

During this time anglers will work with the Environment Agency to deliver a 90% plus voluntary catch and release (C&R) rate for Salmon caught from June 16<sup>th</sup>.

Our immediate next step will be to organise a meeting of angling clubs and salmon anglers with Agency officers to discuss the practical means of implementing the 90% plus C&R option across the catchment. This is a step we believe to be a vital part of the process and addresses the lack of any initiative by the Agency to actively scope the 90% plus C&R option in 2019 and again in the current consultation.

**Justifications** – The benefits of this proposal make it far more attractive as a fishery management option than compulsory 100% catch and release combined with method and tackle restrictions<sup>ii</sup>.

- The proposal follows the precautionary principle. Fewer salmon will be killed under this option than any other<sup>iii</sup>.
- The proposal avoids the unintended consequences of the statutory option<sup>iv</sup>. Statutory C&R and method restrictions will inevitably drive legitimate game anglers off the river<sup>v</sup>. A game angling exodus will remove the Agency's gamefish-sensitive eyes and ears<sup>vi</sup> and create a massive opportunity for increased poaching and subsequent salmon stock depletion<sup>vii</sup>. We believe this mortality will be far above that associated with our option<sup>viii</sup>.
- A cost benefit analysis shows that it will reduce the enforcement costs to the Agency while having greater benefits in terms of reducing exploitation<sup>ix</sup>.
- It will provide an exciting opportunity to foster and strengthen partnership working between salmon anglers and the Agency, rather than increasing indifference or confrontation<sup>x</sup>.
- It is the only proposal that removes the indirect discrimination against disabled and older anglers involved in method restrictions<sup>1</sup>.
- It would remove the concern that the outcome of the byelaw process has been pre-determined<sup>xi</sup>, to 'align' the Severn with Wales<sup>xii</sup>.
- It would maintain existing well being and mental health benefits<sup>2</sup> by allowing migratory fish anglers to continue to enjoy their sport and to access the vast majority of the fishery which can only be effectively fished with bait.<sup>xiii xiv</sup>

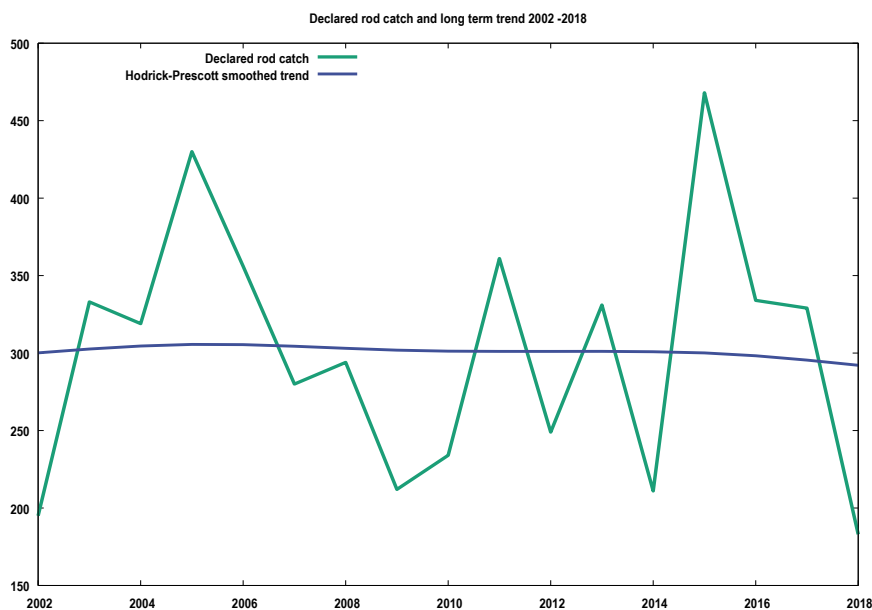
<sup>1</sup> We await pre-approval DEFRA legal team confirmation that the EA has completed an Equality Impact Assessment of the different options in the byelaw consultation, as we have not yet seen ANY documentation. Indirect discrimination occurs when the introduction of a policy, criteria, or practice results in less favourable treatment to a group with protected characteristics as defined by the Equality Act 2010. In this case, only allowing spinning and fly fishing, which are the more active forms of angling, would result in less favourable treatment of those older or disabled anglers who are not capable of that level of activity, and can only fish with bait. Both age and disability are protected characteristics. Furthermore, failure to offer an exemption to any bait fishing ban to anglers with a disability would almost certainly amount to a failure to make reasonable adjustments. The only defence available to the Agency to the claim of indirect discrimination would be that the bait ban is a 'proportionate means of achieving a legitimate aim'. It is difficult to see how the level of salmon mortality involved (especially given C&R the mitigating measures available such as use of circle hooks) would balance the less favourable treatment and impact on individual wellbeing of removing salmon angling as a pursuit for a significant number of people. Whether or not there is any defence available to the Agency against a failure to make reasonable adjustment is a moot point. If an Equality Impact Assessment (EIA) had been carried out these issues would have been highlighted. For guidance on the use of EIAs to eliminate discrimination by public bodies see: *The public sector equality duty and equality impact assessments*, House of Commons Library, July 2020 <https://commonslibrary.parliament.uk/research-briefings/sn06591/>

<sup>2</sup> Health and wellbeing impact assessment completely missing from EA consultation documentation. Experience from Wales shows clearly that it cannot be dismissed as insignificant by any fair minded non-predetermined official – see 550-respondent evidence in PAAS survey at Appendix 1

## Background

This proposal is an initiative from the angling community to end unnecessary conflict in England, following that initiated in Wales as a result of a restrictive byelaw approach<sup>xv</sup>, <sup>xvi</sup>. Anglers fear the repetition of this alienating pattern in England now.<sup>xvii</sup>

Salmon anglers have worked constructively with the Environment Agency over many years. From 2012 to 2016 we achieved an increase in voluntary catch and release from 59% to 78%. This was driven by angler action and initiative including a competition for the largest salmon caught and released sponsored by the Shakespeare tackle company. In 2016 the Salmon stock was assessed as 'Probably not at risk'<sup>3</sup>. Agency projections said that the river was predicted to be 'Probably not at risk' in 2020, 2021 and 2022. This assessment continued until early 2019. It is clear that until the dry summer in 2018 and the emergence of the ramifications from the storms of 2016 on returning numbers of adults in 2019, the long term trend in salmon catches was trend stationary with a statistically insignificant slope as was the egg deposition series<sup>xviii</sup>. The upturn of 35% in provisional rod catch in 2020<sup>4</sup> is indicative that the previous 2 years were aberrant.



In 2019 the agency carried out a drastic and one-sided review of their desk-based stock assessment changing the approach of fecundity estimation from one specific to the Severn to one based on an old and standard Pope formula employed nationally, though with no verification as to its appropriateness for the Severn. At the stroke of a pen this manufactured a perception of crisis which didn't actually exist by reducing the egg deposition estimates by 50% or more<sup>xix</sup> which was used to justify the emergency byelaws.

***This alone seems to need a serious investigation for quality assurance before Defra sends the byelaw to the Minister for approval.***<sup>xx</sup>

The resulting Agency's narrative did not ring true with the overwhelming majority of the anglers on the river, nor did it fit with the picture painted by the rod catch which is the only Severn based empirical data still in use in the Agency's Severn stock assessment. That data suggests a stable stock<sup>xxi</sup> and the adjusted rod catch indexed to 2010 effort levels indicates that there would have been a stable catch over the following years.

<sup>3</sup> Uncontested by the EA, but not even mentioned in the present byelaw consultation- a clear failure of quality assurance for neutral briefing?

<sup>4</sup> Surprisingly there was no reference to the most recent catch data in the EA Technical Case though an uplift in catches was mentioned in the UK NASCO submission.

### Quality Assurance failures<sup>5</sup>:

The 2019 changes to the stock assessment are cause for great concern to the angling community because they suggest a fatally compromised process:

- The review started from the assumption that the Severn stock assessment must be wrong because it didn't match the picture of decline on the Wye and Usk. This reversed the normal process where the investigation should come first, and the conclusions last.<sup>xxii</sup>
- The only changes that were made had a negative impact on the stock assessment.<sup>xxiii</sup>
- Reference to Severn specific data on size and sex based on a decade of painstaking empirical work from agency fisheries scientists were removed.<sup>xxiv</sup>
- Reference to Severn specific data on fecundity (the number of eggs per kilo produced by a female) was also removed. This has been replaced by national fecundity estimates based on lb weigh values raising the following concerns. These are: when and how they are reviewed and whether they apply to all rivers; that these values have remained unchanged over many 10 year assessment cycles and have been replaced with an old weight equation that produces fecundity estimates well below the norm found in most UK and international studies.<sup>6</sup>
- There has been no review of any factors that might have improved the stock assessment.<sup>7</sup>
- Of special concern is the fact the Agency chose not to review the exploitation rate (the percentage of the run caught by anglers) and continued to apply one derived from the river Dee a system a third of the size of the Severn with twice as many anglers.<sup>8</sup> This factor is vital as it is the multiplier by which the agency derive a total number of fish running the river. Sticking to this inappropriately high exploitation rate underestimates the number of salmon in the river and has produced statistical projections which clash with the EA's own fish counter data and the internal assessment model.<sup>xxv</sup>
- Sticking to this inappropriately high exploitation rate underestimates the number of salmon in the river and produces statistical projections which clash with the EA's own fish counter data and the internal logic of the Assessment Model<sup>xxvi</sup>
- Also of concern is the fact that there was no attempt to grasp the specific impact of previous regulatory action on catch, effort and the exploitation rate, and hence on the stock assessment. This runs counter to the methodology previously employed by the agency when reviewing the impact of the Spring byelaws. In that case a fall in rod catch of 58% on the Severn from 1994-8 to 2002-6 was said not to represent a reduced stock as effort had fallen proportionately.
- ***The Severn saw the largest drop in effort of any river following the 1998 spring byelaws. This is because the ban on bait before June 16<sup>th</sup> effectively closed most of the fishery during the peak months of the MSW salmon run.***<sup>xxvii</sup>To transport an exploitation rate from a river where methods are far more interchangeable is an illegitimate exercise.<sup>xxviii</sup> These worrying anomalies explain why anglers are asking for a thorough review of the Stock assessment<sup>xxix</sup> and a moratorium on further action until that is carried out.

<sup>5</sup> Has EA evidence directorate approved the consultation design and wording, to ensure regional is not promulgating substandard or leading material without national oversight? Will Defra be commissioning an independent quality assessment before forwarding to the Minister for approval? Without this, there is ZERO evidence that the byelaw as presently constructed is formally safe. Community assent and compliance with it will be substantially less likely. Has EA chief scientist actually signed off this byelaw proposal? If not, what confidence can Defra have in EA process being safe?

<sup>6</sup> See Appendix 3 for summary and information already submitted by Mike Ashwin to EA which is presently uncontested and still awaiting EFG consideration.

<sup>7</sup> English Fisheries Group review of this matter is surprisingly only planned to begin after the consultation end date for the Severn. This appears a cart before the horse approach. It has increased angler alienation and rational suspicion.

<sup>8</sup> See Mike Ashwin's detailed evidence, not yet processed by the Deputy Director of Fisheries or Directorate for Evidence.

- **Predetermination:** We still await confirmation from EA head of legal as to whether the current process is considered formally safe in specific terms of being free of the taint of predetermination, regarding :-
  - **1.** nonappearance of options two and three in the initial byelaw paperwork for presentation to Severn angling club representatives (16/02/2020).
  - **2.** Reported comment by a key participant in the byelaw formation process, substantively unaddressed in reply from Kay Champion: *"I'm telling you that I am going to stop the taking of Salmon"*<sup>xxx</sup>
  -
- Consideration of apparently glaring departure from Cabinet Office Consultation Principles has been ignored at high level.<sup>xxxii</sup>
- There is a distinct lack of evidence that these proposals will make any difference to the numbers of salmon in the River Severn and its tributaries.<sup>xxxii</sup>
- Nowhere in the byelaw consultation does it mention any evidence of sea trout numbers/technical information even though the byelaw stipulates that it is for sea trout.<sup>9</sup>
- Were there any evidence that Mandatory C&R makes any difference to future stocks over and above current Voluntary Levels then the argument might be slightly more compelling, but the reality is that there is a distinct lack of supporting evidence.
- Furthermore, the neighbouring cross border River Wye has had similar byelaws to those proposed for the Severn since 2012 with the aim of helping salmon stocks recover. During that time stocks have now declined from around 1000 rod caught salmon in 2012 to an all-time low of 243 in 2019, and that in spite of the Wye & Usk Foundation having a total expenditure in excess of £11,180,000 during the same time frame.
- Before the two extreme events below, the Severn was classified Probably Not at Risk. Given that catches have increased by 30% in 2020, it would be **premature to invoke the precautionary principle** to introduce a 10 year restrictive byelaw with potential significant social, discriminatory, health and welfare and rural economic effects when the evidence for systemic decline is so weak, and the current status as of 2020 is indicative of an emergent natural recovery in stocks.
- The fact that the only evidence that has prompted calls for a new byelaw is the consequence of two extreme weather events -loss of eggs and juveniles through Storm Desmond in winter 2015/16 impacting on 2017 -19 1 SW and MSW catches, and a dry summer in 2018 that depressed catches. Prior to those years, the evidence was that the Severn was probably not at risk. Indeed, the current revised egg deposition estimates presented in the Technical Document and its Annexes indicate that the Severn attained or exceeded its conservation limit in several years out of the last 10 given there will be an error distribution around each of the annual egg estimates themselves. This is not indicative of a river in difficulty. We have no confidence in a flawed stock assessment process having been reviewed 3 times in 2 years and currently in a 3-year review process which is indicative of awareness of by Defra, EA and Cefas of failings in the system. Hence the SFG presents an option consistent with the current circumstances, the long run trends in salmon stock and in the interests of furthering good angling practice and conservation.

<sup>9</sup> This shocking major lacuna in byelaw paperwork and consultation framing will result in an escalating complaint if not remedied before any byelaw implementation.

- There is manifold emerging evidence that the 100% C&R for salmon in Wales has been anything but successful except in its legislative introduction. The Angling Trust validates our assessment.<sup>xxxiii</sup> We believe blanket coverage of all rivers in Wales is unselective, unwise, poor river management practice, and will ultimately prove detrimental to the future of salmon and seatrout stock and angling in Wales. The case for extending the elements of the Welsh emergency bye laws for the Hafren to the English Severn that are necessary to ensure conformability with its restrictions other Welsh rivers is unjustifiable on an evidence basis regarding the health of the Severn and a matter for Wales only. Nor is administrative convenience a rational argument for replicating such legislation in England. Put bluntly, inappropriate decision making in Wales should not drive the management of the River Severn in England where the majority of angling effort takes place and concern for the health of its salmon stocks resides. Such is the nature and flexibility that Devolution affords.

## The SFG Principles

- SFG is fully committed to securing a sustainable, long term future for the River Severn and its fisheries and is clear that working in partnership with other stakeholders, including the Environment Agency and Angling Trust, is the preferred pathway by which that goal can be achieved.
- SFG recognises that for partnership working to be successful it must be built on core values of mutual trust and respect, education and a desire to work collaboratively and must also be underpinned by reliable science and evidence in which all parties can have confidence. We share a common goal but understand that rebuilding relationships is likely to be required from all parties if that goal is to be realised.
- SFG recognises that we must focus on where we are going and not where we have been. The future well-being of the River Severn is our primary concern, and all parties must focus on how we can best work collaboratively rather than finding reasons for not doing so or prematurely terminating discussion.
- SFG is clear that a voluntary solution, in line with the NASCO decision making structure, is the best way for our shared goals to be achieved in the shortest possible time whilst at the same time, minimising negative impacts on our fisheries.

## GOING FORWARD:

The SFG believes that a voluntary solution brings the following benefits:

- More salmon anglers remaining on the river where their presence discourages illegal activity and facilitates the reporting of poaching and pollution
- Benefits of angling to physical and mental wellbeing are maintained. The National Angling Strategy's explicit focus on wellbeing must not be undermined by ad hoc catchment restrictions based on insufficient science<sup>xxxiv</sup>
- The development of a positive relationship between the EA and angling stakeholders encourages investment in our rivers and allows fisheries to thrive.
- It allows stakeholders to help the EA to deliver its statutory duties by unlocking the potential for voluntary contributions such as policing agreed enforcement and assisting with redd counts<sup>xxxv</sup>, habitat improvement work etc.

Failure to learn from mistakes made elsewhere will only result in losses for all concerned:

- the EA which in alienating stakeholders have deprived themselves of the partners needed to fulfil their statutory duties
- the angling organisations who face a loss of membership, loss of income & loss of amenities
- most importantly of all, the salmon who have been denied a collaborative approach which could have delivered so much more for habitat restoration, pollution prevention and FEB displacement

We feel that it is irresponsible of the Environment Agency not to be looking at the full consequences of this byelaw for the migratory fish full ecosystem health. No such details have been provided in the consultation written documents.

## A SFG Constructive Collective Working Proposal

Our preferred option is that there should be a 3 year moratorium on changes to current arrangements which comprises statutory 100% C&R until June 16.

During the 3 year cycle a complete stock assessment review will be undertaken. There should be no changes in angling methods. Microbarb hooks would be promoted for worm fishing and circle hook use explored. As there is published peer review evidence that there is no significant difference in post C&R mortality between lure and bait and evidential ambiguity regarding advantages of single and barbless hook use<sup>xxxvi</sup>, premature conclusions about mortality without a full literature search evidence base should be avoided and this period used for mutually respectful academic literature review.

During this period, the SFG would promote voluntary C&R with the collaborating Severn and national angling clubs with Severn fishing interests for the latter half of the season with the aim of attaining over 90% C&R from June 17<sup>th</sup> to the end of season..

Some specific forms that partnership working could take:

### **1. Measures to improve catch reporting and effort monitoring**

- A campaign to encourage anglers to report their catches to the EA
- A catch reporting app
- An angler logbook system

### **2. Measures to improve information about timings and patterns of salmon runs**

- A fish counter on the new Diglis pass (this is particularly important for assessing the total size of the run and the proportion that enters the main rod fishery after the season closes).
- Training of volunteers to carry out redd counts

### **3. Measures to protect stops and deter poaching**

- A joint programme to train significant numbers of voluntary bailiffs
- Deployment of volunteer bailiffs in redd counting and poaching deterrence.

### **4. Measures to protect water quality and combat pollution**

- Encouraging resumption of full incident reporting
- Known pollution vectors to be mutually explored

### **5. Code of Conduct**

An angling code of conduct could be produced for every club explaining the correct methods to release salmon successfully and promoting 90%C&R.

**This section is of necessity in outline only, as it is contingent on partnership working being reprioritised by the EA.**



## APPENDIX 1

### Lessons to be learned from the 'All Wales Salmon and Sea Trout Byelaws'

SFG is clear that working in partnership with other stakeholders, including the Environment Agency and Angling Trust is the preferred, and perhaps only, pathway by which a sustainable, long term future for the River Severn and its fisheries can be secured. Previous conversations between SFG representatives and the AT have also made it clear that the AT is fully supportive of a voluntary solution whereby angling clubs and fisheries assume responsibility for the management, monitoring and enforcement of agreed regulations. We believe that better outcomes will be achieved through a sense of ownership which will inevitably lead to far greater acceptance and compliance, something that is absolutely vital when the EA's enforcement capabilities are so limited. Unfortunately this is the very antithesis of what has happened in Wales where a heavy handed, "top down", management approach has proved counterproductive.

A number of members of the SFG steering group have considerable experience of the mistakes that have been made in Wales where the development and introduction of the 'All Wales Salmon and Sea Trout Byelaws' took from Jul 2015 to January 2020, consumed an enormous amount of public funds, time, resources and effort and has caused enormous damage to the relationship between NRW and Angling Stakeholders. We had feared for some time that NRW would seek to influence any new byelaws for the Severn in order that the Upper Severn catchment within Wales would be neatly encompassed within the same regulations as the rest of Wales. The Technical Case Structure provides evidence to confirm our suspicions:

Page 49 Option 1 Disadvantages (Fishery) 5) *"NRW are likely to seek to implement mandatory rod fishing measures in the upper Severn catchment which will be inconsistent".*

Page 51 Option 3 Disadvantages (Fishery) 3) *"Consistent with rod fishery regulation recently introduced by NRW in Wales"*

**SFG is quite clear that the heavy handed, "top down", management approach adopted by NRW in its introduction of the All Wales Byelaws is counterproductive and must be resisted at all costs.** We are adamant that the approach has failed for the following reasons:

- A failure to heed and address the concerns raised by experienced angling stakeholders has led to a breakdown in the relationship between NRW and the very people needed to enable the regulator to fulfil its statutory duties.
- The breakdown in the relationship has led to a large number of angling organisations refusing to engage with NRW and attendance at many Local Fisheries Groups has been described as *"to say the least a bit sparse"*. Poorer outcomes are an inevitable consequence of failing to develop effective partnerships with those who have a vested interest in salmon and sea trout and the recovery and sustainability of the stock.
- Alienation of stakeholders has resulted in a number of angling organisations refusing to enforce the new regulations. NRW's woefully underfunded enforcement team is unable to compensate for that lack of support which is further exacerbated by a lack of compliance emanating from a lack of ownership. (See Section 2 "Lack of Enforcement" in the Byelaws Survey and Report at the end of this section)

- Both the lack of enforcement and withholding of information for a self-styled *"intelligence led organisation"* has inevitably led to an increase in poaching which ultimately cause significantly more damage than an angler taking an *"occasional fish for the pot"* with the consequence being a **net loss to fish stocks**. It is somewhat surprising that NRW's Principal Fisheries Advisor has not seen fit to feature the unintended impacts of the bylaws for appropriate discussion at the Wales Fisheries Forum.

Prince Albert Angling Society, a key member of the Severn Fisheries Group, was keen to verify the impacts of the bylaws that were being reported anecdotally by a number of reports. As a result the Society carried out a questionnaire survey of members who fish in Wales.

The general lack of both compliance and enforcement provide sufficient reason alone to question the wisdom of a legislative solution. However SFG has even greater concerns about the following unintended consequences:

- The negative impact on angling participation will lead to law abiding anglers being replaced by those who choose to operate outside of the law with a negative impact on fish stocks
- The negative impact on anglers' mental wellbeing when 70% of those in the survey report that they now enjoy their fishing less as a result of the bylaws

The methodology and full analysis of the 550 survey responses received is contained within the report which begins on the following page. There are some very telling quotes from ordinary, law abiding anglers contained within the survey. The EA must learn from NRW's mistakes and fully address those concerns if it really does want the best possible outcome for the River Severn.

## What is the real impact on our fisheries?

It is more than 12 months since new byelaws to control salmon and sea trout fishing were introduced in Wales. There have been many reports from anglers that the byelaws are having a negative impact on both their enjoyment of time spent on the river and on the numbers of fish that they catch. We conducted an online survey of 550 anglers in order to try and establish the true picture.

John Eardley  
<https://paas.co.uk/>

**\*The Byelaws are not being policed**

- **Not a single angler** in the survey was **approached by an NRW Enforcement Officer** whilst fishing in Wales during 2020<sup>10</sup>.
- **Only 14% of anglers** have been approached by an NRW Enforcement Officer at any point **during the previous 5 years.**
- **60% of anglers** have **never been approached** by an NRW Enforcement Officer

**\*The Byelaws are having a negative effect on intelligence gathering**

- **33.2 % of salmon & sea trout anglers** stated that as a result of the new byelaws they are now **less likely to pass on information** to the NRW Incident Hotline or Enforcement team

**\*Anglers are not adhering to rules which serve little purpose and make it increasingly difficult to catch fish**

- **44.4%** of salmon & sea trout anglers admitted **breaking the barbless hook rule**
- **43%** of worm fishermen admitted **breaking the single worm rule**
- **40%** of anglers admitted using used treble hooks whilst spinning **despite such hooks being banned**

**\*Serious implications for fragile rural economies**

- **25%** of salmon & sea trout anglers have **given up their seasonal base in Wales** as a result of the byelaws with a further **25% considering doing likewise**
- **19.4%** of salmon & sea trout anglers stated that they **no longer choose to fish in Wales** as a result of the byelaws

**\*A detrimental effect on mental wellbeing**

- **70.25%** of anglers **enjoy their fishing less** as a result of the byelaws
- **36.9%** of anglers **no longer fish at least one** of their regular water

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<sup>10</sup> We have the utmost respect for the woefully understaffed Enforcement Team and there is a plausible explanation for the lack of contact (albeit based on anecdotal evidence) in that “on the ground staff” recognise that **law abiding anglers pose a negligible threat to stocks** and direct their efforts to where the real threats lie.

## 1. Survey Details

We emailed a link to our membership which allowed them to access an online questionnaire (see **Annex 1** Pages 8 -11) which once submitted allowed us to compile a database in order to analyse the results. We have copies of all the responses along with the full database should anyone doubt the validity of the responses.

We received a total of 550 responses in a 10 day period ending on 20<sup>th</sup> February:

- 544 were<sup>11</sup>PAAS members, 3 identified as non-members & 3 did not submit a response to that question
- 93 of the respondents live and fish in Wales, 452 visit Wales in order to fish & 5 did not submit a response to that question
- 295 anglers fish for coarse fish, 315 fish for trout, 265 fish for sea trout & 270 fish for salmon. Most anglers indicated that they target more than one species

## 2. Lack of Enforcement

The responses make damning reading for an “*intelligence led*” organisation. However there should be no surprises given that <sup>12</sup>NRW had already identified in 2015 that there was a “Potential need to re-direct or increase fisheries enforcement resources to enforce any new regulation”. Instead a decision was made to restructure the 16.25 <sup>13</sup>FTE Enforcement Officers into 10 teams reducing their capacity even further. With the alienation of stakeholders leading to many angling clubs being unwilling to police any of the new rules the writing was on the wall. The current situation is untenable.

- **0%** of anglers were approached by an NRW Enforcement Officer whilst fishing in Wales during 2020.
- **7%** stated that it was 1 – 2 years since they had been approached by an NRW Enforcement Officer
- **7%** stated that it was 3 – 5 years since they had been approached by an NRW Enforcement Officer
- **26%** stated that it was more than 5 years since they had been approached by an NRW Enforcement Officer
- **60% (329 anglers!)** stated that they have **never** been approached by an NRW Enforcement Officer whilst fishing in Wales

Put another way **only 14% of anglers** have been approached by an NRW Enforcement Officer whilst fishing in Wales at any time during the **past 5 years!**

In addition **29% of anglers** stated that as a result of the new byelaws they are now **less likely to pass on information** to the NRW Incident Hotline or Enforcement team.

- <sup>14</sup>*“We, Anglers are the gaurdians (sic) of the Rivers, we report Pollution and River Conditions, to you and our Club, as have the way you have Punished us for doing your Job for you, I will no longer, be assisting you in anyway, NRW.”*
- *“Despite reporting poaching and pollution at the actual time of the event on the Dee and Vyrnwy (sic) I have never had a satisfactory response or seen any action taken against the perpetrators.”*
- *“We are guardians of the river. Unnecessary bylaws without enforcement is nonsensical”*
- *“The new byelaws and absence of enforcement officers is leaving river stocks wide open to illegal poaching.”*
- *“Not as many anglers on the rivers, to report any incidents ie poaching, pollution and general activity on the rivers. Anglers police their own beats that they fish on, with these regulations it will become a poacher’s paradise on some Welsh rivers, not enough ‘eyes’ to keep a watch on things.”*

<sup>11</sup> Prince Albert Angling Society

<sup>12</sup> Natural Resources Wales

<sup>13</sup> Full Time Employment

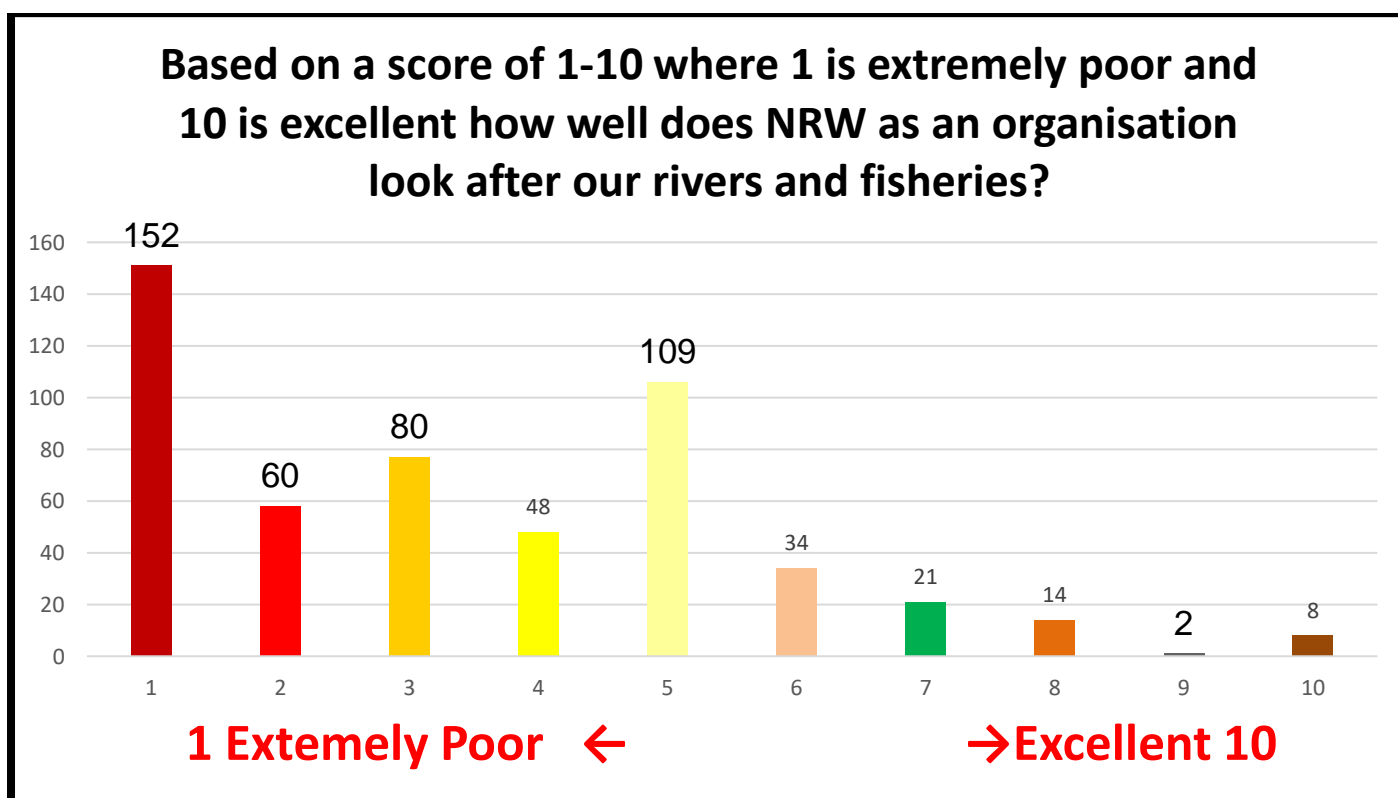
<sup>14</sup> All quotes in italics are from the 191 additional comments received

### 3. The devastating impact on Angling Tourism

Many visiting anglers like to have a seasonal base in Wales such as a caravan or cottage. As such anglers make a significant financial contribution to fragile rural economies throughout the fishing season.

- 99 of salmon & sea trout anglers indicated that currently, or up to the time of the byelaws being introduced, they had a seasonal base in Wales
  - 25 anglers (25%) have given up their base as a result of the byelaws
  - 25 anglers (25%) are considering giving up their base as a result of the byelaws
- *“I have a touring caravan and I was a regular visitor to Wales, however I am less likely now to travel for recreational (sic) angling as a result of the new rules.”*
  - *“I was the last of six fisherman friends to sell our caravan at the end of last season .this was a huge part of our lives”*
  - *“I no longer fish in Wales for migratory fish.”*
  - *“I am seriously looking for alternate water outside wales which is a shame as I started fishing in wales over 60 years ago”*
  - *“New bye laws make Wales a far less attractive fishing destination”*

### 4. We also asked anglers how well they felt that NRW are looking after rivers and fisheries



- *“NRW have alienated angling stakeholders. They are dictatorial in their approach and their actions threaten the very future of Game Angling in Wales. They have closed hatcheries and cut backs mean that there is low morale amongst ‘on the ground staff’.”*
- *“I believe that N.R.W. as the Regulators of our Welsh Rivers are totally incompetent and not fit for purpose.”*

- *“My experience of NRW have always been negative. I believe the by laws (sic) were brought in to mitigate their inadequate handling of the loss of salmon and seatrout, so that they did not need to spend any money on the problem.”*
- *“I half wish they would go back to the old regional rod licence so I could avoid my money going to NRW”*

**The 307 anglers who indicated that they fish for salmon and/or sea trout are the group most affected by the bylaws.**

It is no surprise that many have reacted in the way in which they have. For example the **33.2 % of salmon & sea trout anglers** who stated that as a result of the new byelaws they are now **less likely to pass on information** to the NRW Incident Hotline or Enforcement team is higher than the overall sample figure.

## 5. Anglers views on the Mandatory C&R <sup>15</sup> element of the Byelaws

Mandatory C&R is a contentious issue. Many anglers willingly practice Voluntary C&R and rarely, if ever, take a fish. However when C&R becomes mandatory many of those anglers stop fishing altogether.

- More than **75%** of anglers are opposed to the introduction of Mandatory C&R on all rivers in Wales
- However **60.1%** support **Voluntary C & R<sup>16</sup>** where appropriate on a river by river basis
- *“Catch and release is not the solution to declining Salmon and sea trout catches”*
- *“I believe that the imposition of mandatory catch and release could force me to release an injured fish where to do so would be cruel. The alternative would be to make me a criminal which I do not wish to risk”*
- *“The people that choose to kill fish whether legally or not will continue to kill fish regardless of the byelaws. The byelaws simply penalise those that want to stay within the law”*

## 6. We asked about the impact of the Byelaws on their angling effort in Wales during **2020, irrespective of the impact of Covid 19**

There are serious implications here for future stock assessments. When **60%** of anglers are either fishing less, or no longer choose to fish in Wales at all, **how can angler catch returns provide any valid indicator of how many salmon or sea trout are actually present in rivers in Wales?**

- **123 anglers (40.6%)** stated that they **had fished less often** as a result of the byelaws
- **59 anglers (19.4%)** stated that they **no longer choose to fish in Wales** as a result of the byelaws
- *“because of the new byelaws i did not purchase a migratory fish licence in 2020”*
- *“Since the change of rules I have decided to join another fishing club ,i.e. Felling fly fishing, fishing the Tyne, Tees and Till”*
- *“The impact has had a huge negative affect on my fishing both from an enjoyment perspective and the effectiveness of my efforts. To the point where I have considered whether it's worth bothering to fish for Salmon and Sea Trout in Wales at all. I have fished in Wales now for 45 years and it has been a huge part of my life”*
- *“as a pensioner with limited funds, the latest changes decided me to no longer buy a salmon licence & I no longer intentionally fish for salmon & seatrout.”*

<sup>15</sup> Mandatory Catch & Release – anglers are required by law to return all fish to the river

<sup>16</sup> Voluntary Catch & Release – Anglers abide by a voluntary code, usually agreed and policed by angling clubs

## 7. Anglers are required to use barbless (or debarbed<sup>17</sup>) hooks when fishing for salmon or sea trout

- **104 anglers (36.4%)** reported that they **lost more fish** during 2020 as a result of using barbless hooks
- **126 anglers (44.4%)** reported that they **did use barbed hooks** at times during 2020

If anglers are landing fewer fish then catches will be lower and that will have a **negative impact on stock assessments**<sup>18</sup>. There are a number of reasons which may explain why so many normally law abiding anglers will choose to break this rule. Many realise that it achieves very little other than reducing their ability to land fish, particularly when so many modern hooks are microbarbed.<sup>19</sup> Many worm anglers realise that it is far more difficult to get worms to remain on the hook.

- *“I find the barbless hook and gape size of the hooks for migratory fish a bafflingly and nonsensical regulation that must have been imposed by non-anglers”.*
- *“Trying to hook and land a salmon on a spinner with a barbless single on is pretty impossible”*
- *“Using a barbless fly is ridicules (sic) on a fish that as soon as it’s hooked goes airborne”*

## 8. Anglers are no longer allowed to use worms to catch salmon. However they can use a single worm for sea trout (despite the fact that a salmon is just as likely to take it!). We asked worm fishermen how this had affected their catches.

113 anglers fished with worms at some point during 2020

- **40 worm fishermen (35.4%)** reported that they **caught more juvenile fish** as a result of using a single worm
- **37 worm fishermen (32.7%)** reported that they **caught less fish** as a result of using a single worm
- **47 worm fishermen (43%)** admitted **using more than a single worm** at times during 2020

Most anglers will comply with restrictions when they are able to see their purpose. When that is not the case, and there is little risk of getting caught, anglers will choose to ignore them.

- *“I have fished in Wales now for 45 years and it has been a huge part of my life. I am an angler who looks to use all the methods available to him to catch fish in all situations and conditions. The new byelaws have left me with no other option at times but to break the rules in order to do justice to my angling efforts.”*
- *“If bye laws keep changing and are rarely policed more people will just ignore them if there is no obvious benefit to the fish.”*
- *“Before the Byelaws my river of choice was the River Dee and my favourite method was to worm for salmon primarily (and also sea trout). Following the Byelaws I did not fish for salmon in 2020 which I find both frustrating and upsetting and my personal opinion is that the Byelaws have been introduced for political reasons (decision makers opposed to fishing) rather than fish conservation.”*

## 9. Anglers are no longer allowed to use either shrimp or prawn to catch salmon before 1<sup>st</sup> September. We asked how they had been affected by this rule.

54 anglers stated that they had fished with shrimp or prawn during 2020. Of these

<sup>17</sup> Hooks where the existing barb has been crushed

<sup>18</sup> The numbers of fish officially recorded will appear to be lower than is actually the case

<sup>19</sup> A hook with a much reduced barb which minimises the risk of damage to a fishes mouth



- **More than 79%** of anglers reported that they **caught fewer salmon as a result of this rule**
- **18.5%** of anglers reported that the ban **reduced their expected catch by 50-75%** whilst a further **14.8%** reported that their overall catch was **reduced by more than 75%**
- **10 anglers** admitted that they **did use shrimp or prawn** on occasions before 1st September

Again this aspect of the byelaws is having a **negative impact on stock assessments**

- *“I would prefer rules on fishing set by responsible anglers and angling bodies. The rules are idiotic and clearly not thought through or developed with anglers’ advice or expertise. The banning of shrimp or prawn until September is particularly idiotic”*

#### 10. **Anglers are now required to use single hooks whilst spinning<sup>20</sup> for salmon or sea trout. Again we asked how they had been affected by this rule.**

Of the 157 anglers who fished with spinners for salmon and sea trout during 2020:

- **More than 60%** of anglers reported that they **caught fewer salmon as a result of this rule**
- **12%** of anglers reported that the ban **reduced their expected catch by 50-75%** whilst a further **17.2%** reported that their overall catch was **reduced by more than 75%**
- **40%** of anglers admitted that they **did use treble hooks whilst spinning** during 2020

Given the numbers of anglers who use this method of angling **the reduced numbers of fish landed, and therefore not recorded, should be a major concern.** Anglers’ frustrations are evident in the comments which we received on this matter:

- *“Spinning for salmon and sea trout in my opinion is a totally ineffective method of catching fish under the current NRW bylaws.”*
- *“After I had converted all my spinners to single hooks I found that all of the locals thought I was mad, as they had all decided to continue with trebles, due to losing so many fish! This convinced me to put some trebles back on my spinners.”*
- *“Trying to hook and land a salmon on a spinner with a barbless single on is pretty impossible.”*

#### 11. **We asked anglers if the byelaws had made any difference to how much they enjoyed their fishing during 2020**

Angling is a welcome distraction from the pressures of a busy working life for many anglers and as such makes a **major positive contribution to their mental wellbeing.** However:

- **70.25%** of anglers reported that they **enjoyed their fishing less** as a result of the byelaws
- **36.9%** of anglers reported that they **no longer fish at least one of their regular waters**

**There are significant implications here for the delivery of the Health & Wellbeing of Future Generations Act in Wales**

- *“Prior to the new byelaws I ENJOYED my fishing in Wales, I no longer do”*
- *“It has taken the shine off fishing for me and as a result I am fishing a lot less.”*
- *“Speaking with many game anglers affected by the new rulings, they seem rather dispirited and dismayed by it all and offer the view that it has been poorly handled by NRW”*

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<sup>20</sup> A method of angling using an artificial lure which wobbles or spins in the water in order to attract fish

- *“I have not renewed my membership of another game angling club in North Wales as it is no longer worth going.”*
- *“When I was a young boy I was encouraged to go fishing to keep out of trouble. Now the NRW are trying to criminalise me whilst enjoying a hobby I have done since I was young. If I believe the current NRW byelaws would improve salmonoid (sic) stocks I would applaud them but they don't. These byelaws just restrict anglers enjoyment”*

## Conclusions

### Stock Assessment

There are many experienced anglers and fishery managers who already regard the current EA/NRW/Cefas<sup>21</sup> Stock Assessment Methodology as **not fit for purpose**. However, when lack of angling effort, lost fish due to hook restrictions, reduced catches due to bait bans and reduced fishing periods for certain methods have such a profound negative impact on catches **how can anyone justify continuing with the current system**.

- *“I often walk up and down the river and very rarely see anyone fishing now, A couple of years ago I would have seen about Ten anglers and on a flood Twenty or so anglers. So how can the NRW know if their plan is working as they rely on catch returns to gauge the health of the river?”*
- *I no longer fish in Wales for Migratory Fish due to the 2020 Byelaws introduced by N.R.W. I do however fish for Brown Trout and Grayling, and on occasions catch both Salmon and Sea Trout on Trout/Grayling tactics (all fish are returned), as I do not have a Migratory Fish Rod License and as a direct result of this I am not required to submit a catch return so these fish are never counted in E.A. or N.R.W. figures..... yet another failing on N.R.W.'s part.*
- *“I no longer sadly even fill in my EA catch return in protest of the situation we anglers face.”*

### The Net Loss to our Rivers

A key element has not been addressed here in the relentless pursuit of a legislative solution i.e. **zero exploitation of fish stocks is not a realistic goal**. In the mistaken belief that seeking to prevent generally law abiding anglers from taking the occasional salmon is a priority concern, NRW are exposing rivers to **an increased threat of illegal exploitation** which causes **significantly greater damage to fish stocks**. The result is a significant **Net Loss** to our fisheries.

- *“Imposing too many restrictions will inevitably result in fewer anglers (sic) fishing the waters. Currently most anglers are the eyes and ears of the Agencies”*
- *“It is with regret I note the way in which policy appears to be formed without putting fishermen and fishing clubs at the centre of the decision making process as the interests of the target species are best catered for by those who stand to benefit most from conservation of that species.”*
- *“Not as many anglers on the rivers, to report any incidents ie poaching, pollution and general activity on the rivers. Anglers police their own beats that they fish on, with these regulations it will become a poacher's paradise on some Welsh rivers, not enough 'eyes' to keep a watch on things.”*

**We do of course realise that the Byelaws are in place for a 10 year period and whilst we recognise that NRW “are committed to a 5 year review” we have little confidence that any of the concerns raised here will be addressed.**

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<sup>21</sup> Centre for Environment, Fisheries and Aquaculture Science.

|                |
|----------------|
| <b>Annex 1</b> |
|----------------|

## PAAS Member Feedback Survey - Fishing in Wales

**The Impact of the All Wales Byelaws on Salmon & Sea Trout Angling**

New catch controls for salmon and sea trout angling in Wales were introduced in January 2020. We are trying to assess the impact of these restrictions on our fisheries. This survey is anonymous and we would really appreciate honest answers. This enables us to provide the best provision and where possible, to act on our members' behalf in relation to the feedback we receive.

The survey will take 5 to 10 minutes to complete.

**1. Which of these statements best describes where you live and fish**

- I live and fish in Wales
- I do not live in Wales but visit in order to go fishing

**2. In Wales what do you fish for? Select all that apply.**

- Coarse Fish
- Trout
- Sea Trout
- Salmon

**3. Many visiting anglers like to have a seasonal base in Wales, such as a caravan or cottage**

- No - I do not have a seasonal base in Wales
- Yes - I do have a seasonal base in Wales
- Yes - I have a seasonal base in Wales but have considered giving it up as a result of the byelaws
- I used to have a seasonal base in Wales but have given it up as a result of the byelaws

**4. Enforcement Officer** How long is it since you were last approached by an NRW Enforcement Officer whilst fishing in Wales?

- 1 – 2 years
- 3 – 5 years
- More than 5 years
- I have never been approached by an NRW Enforcement Officer

**4i Reporting to an Enforcement Officer or the Incident Hotline**

- The new byelaws have made no difference to whether I am likely to pass on Information to the NRW Incident Hotline or Enforcement team
- As a result of the new byelaws I am now less likely to pass on Information to the NRW Incident Hotline or Enforcement team

(continued)

**5. What is your overall assessment of how well NRW as an organisation look after our rivers and fisheries?**Based on a score of 1-10 where 1 is extremely poor and 10 is excellent what is your overall assessment of how well NRW as an organisation look after our rivers and fisheries?

**6. Game Anglers - The impact of the Byelaws on your angling**

**(Questions 6, 7, 8 & 9 relate to Game Angling only. If you do not fish for salmon and sea trout in Wales please go straight to Q10)**

What has been the impact of the Byelaws on your angling effort in Wales during 2020? Choose the statement below which best describes your fishing effort. **(Please try to ignore the impact of Covid-19 travel restrictions when making your response).**

- I fished more often during 2020 as a result of the new Byelaws
- I did not fish as often during 2020 as a result of the new Byelaws
- The new Byelaws have made no difference to how often I fish
- I no longer choose to fish in Wales as a result of the Byelaws

**7. Game Anglers - Your views on the Mandatory Catch & Release element of the Byelaws**

- I agree with the introduction of Mandatory C&R on all rivers in Wales
- I disagree with the introduction of Mandatory C&R on all rivers in Wales
- I agree with Voluntary C & R where appropriate on a river by river basis
- I am opposed to both Voluntary & Mandatory C&R

**8. Game Anglers - Impact of Method Restrictions on your angling during 2020**

**8i. Game Anglers - Using barbless hooks - part 1**

- Barbless hooks made no difference to the number of fish I landed
- I lost more fish during 2020 as a result of using barbless hooks

**8i Game Anglers - Using barbless hooks - part 2(Please answer honestly)!**

- I always used barbless hooks throughout 2020
- I did use barbed hooks at times during 2020

**8ii. Game Anglers - The ban on using more than a single worm - Part 1**

- I do not worm fish for salmon or sea trout - **(Go to question 8iii)**
- Using a single worm made no difference to the number of fish I caught
- I caught more juvenile fish as a result of using a single worm
- Overall I caught less fish as a result of using a single worm

*(continued)*

**8ii Game Anglers - The ban on using more than a single worm – Part 2**

- I always used a single worm throughout 2020
- I did use more than 1 worm at times during 2020

**8iii. Game Anglers - The ban on fishing with shrimp & prawn before 1st September - Part 1**

- I do not fish with shrimp or prawn - **(Go to question 8iv)**
- The ban made no difference to my overall catch
- The ban reduced my expected catch by 0-25%
- The ban reduced my expected catch by 25-50%
- The ban reduced my expected catch by 50-75%
- The ban reduced my expected catch by more than 75%

**8iii. Game Anglers - The ban on fishing with shrimp & prawn before 1st September - Part 2**

- I did not use shrimp or prawn before 1st September
- I did use shrimp or prawn on occasions before 1st September

**8iv. Game Anglers - The ban on multiple hooks on spinners and lures - Part 1**

- I do not spin for salmon or sea trout - **(Go to question 9)**
- Using single hooks made no difference to the number of fish I landed
- Using single hooks meant I lost less than 25% of the fish that I hooked
- Using single hooks meant I lost 25% - 50% of the fish that I hooked
- Using single hooks meant I lost 50% - 75% of the fish that I hooked
- Using single hooks meant I lost more than 75% of the fish that I hooked

**8iv. Game Anglers - The ban on multiple hooks on spinners and lures - Part 2**

- I always used single hooks whilst spinning during 2020
- On occasions I did use treble hooks whilst spinning during 2020

**9. Game Anglers - Have the Byelaws made any difference to how much you enjoyed your fishing during 2020?**

- The Byelaws have made no difference to how much I enjoyed my fishing
- The Byelaws have meant that I enjoyed my fishing more
- The Byelaws have meant that I enjoyed my fishing less but will continue to fish my regular waters
- The Byelaws have meant that I enjoyed my fishing less, I no longer fish at least one of my regular waters

*(continued)*

10. Is there any other information that you would wish to share with us regarding the impact of the All Wales Byelaws on your fishing?

11. I am a member of PAAS / I am not a member of PAAS

- I am a member of PAAS
- I am not a member of PAAS

Thank you for taking the time and trouble to complete this form. Please click SUBMIT to return your completed survey.

Submit

## **APPENDIX 2**

### **AN ANALYSIS AND REVIEW OF THE ENVIRONMENT AGENCY TECHNICAL CASE**

A rigorous quantitative and qualitative analysis of the Technical Case has been conducted to highlight the errors and inadequacies of the underlying methodology of the stock assessments undertaken.

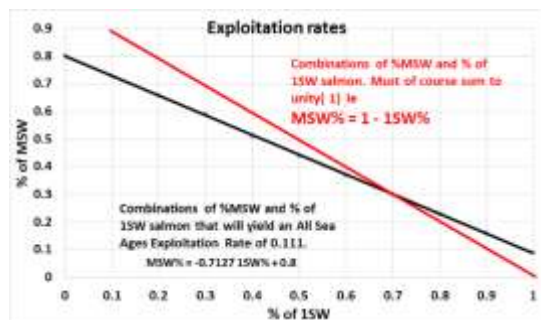
#### **HEADLINE POINTS**

- The claimed average all age class exploitation rate of 11.1% is incorrect and not being applied as claimed. The actual average exploitation rate is higher and varies from between 11.3% to 13.4% depending on the proportion of MSW salmon in the catch
- If the 11.1% exploitation had been applied to both age classes, the returning stock estimate would have been between 10-17% higher, meaning that between 2010 and 2019, an additional 3,800 salmon would have been estimated cumulatively to have returned to the Severn.
- The stock assessment model has too many parameters that have remain unchanged and unchallenged since 2002 and the cumulative effect of them is to depress the egg deposition rates on the Severn.
- There appears to have been no sensitivity analysis conducted to examine the impact of changes in the parameters over almost 20 years.
  - There is published evidence that the applied mortality rates are too high and well beyond the range found across the N Atlantic countries.
  - The review of fecundity rates in 2018 has now placed the Severn fecundity rates below those in Scotland and Ireland and Canada, especially in the heavier MSW weight ranges
  - There is no evidence of efforts (e.g. from netting stations) to validate that the change to a national scale reflects conditions the Severn
  - There is published evidence that the proportion of females varies annually. Again, no attempt has been made to validate the use of fixed proportions for each sea age.
- There is published evidence that catch and release mortality rates from bait fishing is around 15% and 16% from lure fishing and that deep hooking is more prevalent which makes a nonsense of the proposal to ban bait fishing,
- Trend analysis is over simplistic and uninformative except as a proxy when better information is either not available or ignored.
- If we must consider trends. Then it is clear that since 2002, neither the egg deposition time series nor catch on the river Severn have exhibited statistically significant trends at most credible percentile levels.
- It is superficial to ignore the impact of the dramatic drop in rod effort on catch levels. We demonstrate from stochastic modelling that had effort remained at 2010 levels, catches would have been much higher.
- The byelaw is likely to reduce the number of anglers and catch. It is a measure that will undermine the basis of the stock assessment. An own goal.
- Our analysis of juvenile salmon at sites that have been consistently monitored on an annual basis does not present a picture of decline.



## I EXPLOITATION RATES

In practice the EA employs different exploitation rates for each of the two sea age classes. Its model assumes an all sea age exploitation rate of 0.111 (11.1% of returning stock), which is then converted into an exploitation rate for 1SW fish  $(0.111/1.2) = 0.099$  and  $(0.111/0.8) = 0.139$  for MSW fish<sup>22</sup>. However, it is quite clear that 0.111 is in no sense an average



exploitation rate for the river, and in effect the EA applies a higher exploitation rate to the Severn. This in turn reduces the estimated level of returning than were a single rate to be applied. **The chart below illustrates the reason behind error of claiming of a single all river age class rate of 0.111.** The black line is the locus of all points that combinations of 1SW% and MSW% of total stock yield a weighted average rate of 0.111. The red line however is the locus of all points in which 1SW% and MSW% sum to

unity, which they must. The conclusion we draw is that there is only one unique combination of 1SW and MSW stock numbers that will be consistent with a rod exploitation rate of 0.111, and that is if the returning stock comprises of 70% 1SW and 30% MSW. But the Severn is a predominantly MSW river, the lowest percentage being 50% in 2010 and 91% in 2019.

The table below shows the implications of the double vs single river exploitation rate on estimated stock numbers. The actual all sea age average exploitation in recent years has ranged from 0.123 to an estimated 0.134 in 2010 and 0.131 in 2020. The underestimation of returning salmon numbers using the twin sea age exploitation rates compared with the all sea age average ranges from some 200 to 755 salmon, and in total from 2010-20 would be a cumulated underestimate of 3.388 salmon,.

| Stock estimates under assumptions of differentiated 1SW and MSW RERs and the All Sea Age Rate |  |       |        |        |        |        |        |        |       |       |        |           |
|---|--|-------|--------|--------|--------|--------|--------|--------|-------|-------|--------|-----------|
|   | 2009   | 2010  | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017  | 2018  | 2019   | 2020 prov |
| Declared rod catch  | 212  | 234   | 361    | 249    | 333    | 211    | 468    | 334    | 329   | 185   | 159    | 218       |
| Uplifted catch to compensate for undeclared catch and disparity with private sources.         | 233  | 267   | 397    | 274    | 366    | 232    | 636    | 441    | 421   | 279   | 175    | 248       |
| Uplift rate of compensation for undeclared catch  | 1.1  | 1.1   | 1.1    | 1.1    | 1.1    | 1.1    | 1.36   | 1.32   | 1.28  | 1.51  | 1.10   | 1.10      |
| Estimated proportion of 1SW salmon in total catch   | 0.32   | 0.50  | 0.25   | 0.30   | 0.21   | 0.23   | 0.22   | 0.17   | 0.37  | 0.33  | 0.09   | 0.10      |
| Estimated proportion of MSW salmon in total catch   | 0.68   | 0.50  | 0.75   | 0.70   | 0.79   | 0.77   | 0.78   | 0.83   | 0.63  | 0.67  | 0.91   | 0.84      |
| Returning Stock numbers at Rod Exploitation Rates (RER) of :-                                 | Estimated returning salmon numbers on the River Severn |       |        |        |        |        |        |        |       |       |        |           |
| EA Applied RERs of 0.099 (1SW) & 0.139 (MSW)  | 1,894  | 2,222 | 3,145  | 2,209  | 2,853  | 1,823  | 4,975  | 3,392  | 3,479 | 2,272 | 1,304  | 1,681     |
| EA claimed All sea age average RER of 0.111   | 2,099  | 2,315 | 3,577  | 2,468  | 3,297  | 2,090  | 5,730  | 3,973  | 3,793 | 2,514 | 1,576  | 2,216     |
| Difference in returning stock estimate  | -205   | -94   | -432   | -260   | -444   | -267   | -755   | -581   | -314  | -241  | -272   | -335      |
| % Underestimate   | -9.8%  | -4.0% | -12.1% | -10.5% | -13.5% | -12.8% | -13.2% | -14.6% | -8.3% | -9.6% | -17.2% | -15.1%    |
| All fish average RER using EA assumed separate RERs for 1SW & MSW                             | 0.123  | 0.116 | 0.126  | 0.124  | 0.128  | 0.127  | 0.128  | 0.130  | 0.121 | 0.123 | 0.134  | 0.131     |

**The point being made here is that the selection of exploitation rates is crucial to the stock estimate. If the EA claimed all sea age average is 11.1%, this is only possible with a grilse percentage of 70% which is extremely unlikely on the R Severn. Otherwise the all sea age exploitation rates are effectively higher than published in the stock estimates. Or to put it another way, either the all sea-age exploitation rate is inaccurate, or not being applied.**

<sup>22</sup> The unstated rationale presumably being that MSW fish are not only probably in the river for a longer time than 1SW fish but being of heavier weight, more desirable to the angler to retain rather return to the river.



## II OTHER PARAMETERS

Identification of the age-weight classes of the Severn catch is related to angler declared weights compared with age-weight tables. Peer reviewed judgements appear to vary on whether weight or fork-length is best for estimating either sea age or fecundity. Bacon P.J, et al<sup>23</sup> (2011) suggested that weight is a less satisfactory predictor than length of the sea age of fish. Furthermore a number of studies also suggest that length is a preferred predictor to weight in estimating fecundity -see amongst others Hanson N et al (2019)<sup>24</sup>. De Eyto et al (2015)<sup>25</sup> who utilised both length and weight in explaining the fecundity Irish salmon. As anglers in England record catch, weight and days fished on their annual licence returns to the EA, use of weight for sea age and fecundity is a pragmatic choice, as length measurement is not collected.

In order to arrive at the egg deposition estimates a number of other factors also have to be considered -these relate to in-river mortality rates of fish (which includes the mortalities of fish retained by anglers), and the mortality rates of fish that have been caught and released. Also an estimate of the proportions of females in the 2 sea age groups is required to arrive at the numbers of spawning females. Finally, the EA model uses a fecundity rate equation which relates the number of eggs per female to her weight.

It is clear from the Stock assessment tables that there has been no change in the following assumed model parameters since 2002:-

- The stated all sea age exploitation rate of 0.111
- The individual 1SW and MSW exploitation rates 0.099 and 0.139 respectively
- The returned catch mortality rate of 20%
- The in-river mortality rate of 0.091 which includes retained/killed fish
- The proportions of females in the 1SW and MSW age classes of 0.298 and 0.816 respectively
- The conservation limit of 12.85 million eggs.

It is as if these are universal constants unaffected by the environmental and anthropogenic pressures or changes on the salmon population. A look at Fleming I (1998)<sup>26</sup> Fig 5 will quickly reveal the annual variability in the proportion of females. ***There appears to have been little effort made to make recent use of netting station catches to identify the proportions of female fish caught or to take scale samples for sea age classification.*** Hence current Stock Assessment is almost a tick box exercise which generates the estimate of egg deposition by plugging in a few variable elements -viz, the declared rod catch, an uplift in catch (in most years 1.1) to account for undeclared rod catches, the retained and returned catches by anglers, the angler estimated weights of the fish they have caught which helps to partition the catch and stock into age class and generate the eggs deposited through a national standard fecundity equation

<sup>23</sup> Bacon P.J et al (2014) Objective determination of the sea age of Atlantic salmon from the sizes and dates of capture of individual fish.

<sup>24</sup> Hanson N (2019) .Hierarchical analysis of wild Atlantic salmon fecundity in relation to body size and development traits. J. Fish Biol, 2020. 96:3. 316-326

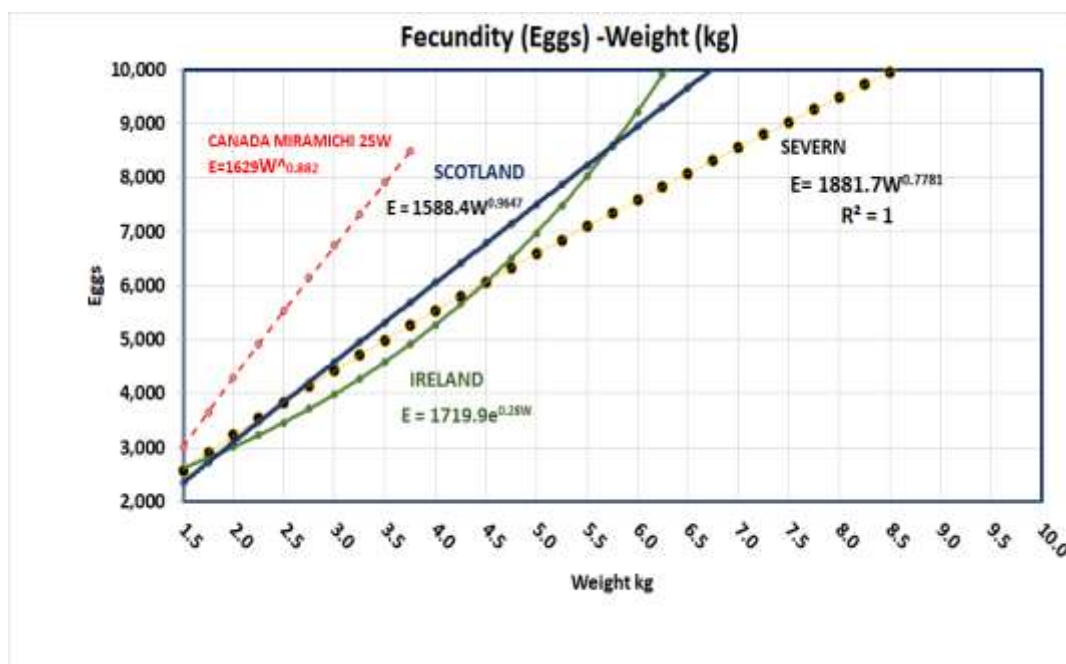
<sup>25</sup> De Eyto, E. (2015) The fecundity of wild Irish Atlantic salmon and its application of stock assessment purposes. Fisheries Research 164 (2015) 150-169.

<sup>26</sup> Fleming I. (1998). Pattern and variability in the breeding system of Atlantic salmon, with comparison to other salmonids. Can. J. Fish.Aquat. Sci. 55(Suppl 1) 59-76

### III FECUNDITY

The fecundity of Severn females was reviewed in 2019 and replaced by a national weight - eggs scale, higher specific rates for the Severn having formerly been used, but never sample checked for accuracy from the 1990's until 2018.

It is instructive to compare the 1991 fecundity rate function now employed in the EA Assessment model<sup>27</sup> with those in two recent studies based on 7 major salmon rivers in Scotland (Hansson N et al op cit ) and another on 11 rivers in Ireland (de Eyto et al op.cit). and on the Canadian Miramichi (Reid J and Chaput G 2012<sup>28</sup>.. ***It is quite clear that above the 3 to 4.5 kg weight ranges the EA fecundity curve is below the Scottish and Irish curves, i.e. at those higher weight ranges where the MSW salmon are situated as the dominant age class and source of eggs in the Severn. There is therefore a pertinent question as to whether the revision has over-emphasised the depression in fecundity in its model and has contributed to the drop in risk status of the Severn.***



The fixed fecundity rate formula re-introduced in 2018 that reduced estimates of egg deposition. The magnitude of this “adjustment” is not revealed in the Technical Case<sup>29</sup> but as the table below reveals it produced a substantial impact of retrospective egg deposition estimates ranging from 39%-59%., sufficient to undermine the extant Probably Not at Risk Status. Two more subsequent revisions involving changes in the weight distribution tables have also followed but the final outcome is still a substantial reduction in egg deposition estimates. These past values are crucial to the degree to which the management objective criteria are satisfied. Whilst the reviews may reflect an urge to improve after years of stasis in the weight distribution tables, nevertheless it is indicative of a model which even after its inception in 2002, has rarely attained settled status and is now part of an ongoing three year project to review Conservation limits and Stock Assessment.

<sup>27</sup> EA personnel may not recognise the function in this chart, but it is simply a re-estimate of the data generated by their Pope 1991 function, somewhat shorter, and simpler to comprehend.

<sup>28</sup> Reid J and Chaput G Spawning influence on fecundity, egg size and egg survival of the Atlantic salmon from the Miramichi River New Brunswick, Canada . ICES Journal of Marine Science (2012), 69(9), 1678–1685. doi:10.1093/icesjms/fss091

<sup>29</sup> See page 18 of 65

| Egg Deposition Revisions % changes on previous version |            |            |            |            |            |            |            |            |            |            |
|--|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Estimate dates   | 2009       | 2010       | 2011       | 2012       | 2013       | 2014       | 2015       | 2016       | 2017       | 2018       |
| Amended 2019 V1  | -42        | -44        | -44        | -39        | -40        | -52        | -52        | -59        | -47        | -45        |
| Amended 2019 V2  | 0          | 0          | 0          | 0          | 0          | 0          | 6          | 19         | -12        | 36         |
| Amended 2020 V3  | 0          | 0          | 0          | 0          | 3          | 16         | 9          | 11         | 22         | 12         |
| <b>Net Change</b>                                      | <b>-42</b> | <b>-44</b> | <b>-44</b> | <b>-39</b> | <b>-39</b> | <b>-44</b> | <b>-45</b> | <b>-45</b> | <b>-43</b> | <b>-16</b> |

#### IV Mortality / Survival Rates

Turning now to the fixed parameters. ***It is clear that assumed mortality rate in the EA assessment of Severn stocks for returned catch at 20% is exceptionally high relative to the results of many studies.*** Lennox et al<sup>30</sup> indicate a survival rate of 83% (mortality rate of 7%) across N Atlantic river fisheries. Smith et al (2014)<sup>31</sup> provide a useful summary of the ranges of catch and release mortality. In Canada, estimates range between 5-15% with higher mortality for released salmon in summer. Their modelling study assumes 10% mortality and simulates over a range of exploitation rates. At the time of the article neither Norway nor Ireland included a mortality rate for caught and released fish (ie zero mortality). Van Leeuwen T et al(2020)<sup>32</sup>

**Furthermore Lennox et al, (op cit) indicate that survival /mortality rates vary according to fishing method. Fly caught salmon mortality was lowest at 4%, bait fished released salmon at 15% and lure fished salmon at 16%. Given the proportions of salmon caught by these methods on the Severn<sup>33</sup>, one might therefore expect a weighted average mortality rate of around 14% . Their study also calls into question the justification advanced for the proposed byelaw to ban bait angling, but to allow lure angling. Given there is no discernible difference in released fish mortality by either method, the banning of bait seems unjustified.** More fish were deep hooked on the fly than by lure and bait. This study's conclusions refute the EA supposition " *that the reduced level of C&R observed for bait fishing may reflect the fact that salmon taken on worms tend to be deeply hooked and therefore in poor condition to be returned alive*"<sup>34</sup>

***It would seem that it would be more prudent to invoke the precautionary principle in the use of the present Stock Assessment model until a more robust analytical framework evolves in 2022/3, and avoid the introduction of a 10 year byelaw when there is still the potential for significant change in the stock adjustment and CL methodology.***

It is very surprising that the annual stock assessment does not review whether these fixed parameters might have changed, or indeed whether any sensitivity analysis has been conducted given that each will have some (albeit perhaps unknown) probability distribution.

<sup>30</sup> Lennox R J et al (2017) Pan-Holarctic assessment of post-release mortality of angled Atlantic salmon *Salmo Salar*. *Biological Conservation* 209 (2017) 150-158;

<sup>31</sup> Smith, G.W. et al (2014) Assessing the status of Scottish Atlantic salmon stocks using reported catch data: a modelling approach to account for catch and release in the rod & line fishery. *Scottish Marine and Freshwater Science* Vol 5 No. 11

<sup>32</sup> Van Leeuwen et al .2020. Mortality of Atlantic salmon after catch and release angling:assessment of a recreational Atlantic salmon fishery in a changing climate. *Can. J. Fish. Aquat. Sci.*: 1–11

<sup>33</sup> EA Technical case p27

<sup>34</sup> Technical Case p27 of 65.

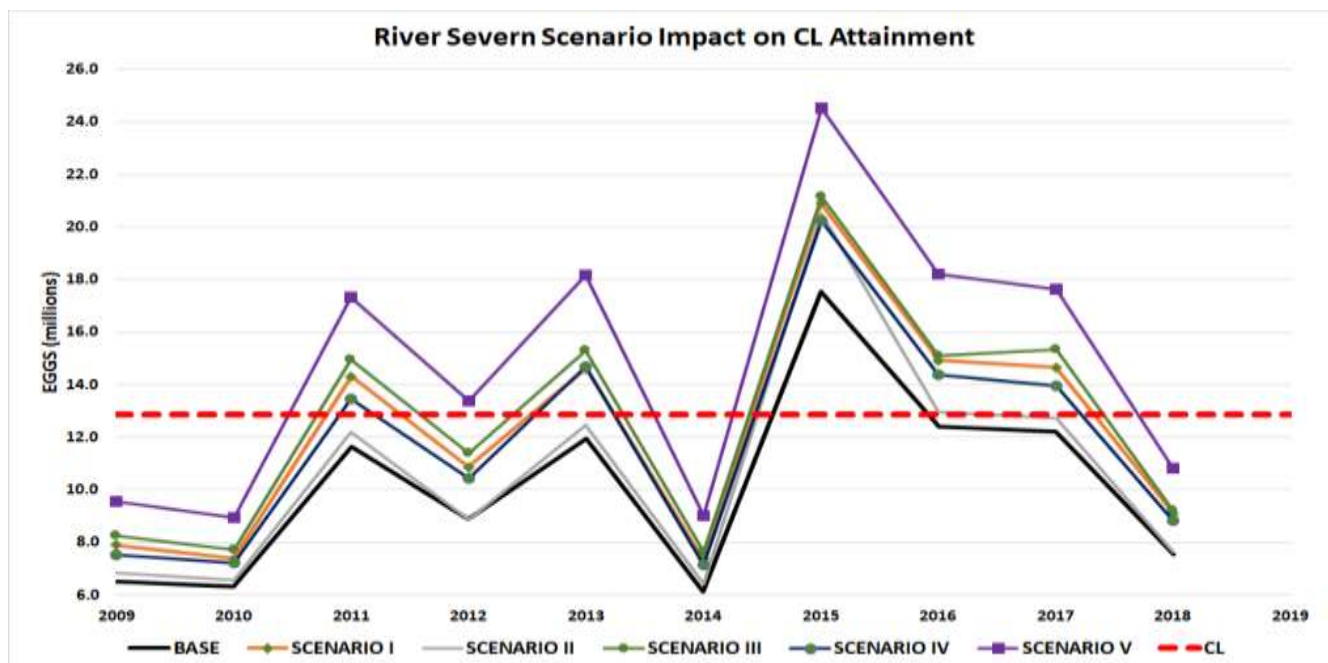
The decision process treats the egg estimates for each year as definitive. There have been no published details regarding the Bayesian trend estimation, what the priors are to generate the posterior distribution that leads to Bayesian trend or its credible interval, nor any indication of its slope. There is indeed a large black box in which the stock assessment is conducted and the evaluation of its outcome.

## V STOCK ASSESSMENT PARAMETER SENSITIVITY ANALYSIS

Given that the model contains a large number of fixed valued assumptions it might be instructive to explore the EA Stock Adjustment model outputs through a number of scenario-based sensitivity analyses to examine resulting changes in the egg deposition estimates to the scenarios. The analysis is based on the pre 2020 amended version of the stock adjustment model as the 2019 revised dataset of stock adjustment was only released to an FOI request in early March 2021. The table below sets out the combination of assumptions that were retained or changed in each scenario. One key scenario was to apply the all age class exploitation rate to both age classes. Variations in assumed mortality rates were also introduced and variation in the fecundity rates using the Scottish equation to simulate that derived from Hansen et al (op cit)

| Scenario Modelling Assumptions for Egg Deposition Estimates |                            |       |                     |                 |               |                              |
|---|----------------------------|-------|---------------------|-----------------|---------------|------------------------------|
|   | Rod Exploitation Rates RER |       |                     | Mortality Rates |               | Eggs/kg fecundity            |
|   | 1SW                        | MSW   | All River Average   | Released Fish   | In-River Rate | All age classes              |
| BASE (EA Extant Assumptions)                                | 0.099                      | 0.139 | 0.111 (not applied) | 0.2             | 0.09          | E=1881.7 W <sup>0.7781</sup> |
| SCENARIO I (Base with All Sea Age RER)                      | not applied                |       | 0.111               | 0.2             | 0.09          | E=1881.7 W <sup>0.7781</sup> |
| SCENARIO II (Base with Lower mortality rates)               | 0.099                      | 0.139 | 0.111 (not applied) | 0.14            | 0.05          | E=1881.7 W <sup>0.7781</sup> |
| SCENARIO III (Scenario II and Lower Mortality Rates)        | not applied                |       | 0.111               | 0.14            | 0.05          | E=1881.7 W <sup>0.7781</sup> |
| SCENARIO IV (Scenario I plus higher fecundity rates )       | 0.099                      | 0.139 | 0.111 (not applied) | 0.2             | 0.09          | E=1588.4 W <sup>0.5647</sup> |
| SCENARIO V (Scenario III plus higher fecundity rates)       | not applied                |       | 0.111               | 0.14            | 0.05          | E=1588.4 W <sup>0.5647</sup> |

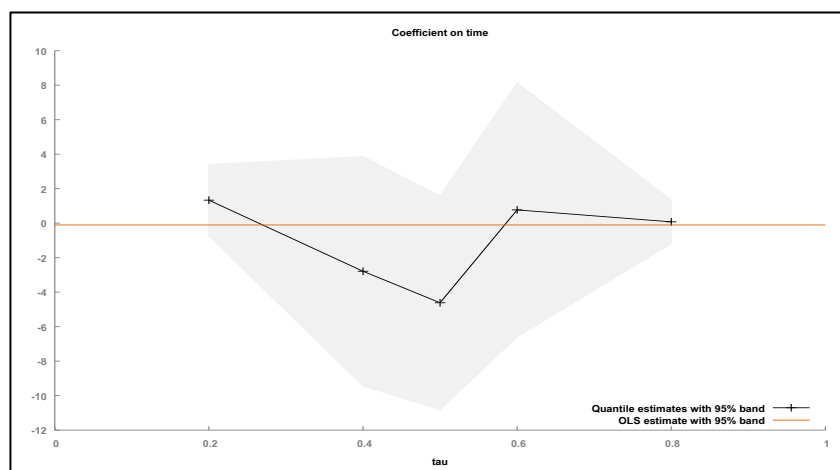
The graph below illustrates the sensitivity of the egg deposition outcome under the various scenarios shown in the table above. It illustrates the fact that **modest variation in the assumed parameters and fecundity function consistent with published estimates can render a more favourable outcome in terms of egg deposition. Although some of the scenarios may not hit the 4 years in 5 Management Objective requirement, nevertheless the river Status would appear more secure and less at risk. To put it another way, most of the model parameters as extant serve to depress the estimates of egg production.**



## VI CATCH

Catch is a given in the stock assessment process albeit with an uplift factor. However, it is subject to salmon population biological dynamic cyclical effects, is affected by river flow levels and rod effort.

First we consider the usefulness of trend analysis in examining catch. The graph below shows the estimate of a series of quantile trend regression equations of catch on time over a range of percentile levels from 20<sup>th</sup> to 80<sup>th</sup> percentiles<sup>35</sup> over the period 2002 to 2020. None of the estimated coefficients are statistically significant as the 95% confidence interval at each percentile incorporates a trend coefficient estimate of zero. Reliance on forecasting from a zero sloped trend is not particularly helpful when it comes to making strategic river management decisions.

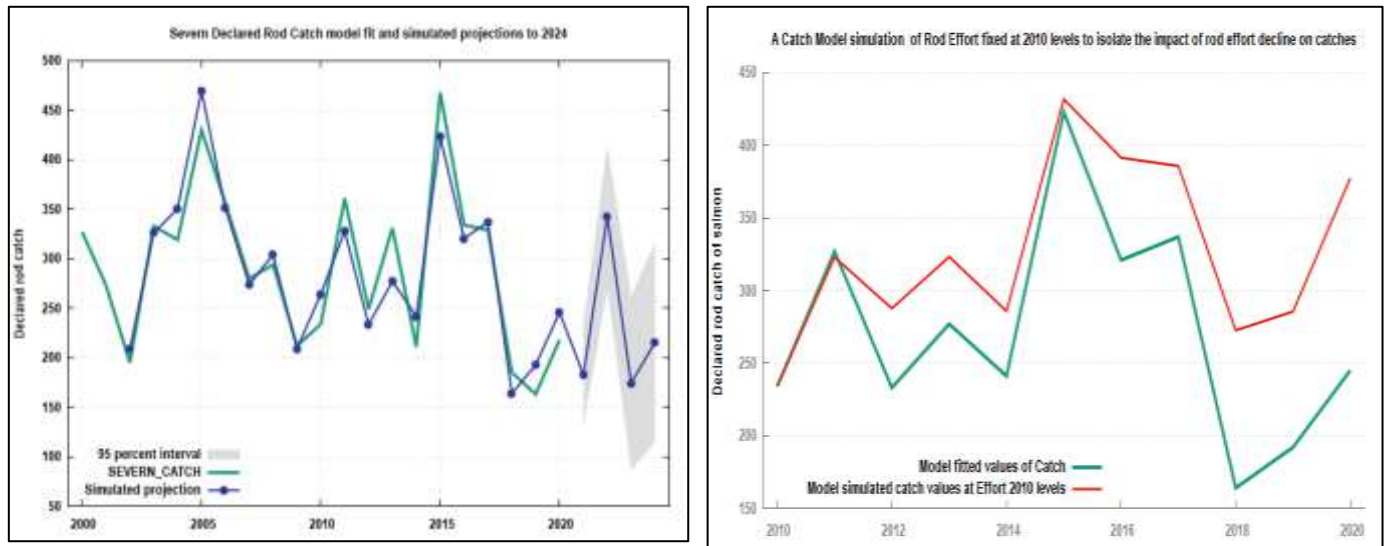


There has been a substantial decline in rod effort on the Severn largely triggered by the introduction of statutory catch and release in 1998, though some decline is also due to an ageing angling population. The Technical Case does refer to declining rod effort and declining

<sup>35</sup> (tau = 0.2, 0.4, 0.5, 0.6 and 0.8)



catches but does little to join the two together. In order to examine the effort-rod catch relationship, an ARMAX<sup>36</sup> stochastic dynamic model of declared catches on the Severn was estimated incorporating regional seasonal rainfall variables as proxies for river levels, 5 and 9 year trigonometric cyclical elements and rod effort days. Model fit is excellent (see l.h graph) Also shown are projections, to 2024 based on 20 year seasonal mean rainfall as a proxy for river levels and ARMAX model projections of effort.. It is also possible to use the catch model to adjust catch to a standardised rod effort level such as in the graph on the right that is indicative of a more stable rod catch outcome when the downtrend in effort is excised<sup>37</sup>. The advantage of this approach is that the model can be queried . Similar adjustments might be made for example for low or excessively high seasonal rainfalls on catch levels.



Given the positive relationship between catch and effort, catches would have been substantially higher if remaining at 2010 effort levels. Conversely, declining effort levels will lead to lower catches. Simply presenting declining catches as an example of the deteriorating salmon stock situation on the Severn as the Technical Case does is both misconceived and misleading .

***In exacerbating the continuing downtrend in effort through method restriction, the byelaw will produce two perverse effects. First it will lead to a reduction in catches. Second that will feed through the stock assessment into lower egg deposition estimates and the erroneous conclusion that salmon stocks have deteriorated further. -but only in the model! . The conclusion is that the proposed byelaw may well lead to erroneous judgements about the future stock levels by compromising and undermining. the very basis of the stock assessment -catch. .***

## VII EGG DEPOSITION ESTIMATES

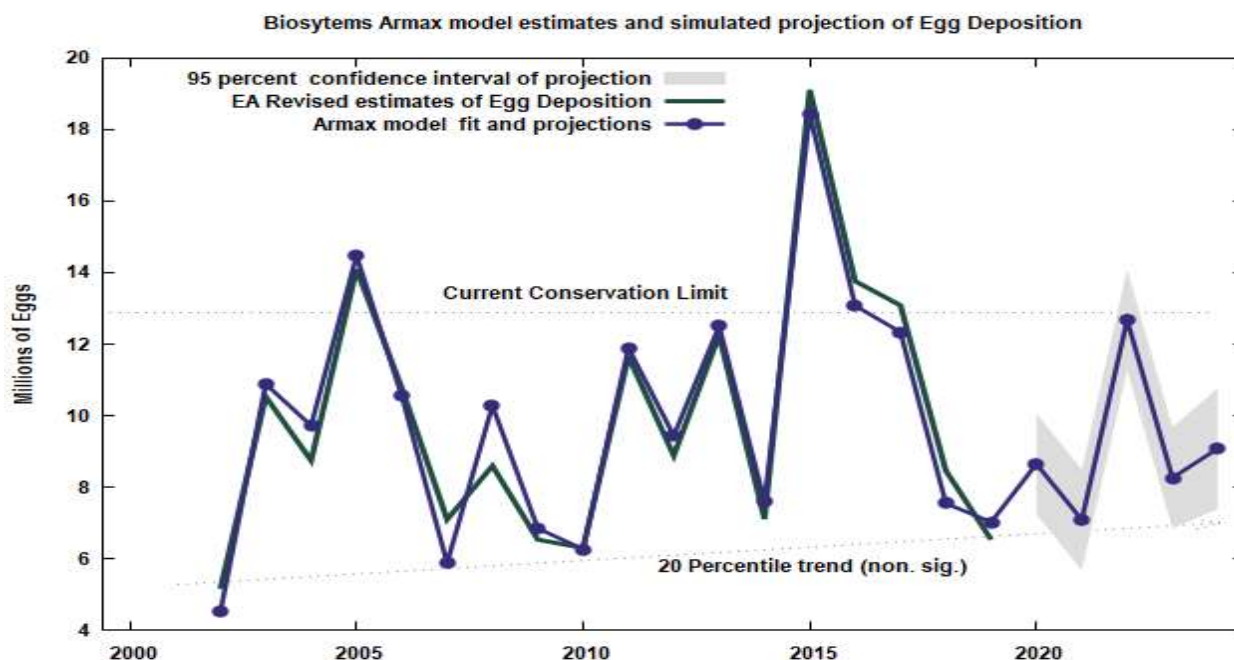
This biosystems modelling approach can be taken through to egg deposition also yielding more fruitful insights than the Bayesian quantile trend with no significant slope. With a suite of interdependent ARMAX models :effort feeding into catch, a model for the dynamics of age class proportions of the catch can feed as inputs into an egg deposition ARMAX model from which projections can be generated as illustrated below. Such an approach has greater information content, more flexibility in generating projections rather than from a trend echoing the past. What is clear from the graph below is that egg deposition estimates can equally be generated through dynamic stochastic modelling and projections made with

<sup>36</sup> Auto-Regressive Moving Average model incorporating eXogenous variables

<sup>37</sup> Fitting and projecting trends with no accommodation of underlying factors that drive them can lead to superficial and erroneous conclusions .

confidence limits. . But, the key point is that ***it is clear the Severn has maintained an almost steady state around 9 million eggs whilst failing to meet Management Objectives . That should give pause for thought. How realistic is the MO and how relevant is the present Conservation Limit as clearly there has been a sustainable population?.***

***In the graph, the long term 20 percentile trend is statistically non significantly different from zero as is the !0 year trend (not shown).***

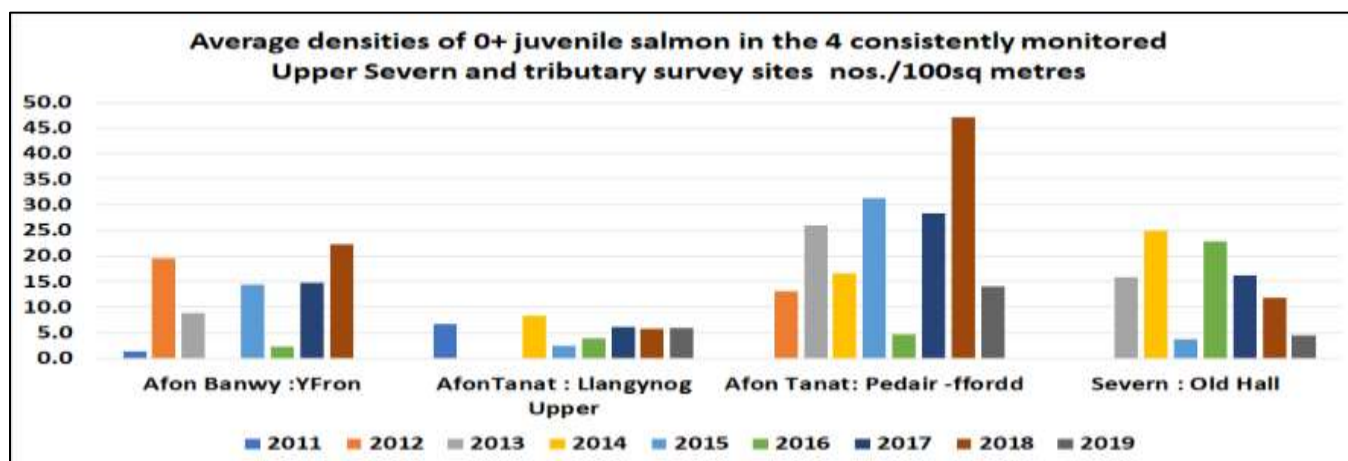


### VIII JUVENILE SALMON

One final point of disagreement with selective presentation of information in the Technical Case concerns Juvenile salmon trends<sup>38</sup>. .

The Technical Case provides no information on which sites are included in its presentation of Juvenile Densities and whether the aggregation is strictly one of an identical sample of consistently monitored sites.

Our own analysis of Severn and tributary sites found only 4 that were regularly surveyed consistently over the period 2011 to 2019 sufficient to generate a credible time series picture. The graph of the 0+ juveniles at these sites is presented below.



<sup>38</sup> Page 39 of 65.

Source data NRW

The picture is one of stability or growth in 0+ densities in the Tanat and Banwy with the exception being Severn Old Hall. Juvenile densities declined at 3 of the sites in 2019 however.. All sites suffered from winter storms in 2016. The low densities of >0+ juveniles in the Technical case are not surprising as the parr will move downstream from the upper tributary sites to find deeper water and hopefully more abundant food and more shelter. But low numbers of >0+ juveniles will also reflect the fact that their numbers are being heavily predated by sawbill ducks and the smolts by cormorants as they descend the river.

## IX CONCLUSIONS

- The Technical Case is largely descriptive and lacks any analytical rigour.
- It makes no attempt to indicate the impact of the proposal on the future dynamics of the Severn salmon stocks nor provides any estimates of the advantage in terms of salmon numbers that might be anticipated relative to the two alternative proposals.
- There is no full options appraisal for what is a significant piece of byelaw legislation given the 10 year duration with no indication of what might follow the five year review.
- There is no integration of the economic consequences into an options appraisal. Where a policy action may deprive or exclude individuals from their pastime, contingent valuation through travel costs is not an appropriate methodology for assessment of the welfare losses of those who lose out by the changes that follow, and direct survey methods would be necessary .
- The discount rate used in the economic analysis that is lacking a true cost benefit evaluation does not conform to Treasury norms.
- No sense is given of the social and economic impacts relative to the expected outcome of the byelaw imposition.
- The Technical Case signally fails to mention the 2020 provisional catch estimate increase and that declines in catches are related to a sustained decline in rod effort, that in part itself is a consequence of the introduction of statutory catch and release.
- The stock assessment modelling contains many unverified and unsubstantiated assumptions and show little or no evidence of updating the key parameters or in the case of exploitation rates no willingness to update.. The claim that an average all age class exploitation rate is 11.1 percent is demonstrably wrong. Were that the true average then the estimate of returning adult salmon numbers would be substantially higher.
- Mortality rates appear to be too high while fecundity rates have been lowered and seem to be at variance with those in published peer reviewed papers.
- The key parameters in the stock assessment have the effect of depressing the estimates of egg deposition estimates. While this may suit the case being presented for the byelaw, a sensitivity analysis adjusting these parameters to levels in the scientific literature cited can present a more positive picture of the state of the stocks in the R Severn.
- There have been three revisions to the current and past stock assessments within the space of two years. This is indicative of a lack of robustness and reliability in the analysis which is underpinning Severn fisheries management legislation. Already, emergency catch and release byelaws have been imposed in 2019 and 2020 based on egg deposition data that have subsequently been revised. This undermines trust in the transparency and justification for such byelaws and in the application of evidence-based decision making relating to the Severn.



## APPENDIX 3

### NWATFCC short analysis of EA Technical Case justification for Severn NLO & Byelaws

There is clear evidence from the Appendix 2 analysis of the Technical case justification and FOI sourced Severn 10 year stock calculations that there is significant error and explanations required for the use of River Severn variables applied in calculating annual egg deposition stock estimates. These river variables and national assessment systems and procedures are currently undergoing a national review process which we have been notified would inform earlier river estimates. Yet there is no mention in the Consultation documents of this landmark process for improvements being made to these critical river variables, the river status assessment methodology and decision process. We find;

- The EA & NRW claims & statements of “Severn stocks in alarming 30 year decline, unsustainable and with no harvestable surplus” are not supported by actual EA Severn angler declared catches over this 30 year period
- The EA have found reason to make three revisions in the last 18 months to the Severn 10 year (2009 - 2018) historic annual stock estimates to “correct” applied river variables, including two for the Emergency Byelaw Decision paper. SFG maintain the fourth and final estimates still contain significant error.
- The foundation on which final spawning stock estimates are derived for the River Severn (and most E & W rivers) is rod catch estimates. Those estimates require application of the I.Small 1991 model for correcting under reported catch. SFG find the five years 2010 - 2014 have under estimated and incorrectly applied uplifts whilst the return to use of the default 1.1 uplift in 2019 is not supported by reliable independent rod fisheries estimates from the Wye and NW rivers.
- The explanations for adjusting Age Weight tables and use of “fixed” Age Weight tables in the 2015 - 18 Emergency Byelaw revisions does not correspond with the actual use of Welsh Dee and Severn specific tables that took place in estimating Severn egg deposition calculations.
- The EA commitment in 2004 to introduce an improved procedure for annually revising rod exploitation rates (RER) taking account of seasonal factors including rod effort and river conditions was adopted in Wales but not in England. As a result many rivers including the Severn have had fixed RER applied since 2004 the year the EA introduced the new river status classification system.

The use of a fixed Severn 11.1% average RER for 16 years when numbers of anglers and rod effort has fallen by 50% cannot be justified i.e. where are the findings of the 2019 national RER review ? The 2018 & 2019 year assessments are critical with low effort in the 2018 drought combined with the impact on angler participation in the 2019 Emergency Byelaw restrictions.

- A revision and updating of assumptions and evidence to more recent research is called for in the use by the EA of an average 20% C & R mortality estimates for fly, spin and bait angling methods. .
- The Agreement on Adoption of Precautionary Approach principles between NASCO & Contracting Parties (EA & NRW) states “*Parties should be more cautious when information is uncertain, unreliable or inadequate*” and is particularly relevant in view of the reliance

placed on missing and incomplete supporting evidence of Supplementary data (Severn redd & fish counter datasets and sampling frequency and number of juvenile survey sites).

- We cannot agree with the Agency's statement that they are making use of the best available data to inform the NLO & Byelaw review.

The EA is the lead regulatory body for the Severn catchment and rod fisheries look to the Agency to take into consideration the evidence of reported error in stock estimates, the incomplete and missing supplementary data and reach a recommendation that delivers improvements for the whole fishery.

We firmly believe that Option 1 (90% Voluntary C & R and Voluntary angling method restrictions) is the correct approach and promotes cooperative partnership working between the Agency and its fisheries at a time when fisheries team resources are stretched and we have the improvements to stock assessment on the horizon.

Option 1 is the EA national strategy delivered and agreed in the 2019 national Salmon Byelaws. It is the Decision Structure measure for a Probably at Risk river designation for England & Wales, as approved and directed by NASCO policy.

## APPENDIX 4

### NWATFCC in depth analysis of EA Severn NLO & Byelaw Consultation Technical case justification of stocks

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*North West Angling Trust Fisheries Consultative Council*  
*part of the Angling Trust and AT North West Freshwater Forum*

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6<sup>th</sup> April 2021

Dear Sir,

North West Angling Trust Fisheries Consultation Council is a contributor to the Severn Fisheries Group with a major interest in the Consultation through its affiliated interest - Prince Albert Angling Society.

As Chairman of NWATFCC I am submitting the following Objection and SFG alternative proposals set out in the accompanying document:

- **Introduction**
- **EA & NRW claims & statements** - "Severn stocks in alarming 30 year decline, unsustainable, no harvestable surplus"
- **The Emergency Byelaws process & three Severn stock revisions**
- **Analysis of EA Severn stock Technical Case:**
  1. **CL principles, Management targets & accuracy of Linear trend predictions**
  2. **Angler Declared rod catch and use of river and national angler uplifts**
  3. **Revisions to Age Weight proportion`s of 1SW/MSW salmon and female contribution to stock estimates**
  4. **Use of "fixed" Rod exploitation rate variable**
  5. **Use of outdated In River & C & R mortality estimates**
  6. **EA changes to Fecundity estimates**
  7. **River stock status classification, alternate status & Decision models, E & W Decision Structure process, National 2019 Byelaws**
  8. **SFG corrections to historic assessments - including critical 2018 & 2019 years**
  9. **Supplementary data - Tanat Counter, Juvenile survey data, red counts ?**
  10. **Use of best available data to inform Byelaw review and conservation measures**
- **Rod Fishery Management Options**

#### Introduction

This Objection to the EA Consultation proposal stems from correspondence between Prince Albert AS and the EA dating from July 2019 in objections to the implementation of the Severn Emergency byelaw of the 15<sup>th</sup> June 2019. This led directly to later communications with the

Defra Minister, FOI requests, a Formal Complaint to the EA and working as a key partner in the formation of the SFG and pre-Consultation discussions with EA.

This Objection reveals weaknesses and unexplained changes to EA annual stock assessment procedures and estimates for the Severn (current year and over the 10 year historic cycle) in the EA fisheries team arriving at its interpretation of stock health. But also raises fundamental questions that have to be answered over deploying mandatory measures when they have limited effect, fail over enforceability and carry high risk in terms of unintended consequences that weaken river stock protection.

It leads to the SFG conclusion that the EA proposal to fast track the Formal Consultation process and its earlier 2019 Emergency Byelaw process was and is ill advised, formed on statistically invalid stock assessments and uncertain River status projections. These "All Wales" proposals alienate anglers and as the PAAS survey of 550 anglers fishing Welsh waters, ill conceived mandatory measures have quite unintended outcomes.

following stock analysis sections identify significant error in the use of Severn River variables and SFG recommends and formally requests recalculation of specific years where stocks are clearly underestimated. A final summary of proposed revision highlights the scale of potential underestimated stock.

Rod catch estimates are the primary indicator of river stock health for most E & W Rivers and require at least a core level of participation by competent anglers to provide a degree of validity in stock estimates. The number of Severn salmon anglers has fallen to a critical 200 mark in the past 3 years, principally because of the introduction of restrictive Byelaw measures. Have the EA carefully considered how introducing 10 year mandatory measures will impact on the alarming decline in angler participation and whether rod catch stock estimates will be sustainable in future years? Equally, there appears to be a heavy reliance in the Consultation justification on Supplementary data as the secondary string of evidence to support the rod catch stock assessment. With no recent Severn redd count data, incomplete juvenile electro fishing data and the River Tanat ( tributary of a tributary of the Severn) providing the only reported adult count data, SFG has justifiable grounds to question the Fisheries teams conviction that this secondary

The first of the Precautionary Principles for Contracting Parties is particularly relevant.

#### **CNL(98)46**

##### ***Agreement on Adoption of a Precautionary Approach***

1. NASCO and its Contracting Parties agree to adopt and apply a Precautionary Approach to the conservation, management and exploitation of salmon in order to protect the resource and preserve the environments in which it lives. **Accordingly, NASCO and its Contracting Parties should be more cautious when information is uncertain, unreliable or inadequate.** The absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures.

We strongly recommend the EA use caution in its approach and review the evidence SFG present of its interpretation of rod based assessment for the River Severn and the options and proposals we will promote and secure to protect and enhance stocks.

SFG strongly believes and recommends a Voluntary Byelaw partnership approach and solutions at a time when major improvements are under consideration and in progress in national stock assessment reviews.

## **The Emergency Byelaws process & three Severn stock revisions**

PAAS correspondence with the EA following sight of the Emergency Byelaw Decision Paper and subsequent FOI requests of the 10 year Severn egg deposition (2009 – 2018) estimates revealed that the EA had failed to incorporate the national angler undeclared uplifts for 2015 - 18. As a result the 2019 Emergency Byelaws had been presented on invalid assessment of stock with significant under estimated stock in four years requiring a new Decision Paper. The EA acknowledged this by letter of the 16<sup>th</sup> April 2020 with a commitment to present the revising year estimates, River assessment and Decision Paper at a Formal Consultation in 2020. The EA failed to deliver that commitment to consult with anglers and fisheries (reasons explained as Covid & Severn Floods) and at the 11<sup>th</sup> hour extended the Emergency Byelaws on the 15<sup>th</sup> June 2020 for a further year without any prior communication and again on invalid assessments.

PAAS & NWATFCC raised a Formal Complaint against the EA for a series of process failures in the implementation of the Emergency Byelaws and significant errors in stock estimates and interpretation of stock.

Finally in 2021 PAAS made a further request for the 2017-19 annual estimates and received the complete 10 year 2010 - 2019 estimates used in the 2021 Formal Consultation and Technical Case justification.

What became evident was that in these estimates there had been extensive revisions to applied Age Weight tables (again not disclosed). As a consequence estimates in 2013 - 19 years do not correspond with the Severn River 2010 -19 estimates published in national reports on the 6<sup>th</sup> August 2020.

There have now been four 10 year River Severn assessments in less than two years. The original incorrect 2018 published Severn estimates, the incorrect 2019 Emergency Byelaw estimates, the incorrect amended 2019 Emergency Byelaw estimates and the amended 2021 Consultation Byelaw estimates that we now find do not correspond with the 2019 published estimates.

**NWATFCC, PAAS & SFG advise the EA that the most recent of these still has significant error and requires recalculation over the 10 year timeframe of annual estimates and assessments. Please refer to points raised in Analysis of EA Severn stock Technical case.**

**We therefore ask, will the EA seriously consider SFG alternate proposals (including the revisions to stock estimates) in this Consultation process and as part of the imminent national Review of improvements to stock procedures before framing its recommendations to the Defra minister?**

## **EA & NRW claims & statements ref River Severn stock health**

The following statements are used extensively by the EA and NRW in Consultation documents and media releases;

**“ Severn stocks over the last 30 years have declined at an alarming rate and are unsustainable with no harvestable surplus”.**

SFG rejects these claims and assertions and refer the EA & NRW to annual EA published angler declared catch returns over the last 30 years (even before correction and uplift for under reporting).

For the River Severn and most E & W rivers angler rod catch is the baseline or reference point on which stocks are assessed.

These show, as Chris Bainger, EA acknowledged at the EA & SFG video meeting on the 1<sup>st</sup> April that River Severn rod catch figures from 1990 - 2020 (see Annexe 1) have remained relatively consistent over the last 30 years..Even at a time when numbers of anglers filing declared returns and their rod effort days fished have fallen to their lowest levels in 2018 - 2020.

However, it is certainly a fact that salmon angler numbers and effort days have declined at an alarming rate in the last 20 years and are now reported as less than 25% of pre 1998 Spring Byelaw levels. Whilst CPUE, Catch per Unit Effort as the other KPI of stock health relative to fishing effort in the last 10 years is at its highest levels compared to pre 2010 catch to unit effort fished.

In fact the 2014 - 2018 five year annual rod catch average (305 salmon in the table below) was higher than the 10 year averages for both 1999 - 2008 and 2009 -18 periods which followed the 1998 national Spring Salmon Byelaw restrictions which had such disproportionate impact on the Severn fishery.

To reiterate; Severn stocks have not declined at an alarming rate in the last 30 years and are not at unsustainable levels.

|             | EA Fisheries<br>Stats Table 6.19                            | EA Report<br>Table 12   | EA Report<br>Table 8  |         |                                |
|-------------|---|---|---|---------|--------------------------------|
|             | <u>Number of<br/>Severn Angler<br/>declared<br/>returns</u> | <u>EA Angler<br/>declared Rod<br/>catch before<br/>correction</u> | <u>Angler declared<br/>rod effort days<br/>fished (S &amp; S/T) -<br/>mostly salmon on<br/>Severn</u> |         |                                |
| 1994 - 1997 | 630   | 428   | 13,585  | 4 year  | Pre 1998 Spring Salmon Byelaws |
| 1998 - 2008 | 317   | 299   | 4,849   | 10 year |                                |
| 2009 - 2018 | 302   | 290   | 4,141   | 10 year |                                |
| 2014 - 2018 | 272   | 305   | 3,720   | 5 year  |                                |
| 2018        | 179   | 183   | 2,335   | 1 year  | Drought impact                 |
| 2019        | 202   | 161   | 2,641   | 1 year  | Introduction Emergency Byelaws |
| 2020        | 158   | 220   | 1,839   | 1 year  | Extension of Emergency Byelaws |

In the intervening years further corrections to River CL target and systems to predict 5 year forward stock status were introduced and post 2010 many rivers experienced significant changes in ISW & MSW proportions and a noticeable decline in what were consistent one sea winter returning populations.

This was predicted as part of longer (50 - 60 year) cyclical trends of sea warming and cooling and abundance and scarcity of food source in the northern seas, commonly referred to as the impact of the North Atlantic Oscillation. River Severn stocks have historically maintained high levels of MSW components stocks and in this respect has experienced a lower impact than many rivers to the transition in ISW salmon runs.

Is it logical then that E & W use a CL target that was set in the 1990`s and lowered by 26% on average in 2004 (for counter intuitive reasons that marine survival rates had more than halved since the 1970`s) but then have a Management Target MT for managers "to aim for" and long term Management Objective, MO that river stocks must meet CL in 4 out of 5 years on average?

The system that was devised and introduced in 2004 and updated in 2007 to today`s River Classification methodology ( a rivers status or Risk/Probability of its stock meeting MO in 5 years time) was never validated, has not been routinely quality

assured in 16 years and given assurance in 2004 because “These results are in broad agreement with the previous compliance scheme”.

Rod fisheries have lobbied strenuously for radical reform of this stock conservation system over the last 3 years and made detailed submissions and recommendations in December 2018 to the drafting of the NASCO 2019 - 2024 Implementation Plan for “Improvements to stock procedures and Decision process”.

We now have the prospect of these Improvements taking place through the national reviews underway for use of annually revising river Rod Exploitation Rates and the longer 3 year review of the Stock Assessment system & Decision Structure process concluding in 2022. As a principal rod fisheries stakeholder NWATFCC has submitted its full recommendations on behalf of PAAS, CPWF and the national SAAG to the Stock Assessment Working Group.

A critical element of these recommendations is for a removal of the use of Linear Trend line model which generates forecasts of 5 year forward predictions of river stock status. The use of this 2004 system of 15 year linear (straight line) trend analysis and forecast predictions of stock has been directly responsible for the high incidence of rivers not aligning with their original 5 year forward stock status predictions.

Over the 2013 - 18 year period NWATFCC tracked reported accuracy of predicted stock status and found these predictions to be correct on average in only 1 in 3 cases. When you consider there are only four River status categories and two of these - PaR and PNaR status assume 90% of the probability range of stock predictions then you have to ask “What is going wrong with River status predictions?” Ivor Llewellyn, Director of the Atlantic Salmon Trust drew attention to this high status reporting failure and need for improvement or alternate methodology in his concluding summary report “Possible Changes to Conservation Limits and Stock Assessment in England” following the national workshop on Stock Assessments in Telford in June 2016.

It is actually a very simple phenomenon and well understood by fisheries managers & anglers alike.

Salmon stock abundance runs in cycles with shorter frequency peaks and troughs. Very few Rivers stocks exhibit or follow a 15 year straight line trend (or the 20<sup>th</sup> percentile regressed 10 year historic trend of CL attainment which is then cast 5 year forward on that same straight trend line projection).

Using a national trend analysis model that is not Quality Assured when river populations do not behave in the is not QA and almost doomed to failure at the outset as River populations particularly when impacted in recent years by longer term 1SW/MSW stock transitions do not behave in this was.

Please refer to the NWATFCC Annexe 4 - Analysis of the 64 Principal E & W monitored salmon rivers and their reported accuracy. Headline reporting accuracy is detailed below.

| EA & NRW Accuracy of 2013 - 2019 Five year forward Predictive Stock Status Forecasting |                    |         |        |                   |                    |         |        |                   |             |         |        |                   |             |         |        |                   |                    |         |        |                   |                    |         |        |
|--|--------------------|---------|--------|-------------------|--------------------|---------|--------|-------------------|-------------|---------|--------|-------------------|-------------|---------|--------|-------------------|--------------------|---------|--------|-------------------|--------------------|---------|--------|
|  | 2013               |         |        | 2014              |                    |         | 2015   |                   |             | 2016    |        |                   | 2017        |         | 2018   |                   |                    |         |        |                   |                    |         |        |
| 2008-5yr Forecast  | 2013 Actual Status | YES - ✓ | NO - X | 2009-5yr Forecast | 2014 Actual Status | YES - ✓ | NO - X | 2010-5yr Forecast | 2015 Actual | YES - ✓ | NO - X | 2011-5yr Forecast | 2016 Actual | YES - ✓ | NO - X | 2012-5yr Forecast | 2017 Actual Status | YES - ✓ | NO - X | 2013-5yr Forecast | 2018 Actual Status | YES - ✓ | NO - X |
| ENGLAND TOTAL  | 21 Y - 21 N        | Y - 50% |        | 15 Y - 27 N       | Y - 36%            |         |        | 10 Y - 32 N       | Y - 24%     |         |        | 9 Y - 33 N        | Y - 21%     |         |        | 12 Y - 30 N       | Y - 29%            |         |        | 17 Y - 25 N       | Y - 40%            |         |        |
| WALES TOTAL  | 9 Y - 13 N         | Y - 41% |        | 9 Y - 13 N        | Y - 41%            |         |        | 6 Y - 16 N        | Y - 27%     |         |        | 4 Y - 18 N        | Y - 18%     |         |        | 8 Y - 14 N        | Y - 36%            |         |        | 9 Y - 13 N        | Y - 41%            |         |        |
| E & W TOTAL  | 30 Y - 34 N        | Y - 47% |        | 24 Y - 40 N       | Y - 37%            |         |        | 16 Y - 48 N       | Y - 25%     |         |        | 13 Y - 51 N       | Y - 20%     |         |        | 20 Y - 44 N       | Y - 34%            |         |        | 26 Y - 38 N       | Y - 41%            |         |        |



The River Wye and NW (Eden, Lune, Border Esk & Ribble) typify what can happen at opposite ends of the spectrum in using 15 year Linear historic and 5 year forward stock projections.

In 2015 the Wye with an improving trend but 10 years of CL failure was predicted in 2020 to be PNaR, Probably not at Risk. Whilst many NW rivers with 8-10 years CL achievement in 2015 had AR, At Risk or PaR Probably at Risk forecast with 15 year trend line assessments that showed stock to be nearing extinction in 2020. What has happened in 2019 & 2020 is actually the reverse of EA & NRW stock predictions with Wye stocks and rod catches falling to some of their lowest on record whilst NW experiencing some of their best runs and vastly improved rod catches.

Can rod fisheries be expected to have confidence in a system that at best accurately predicts only 1 in 3 correct status classifications and on which 10 year regulatory measures are to be enforced?.

Should the EA & NRW be proposing 10 year measures using potentially invalid and suspect river status predictions? NWATFCC & SFG ask that the EA use caution in reaching decisions with the national RER stock review pending.

Can rod fisheries be expected to have confidence in a system that at best accurately predicts only 1 in 3 correct status classifications on which 10 year regulatory measures are to be enforced?.

## 2. Angler Declared rod catch and use of river and national angler uplifts

As the first stage in annual River stock estimates (rod based rivers without validated counter & whole river run estimates) rod declared catch is raised to correct for under reported catch. Historically a 1.1 factor or 10% uplift was applied to under reported rod catch on assumptions that 90% of migratory rod catch returns were received by post in the 1990`s and early 2000`s and processed for stock estimates. In 2015 anglers and regional rod fisheries representatives of the SAAG were informed the new On-line reporting system was responsible for missing processing anglers returns causing a significant error in angler report catch and as a result higher uplift values were used for catch estimates between 2015 - 2018.

NWATFCC, PAAS, CPWF & SFG have been informed that actually similar levels of anglers returns were not being received or processed between 2010 - 2014 but was not disclosed at the time and no appropriate correction made. In total Between 36 - 42% of angler returns were not received or processed in England & Wales rivers for those years and for the River Severn these amount to 5 of the 10 year Consultation assessment years.

In addition we find that the EA & NRW reverted to using the 1.1 default in 2019 when an improved 76% of returns was reported received and processed. This is still some margin from the 90% target. The EA have been unable to confirm what rivers they used to validate the use of 1.1 default. The Wye independent reliable catch showed 1.4 under reported catch in 2019 whilst the four major NW Rivers Eden, Ribble, Derwent & Border Esk an average of 1.69 was required



|   | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|------|------|------|------|------|------|------|------|------|------|
| EA applied Angler under reported catch uplift | 1.1  | 1.1  | 1.1  | 1.1  | 1.1  | 1.36 | 1.27 | 1.28 | 1.51 | 1.1  |
| Reported % Angler license returns received    | 64%  | 62%  | 61%  | 63%  | 58%  | 58%  | 55%  | 59%  | 66%  | 76%  |

**This indicates published stock estimates in 6 of the 10 years of the River Severn Consultation Byelaw estimates require correction and revision.**

### 3. Revisions to Age Weight proportions of 1SW/MSW salmon and female contribution to stock estimates

The Technical Case justification - Page 18, Section 2 - Salmon Stock Assessment on Fish Weight gives an inaccurate and misleading description of one of the most critical areas of the Severn stock estimates - the distribution of rod catch weights and apportionment to 1SW or MSW stock. Critical because 1SW apportioned stocks are estimated as 29.8% females and MSW as 81.6%. Incorrect apportionment in this area has a major impact on the final year egg deposition.

In the last 2 years the EA have produced FOUR different calculations of 2009 - 2018 Assessments;

1. the Original 2018 high Fecundity 2018 published assessments which were revised to V1
2. V1 - amended original estimates with lower Fecundity & changed Age Weight tables with variable in 2009-12 years and suppressed MSW proportions in the Fixed Age Weight 2015-18 years
3. V2 - amended V1 for reasons that the 2015-18 years had incorrectly underestimated angler uplifts values applied.
4. V3 - a further amendment for reason that they explain "*the Severn - Specific yearly weight distribution data including from previous year, as a more realistic description on Severn salmon weights*".

Please refer to **Annexe 2 - analysis of actual Age Weight Tables** applied in the V1, V2 & V3 years, gained from FOI requests by PAAS and the **Annexe 3 - analysis of impact on 1SW/MSW and Total female contribution in V1,V2 & V3 annual estimates of CL egg epositions.**

**SFG are unable to understand how the EA can state the prior 2018 annual Severn Salmon stock Assessment calculations did not incorporate fish weight data in this way (the standard national method of stock assessment) when the Annexe 2 tables show they actually did from annotated notes in the EA 1996 - 2012 Severn assessments tables referencing post 2002 year calculations as follows;** *The % grilse in the catch is estimated from weight composition data -submitted as part of the catch return - and the application of a national age-weight key (derived from trap sampled fish on the Welsh Dee). Severn specific age composition data may have been used in earlier years.*

**We are unable to find an explanation for "Fixed Age Weight" proportions being applied to the 2013 - 18 year Emergency Byelaw estimates effectively suppressing MSW proportions, female contributions and total egg depositions. When and where were these estimates derived and if they were Severn Specific estimates, have they been reviewed since those early years ?**

**How have the EA been able to make a third revision to these estimates which;**

1. does not agree with the published 2019 assessments of CL estimates released in August 2020 and now claims to use more realistic historic Severn Specific Salmon weight data?.
2. make the two Emergency Byelaw estimates even further underestimated with variance to the 2019 published MSW %. See chart below ?

Revisions made to reported MSW proportions of stock estimated in the national 2010 - 2019 published estimates and the variance with the estimates used in the Emergency Byelaws 2010 - 2018.

|   | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|------|------|------|------|------|------|------|------|------|------|
| EA - MSW % - Published Table 19           | 59%  | 74%  | 75%  | 79%  | 77%  | 79%  | 82%  | 77%  | 79%  | 91%  |
| EA - MSW % - Emergency Byelaw estimates   | 50%  | 75%  | 75%  | 73%  | 63%  | 60%  | 64%  | 63%  | 67%  | ?    |
| % variance in to published 2019 estimates | 9%   |      |      | 6%   | 14%  | 19%  | 18%  | 14%  | 12%  | ?    |

#### 4. Use of “fixed” Rod Exploitation Rate, RER variable

RER calculation is the third critical stage in estimating whole river run size where separate 1SW & MSW factors are used to multiply the 1SW & MSW rod caught estimates (after uplifts) to reach the full river spawning run before other adjustments. Rod exploitation rates vary considerably from year to year due to seasonal factors such as rod effort, river conditions, run timing etc, as evidenced by EA Index river estimates from key regional counter sites. In 2004 with the introduction of the new EA stock methodology for assessing river stocks and stock status the EA committed to introduce a procedure for annually revising RER, stating;

*For rivers without traps or counters, the usual procedure for estimating egg deposition derives run size from rod catch using estimates of exploitation, which do not take into account annual changes in fishing effort. In years when effort was low - such as the ‘low-flow’ year of 2003 and the Foot-and-Mouth Disease year of 2001 - **this approach has probably resulted in rod exploitation being over-estimated on a number of rivers and hence escapement and egg deposition being under-estimated. An improved procedure is being developed by the Environment Agency to take account of annual changes in fishing effort, as well as partitioning effort between salmon and sea trout (no distinction is currently made between these species when reporting fishing effort).***

The RER used for the River Severn remains a “fixed” estimated average 11.1 % or factor of .111. For historic estimates as far back as the introduction of the 2004 Severn Salmon Action Plan this has been applied at a 1SW rate of 9.9% or factor of 0.099 and MSW of 13.9% or factor.139.

**In reality when you apply the factors to actual Age Weight 1SW & MSW proportions of annual stocks the high Severn MSW proportions make the actual average applied RER not 11.1% but between 12.0 - 13.0% !**

So why has the River Severn and many other rivers stock assessments been compromised and cast in stone for 16 years with fixed RER`s applied when the methodology, Index River interpretation of RER and the EA`s committed to introduce annual revising RER was clearly a priority.

Emeritus Professor Brian Revel who is an important contributor to the SFG response and has corresponded at length with Ian Davidson of NRW has modelled and studied

the correlation and impact of the key RER factors on historic rod catch on the Severn, Dee and NW rivers and concludes that there is a strong correlation between river conditions, angler effort, run timings and resulting rod catch.

The exceptional circumstances in 2018 prompt the question why the Severn those 2018 assessments have not been RER adjusted? A year when the two operational E & W Index River counters, Welsh Dee and Tamar recorded published RER estimates that fell by 50% on 2017 estimates for reason of a combination of prolonged drought conditions reducing angling effort and catch.

We still await the 2019 national RER review where we had strong indications that a new system would inform the 2018 assessments (Brian Shields email of 15.02.19 to myself and Dave Hudson letter of 16.04.20 to PAAS).

Importantly, how does the Severn and national Fisheries team intend to take account of the alarming decline of angler numbers and rod effort in the RER review and introduction of the new methodology?

**In this Consultation response we have included corrections for these factors in our revising estimates of underestimated stocks.**

## 5. Use of outdated In River & C & R mortality estimates

SFG, PAAS & NWATFC do not accept the EA national mortality estimates applied to the River Severn and other English & Welsh rivers (10% In River mortality and 20% C & R mortality). Reference is made to this in Appendix 2 Section and refer to the recent Lennox et al studies:

### **Pan-Holarctic assessment of post-release mortality of angled Atlantic salmon**

**Salmo salar** Robert J. Lennox a,b, \*, Steven J. Cooke a , Colin R. Davis, Paddy Gargan c , Lorraine A. Hawkins d , Torgeir B. Havn b , Martin R. Johansen b , Richard J. Kennedy e , Antoine Richard f , Martin-A. Svenning g , Ingebrigt Uglem b , John Webb, Frederick G. Whoriskey h , Eva B. Thorstad b

Recreational Atlantic salmon *Salmo salar* fisheries are culturally and economically important, but confronted with global population declines, catch-and-release has frequently replaced harvest in these fisheries. Many studies have evaluated the effects of catch-and-release angling on Atlantic salmon; however, studies typically focused on a single system and had small sample sizes. Using data from Atlantic salmon catch-and-release studies conducted in 12 rivers throughout the pan-Holarctic range of wild Atlantic salmon, we modeled delayed mortality data using logistic regression. The model was based on 512 salmon (75 ± 15 cm TL) captured and released with electronic tags (i.e. radio or acoustic transmitters), which permitted the determination of fish fate after release (delayed mortality). The percentage of salmon categorized as survivors after release was high (93%). Salmon with longer body length tended to be played for longer durations ( $R^2 = 0.60$ ) but there was no significant effect of fish length or playing time on mortality. Water temperature at capture emerged as a significant predictor of delayed mortality of salmon. Individuals captured by flies had significantly higher survival (96%) compared to lure (86%) and natural bait (85%) caught salmon. Data from throughout the range of Atlantic salmon confirm that fish captured by anglers adhering to best practices have high probability of surviving catch-and-release angling. © 2017 Published by Elsevier Ltd.

The EA's own comprehensive 2017 Report on the *Impact of catch and release angling practises on survival of salmon* does not provide a definite mortality rate attributable to angling methods but recognises they are different for a multitude of reasons and that other factors such as water temperature and the anglers attention to good practise in returning salmon are hugely influential in survival rates. SFG and Severn anglers more aware of this and keen to play their part.

**SFG & NWATFCC therefore maintain the use of a fixed 20% C & R mortality in stock estimates does not accurately reflect changing and more informed angler observance of improved handling techniques or changing method proportions of bait, spin and fly caught methods.**

## 6. EA changes to Fecundity estimates

The EA`s decision to change 42 years use of River Severn historic Fecundity estimates based on MSW females with average weight of 7.3kg producing 12,913 eggs (1,769 eggs per kg) and 1SW estimates of average weight of 2.9kg producing 5.130 eggs (1,769 eggs per kg) appears to have been taken overnight effectively consigning earlier annual estimates to the bin. At a sweep in June 2019 in its Emergency Byelaw Decision Paper the EA were able to reduce egg deposition estimates of "stocks" by 50% or more. The EA explaining this as new emerging evidence when in fact the introduction of national Welsh Dee derived Age Weight tables reduced MSW proportions and females numbers and of these lowered fecundity values did the rest.

However the explanation that the source of the original Severn fecundity and average 1SW & MSW weight characteristics was not known, is and has been known to rod fisheries and originates from studies of hen salmon caught in the Severn estuary putcher fishery.

The question that has to be asked both in this Severn Consultation and at a national level, is how representative are the fecundity table values of Welsh Dee hen salmon in comparison to other river mid-point lb fish weights. And importantly are there other rivers or Index Rivers that provide comparative fecundity estimates?

## 7. River stock status classification, alternate status & Decision models, E & W Decision Structure process and 2019 National Byelaws

Whilst the use of 15 year linear predictions of stock status have a high degree of uncertainty there are systems and procedures in use that provide a precise assessment of historic performance to CL. Rod fisheries recommended and proposed the Scottish system in its submission to the NASCO IP drafting and national assessment review. The Scottish model of annual reviews of river categorisation which was introduced in 2018 after Consultation is clear simple and statistically precise; **A river`s 5 year mean or average CL attainment to egg deposition target.**

**It is statistically precise, allows MO and CL to merge to a single CL attainment target. Clear with no uncertainty over forward predictions, has a built in damper warning mechanism, maintains existing CL and annual estimates processes and enables an annual C & R revision facility. Adoption would harmonise UK mainland jurisdictions with obvious operational benefits whilst allowing the facility for future flexing of C & R target breakpoints.**

**An analysis of three models and the current model for all 42 English Rivers was prepared in March 2018 (using 5 year 2012 - 2016 CL attainment data) was provided by rod fisheries in its submissions to NASCO & the Stock Assessment Review. Annexe 5 - Option 2 is the Scottish model.**

Meanwhile the current Severn River stock status predictions which are a PaR - Probably at Risk in 2019 and 5 year forward 2024 require the fishery to meet a 90% C & R target. These are clearly set out in the E & W Decision Structure process table and notes, NASCO approved guidance and the 2019 national Salmon Byelaws. If it fails to do so then other more stringent measures including mandatory 100% C & R or even closure of the fishery should be considered.

The 2019 National Salmon Byelaws do not include method or hook restrictions and the EA

The EA's interpretation of events around the 2012 discussions involving the Severn Rivers Trust and other interests together with the more recent and rushed 2019 pre Emergency Byelaw meetings differ from the Severn Fisheries representatives meeting notes and observations on the central question of when higher or specific 90% C & R targets were aired and agreed.

It is clear SFG representatives did propose 90% C & R at the pre Emergency Byelaw meetings but this was turned down. Severn Fisheries representatives did not attend the February NRW - LFG (including EA) meeting on the proposed Severn Byelaws in Wales when only 2 English rod fisheries representatives were present because SFG were informed that the EA is the lead authority in the Severn catchment and the appropriate Byelaw measures regulations would be an Agency led decision.

**The SFG propose and maintain the EA meet its commitment to adhere and apply National Decision Structure policy and not be swayed by NRW overtures to adopt the "All Wales" measures that have provoked serious unrest in fisheries circles and unintended consequences.**

## 8. SFG corrections to historic assessments - including critical 2018 & 2019 years

The following adjustments are highlighted and illustrated as accumulated step corrections to the following year published estimates for reasons explained in points 2 & 4.

| SFG corrections to historic assessments - including critical 2018 & 2019 years  |             |             |             |             |             |             |            |            |            |             |             |
|---|-------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|-------------|-------------|
|   | 2010        | 2011        | 2012        | 2013        | 2013        | 2014        | 2015       | 2016       | 2017       | 2018        | 2019        |
| Angler declared rod catch under reporting % uplift required above default 1.1   | 20%         | 20%         | 20%         | 20%         | 20%         | 20%         | variable   | uplift     | applied    | years       | 20 % ?      |
| Rod exploitation rate uplift required for use of fixed 11.1% estimate. 2018 & 2019 due to Emergency Byelaws, river flow, depressed rod effort |             |             |             |             |             |             |            |            |            | 40%         | 30%         |
| Correction for stated 11.1 % RER used when actual weighted average was 12 - 13%   | 10%         | 10%         | 10%         | 10%         | 10%         | 10%         | 10%        | 10%        | 10%        | 10%         | 10%         |
| Minor adjustment for C & R mortality revision   |             |             |             |             |             |             |            |            |            |             |             |
| <b>Total accumulated factor uplift</b>  | <b>1.32</b> | <b>1.32</b> | <b>1.32</b> | <b>1.32</b> | <b>1.32</b> | <b>1.32</b> | <b>1.1</b> | <b>1.1</b> | <b>1.1</b> | <b>1.54</b> | <b>1.72</b> |

## 9. Use of best available data to inform Byelaw review and conservation measures

Taking into consideration the clear concerns that have been drawn to the EA's attention with incorrect use of variable estimates in stock calculations and that a RER national



review is pending and the three year national review of Improvements to Stock reporting procedures & Decision process is underway, SFG is quite clear that the EA stock estimates and decisions are not being made as they claim "using best available data".

SFG have analysed and prepared revisions to the current under estimates of Severn stock in the table above that significantly change historic annual estimates and the EA & NRW assessment of Severn stocks. We request further discussion on these recalculations as a priority.

We believe these better estimate historic and current stocks and with modelled projections warrant further consideration together with the NASCO and E & W guidelines for Voluntary 90% C & R proposals for managing the rod fishery with PaR stock status.

#### **10. Supplementary data – Tanat Counter, Juvenile survey data & spawning redd counts ?.**

With the Consultation document placing heavy reliance on Supplementary data providing evidence of unsustainable stocks or potential shortfalls in future stock from juvenile recruitment the Consultation document provided very little information or data and what was provided was incomplete.

Historically spawning redds counts were undertaken by Fisheries officers across the whole catchment giving a clear indication of stock health and considerable yearly variations. SFG have that EA from 1975 - 2004 when presumably counts ceased. These comprised yearly summaries of Severn, Vyrnwy, Banwy, Tanat, Teme and tributaries. So there is no recent red count data.

EA concerns over trends in Severn juvenile numbers are refuted clearly in Appendix 2. Section VIII

The Tanat counter itself also provides upstream adult counts on what is an important tributary of the Vyrnwy, itself an important tributary of the River Severn. The data provided is incomplete with two recent years (2016 & 2019) suffering long and major power outages across the peak migration periods August - November. With 2017 - 2018 reporting low year counts whilst the years 2010 - 2015 were consistently healthy and with rod catches and CPUE presenting a different interpretation of stock it is difficult to see how the fisheries team place so much weight on the a single tributaries incomplete data.

#### **Conclusion re Rod Fishery Management Options**

As I review the EA Rod Options 1 - 3 and stated Advantages & Disadvantages I am struck by the repetition of statements of stock decline which are incorrect and not substantiated and the bias and pre-determination of the Options analysis. I refer to a number of these;

1) Severn salmon stock has no harvestable surplus. Even low level exploitation through voluntary C&R will at best delay, or at worst prevent recovery of salmon stock.

1) Recognises that salmon stocks are in decline and are currently at unsustainable levels with a need to restore stocks to a favourable status as soon as possible.

2) C&R survival may be severely compromised if necessary changes to angling methods are not implemented quickly and consistently.

1) Voluntary implementation of rod and line angling measures are unlikely to be consistently applied in a timely manner

1) Previous attempts in 2012 to increase the voluntary level of C&R to >90% within the Severn salmon rod fishery have failed to achieve the desired level of C&R. Severn rod fishery records one of the lowest voluntary C&R rates in E&W.

3) Risk of false reporting by anglers on declared catch (already an issue) which may falsely indicate stocks are healthier than they are.

5) NRW are likely to seek to implement mandatory rod fishing measures in the upper Severn catchment which will be inconsistent with a voluntary approach in the lower catchment.

The Options analysis appears to be missing very obvious but overlooked disadvantages to Options 2 & 3.

These are possibly unintended consequences but nevertheless key points in the future management and cooperative approach SFG are seeking for the fishery;

- ~ Further exodus of anglers will open the waters to poaching. How does the 10% retention rate compare with illegal killing by poachers and unlicensed anglers.
- ~ Can the EA & NRW enforce mandatory C & R and method restrictions.
- ~ How can the fisheries enforcement team police a bait ban when those methods are used by other anglers targeting other fished for species - chub, barbel & trout.
- ~ Salmon anglers presence acts as a deterrent to avian predators.
- ~ Salmon anglers provide intelligence and notification of other river incidents (pollution etc) particularly in the March to June months of the coarse close season.
- ~ The 2 & 3 Options will alienate anglers and erode cooperative partnership working that should be fostered e.g. voluntary redd count programmes, river enforcement liaison.

SFG and its salmon anglers can be trusted to act responsibly and conserve stocks. They do return the greater majority of fish caught. For instance in 2018 when 163 salmon reported caught, 34 were killed of which 20 were retained by anglers who only caught a single fish and the remaining 14 salmon by anglers who caught and retained two or more. Of the 129 returned salmon caught the majority were by 45 anglers who returned all their catch. By comparison, Severn anglers retention rate is almost identical to the River Tyne and can be improved with joint cooperation.

The Severn is not like other major rivers. It frequently runs with high sediment load over much of its length. The river offers very few fly fishing opportunities with most reaches not able to be waded effectively to present a fly. Option 3 will consign 90% of the river to a single method approach. Is that what the EA intends in this process?

The Option 3 combined mandatory C & R and method restrictions will have serious consequences for the salmon fishery and lead to the predicted and unintended consequences observed in Wales following the 2020 All Wales byelaws.

The EA is the lead regulatory body for the Severn catchment and rod fisheries look to the Agency to take into consideration the evidence of reported error in stock estimates and incomplete and missing supplementary data within this response.

We firmly believe that Option 1 (90% Voluntary C & R and Voluntary angling method restrictions) is the correct approach and promotes cooperative partnership working between the Agency and its fisheries at a time when fisheries team resources are stretched and we have the improvements to stock assessment on the horizon.

Option 1 is the EA national strategy delivered and agreed in the 2019 Salmon Byelaws, is the Decision Structure measure for a Probably at Risk river designation for England & Wales and as directed by NASCO policy.

Thank you for your time and consideration in assisting with this response.

Mike Ashwin

Chair NWATFCC North West Fisheries Angling Trust Consultative Council & SFG  
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**Annexe 2 - Age Weight Tables used in V2 - Revised Emergency Byelaws and V3 - 2021 Byelaw Consultation**

| EA Apportionment of MSW by weight range mid-points Based on data up to 2018 Assessment - V2 is Revised Emergency Byelaws & V3 is 2021 Consultation Byelaws |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2009   | 2009 | 2010 | 2010 | 2011 | 2011 | 2012 | 2012 | 2013 | 2013 | 2014 | 2014 | 2015 | 2015 | 2016 | 2016 | 2017 | 2017 | 2018 | 2018 |
| V2   | V3   | V2   | V3   | V2   | V3   | V2   | V3   | V2   | V3   | V2   | V3   | V2   | V3   | V2   | V3   | V2   | V3   | V2   | V3   |
| 0.00   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00   | 0.00 | 0.00 | 1.00 | 0.01 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.14   | 0.14 | 0.01 | 0.00 | 0.26 | 0.00 | 0.01 | 0.02 | 0.05 | 0.00 | 0.05 | 0.00 | 0.05 | 0.05 | 0.05 | 0.00 | 0.05 | 0.08 | 0.05 | 0.00 |
| 0.46   | 0.46 | 0.00 | 0.01 | 0.19 | 0.10 | 0.14 | 0.01 | 0.02 | 0.01 | 0.02 | 0.00 | 0.02 | 0.01 | 0.02 | 0.41 | 0.02 | 0.04 | 0.02 | 0.25 |
| 0.38   | 0.38 | 0.11 | 0.00 | 0.47 | 0.26 | 0.29 | 0.14 | 0.12 | 0.09 | 0.12 | 0.31 | 0.12 | 0.31 | 0.12 | 0.31 | 0.12 | 0.21 | 0.12 | 0.30 |
| 0.45   | 0.45 | 0.21 | 0.11 | 0.69 | 0.19 | 0.42 | 0.29 | 0.35 | 0.46 | 0.35 | 0.28 | 0.35 | 0.57 | 0.35 | 0.73 | 0.35 | 0.46 | 0.35 | 0.68 |
| 0.53   | 0.53 | 0.44 | 0.21 | 0.67 | 0.47 | 0.48 | 0.42 | 0.41 | 0.43 | 0.41 | 0.80 | 0.41 | 0.75 | 0.41 | 0.80 | 0.41 | 0.62 | 0.41 | 0.61 |
| 0.72   | 0.72 | 0.84 | 0.44 | 0.93 | 0.69 | 0.82 | 0.48 | 0.74 | 0.69 | 0.74 | 0.86 | 0.74 | 0.86 | 0.74 | 0.88 | 0.74 | 0.93 | 0.74 | 0.93 |
| 0.86   | 0.86 | 0.87 | 0.84 | 0.97 | 0.67 | 0.92 | 0.82 | 0.86 | 0.88 | 0.86 | 0.93 | 0.86 | 0.93 | 0.86 | 0.95 | 0.86 | 0.96 | 0.86 | 1.00 |
| 0.83   | 0.83 | 0.96 | 0.87 | 0.97 | 0.93 | 0.95 | 0.92 | 1.00 | 0.95 | 1.00 | 0.91 | 1.00 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 |
| 0.94   | 0.94 | 0.98 | 0.98 | 1.00 | 0.97 | 0.98 | 0.95 | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 0.96   | 0.86 | 0.99 | 0.99 | 1.00 | 0.97 | 0.99 | 0.98 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 1.00   | 0.83 | 0.99 | 0.99 | 1.00 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 1.00   | 0.94 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 1.00   | 0.96 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 1.00   | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 1.00   | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 1.00   | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Annexe 3 - analysis of impact on 1SW/MSW & females ref EA - Original & 3 Revisions to 2018 & 2019 - 10 year Assessments**

| EA - River Severn Egg deposition estimates Revisions (Original, V1, V2 & V3) with CL attainment in Millions (CL - 12.85 million) & 1SW/MSW Females & MSW %              |              |              |              |              |              |              |              |              |              |              |             |  |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|--|
|   | 2009         | 2010         | 2011         | 2012         | 2013         | 2014         | 2015         | 2016         | 2017         | 2018         | 2019        |  |
| <b>Original 2009 - 2018 estimates</b>   | <b>11.31</b> | <b>11.32</b> | <b>20.67</b> | <b>14.51</b> | <b>20.00</b> | <b>12.7</b>  | <b>34.75</b> | <b>25.14</b> | <b>22.80</b> | <b>10.11</b> |             |  |
| <b>Source of Fecundity values "unknown" - Average MSW weight of 7.3kg - 12,913 eggs &amp; Average 1SW of 2.9kg - 5,130 eggs</b>   |              |              |              |              |              |              |              |              |              |              |             |  |
| 1SW Females   | 188          | 268          | 256          | 177          | 199          | 136          | 358          | 205          | ?            | 88           |             |  |
| MSW Females   | 801          | 770          | 1499         | 1053         | 1470         | 930          | 2548         | 1865         | ?            | 748          |             |  |
| <b>Total females</b>  | <b>989</b>   | <b>1038</b>  | <b>1755</b>  | <b>1230</b>  | <b>1669</b>  | <b>1066</b>  | <b>2906</b>  | <b>2070</b>  | <b>?</b>     | <b>836</b>   |             |  |
| MSW %   | 81%          | 74%          | 85%          | 86%          | 88%          | 87%          | 88%          | 90%          |              | 89%          |             |  |
| <b>V1 -Emergency 2009 - 2018 estimates</b>  | <b>6.54</b>  | <b>6.3</b>   | <b>11.65</b> | <b>8.85</b>  | <b>11.95</b> | <b>6.13</b>  | <b>14.17</b> | <b>10.33</b> | <b>10.47</b> | <b>5.49</b>  |             |  |
| <b>Revised Fecundity (national tables) with Age weight tables determining 1SW &amp; MSW proportions by weight - Variable tables 2009 -12 and Fixed 2013 - 18</b>        |              |              |              |              |              |              |              |              |              |              |             |  |
| <b>Incorrect 2015-18 angler declared default 1.1 used</b>   |              |              |              |              |              |              |              |              |              |              |             |  |
| 1SW Females   | 218          | 374          | 292          | 206          | 293          | 235          | 625          | 395          | 407          | 181          |             |  |
| MSW Females   | 798          | 648          | 1518         | 1074         | 1386         | 694          | 1604         | 1192         | 1180         | 632          |             |  |
| <b>Total Females</b>  | <b>1016</b>  | <b>1022</b>  | <b>1810</b>  | <b>1280</b>  | <b>1679</b>  | <b>929</b>   | <b>2229</b>  | <b>1587</b>  | <b>1587</b>  | <b>813</b>   |             |  |
| MSW %   | 78%          | 63%          | 84%          | 84%          | 83%          | 74%          | 72%          | 75%          | 74%          | 78%          |             |  |
| <b>V2 - 2019 Published 2010 -2019 estimates</b>   | <b>6.30</b>  | <b>11.65</b> | <b>8.85</b>  | <b>11.95</b> | <b>6.13</b>  | <b>17.48</b> | <b>12.46</b> | <b>12.20</b> | <b>8.48</b>  | <b>6.53</b>  |             |  |
| <b>Revised Fecundity (national tables) as V1 -with Age weight tables determining 1SW &amp; MSW proportions by weight - Variable tables 2009 -12 and Fixed 2013 - 18</b> |              |              |              |              |              |              |              |              |              |              |             |  |
| <b>with Correction from 1.1 to the national 2015-18 default - 2015 - 1.36, 2016 - 1.27, 2017 - 1.28, 2018 - 1.51</b>  |              |              |              |              |              |              |              |              |              |              |             |  |
| 1SW Females   | 218          | 374          | 292          | 206          | 293          | 235          | 773          | 474          | 475          | 249          |             |  |
| MSW Females   | 798          | 648          | 1518         | 1074         | 1386         | 694          | 1985         | 1433         | 1376         | 869          |             |  |
| <b>Total Females</b>  | <b>1016</b>  | <b>1022</b>  | <b>1810</b>  | <b>1280</b>  | <b>1679</b>  | <b>929</b>   | <b>2758</b>  | <b>1907</b>  | <b>1851</b>  | <b>1118</b>  |             |  |
| MSW %   | 78%          | 63%          | 84%          | 84%          | 83%          | 74%          | 72%          | 75%          | 74%          | 78%          |             |  |
| <b>V3 - 2021 Consultation - 2010 - 2019</b>   | <b>6.53</b>  | <b>6.30</b>  | <b>11.65</b> | <b>8.88</b>  | <b>12.25</b> | <b>7.11</b>  | <b>19.11</b> | <b>13.76</b> | <b>13.08</b> | <b>8.46</b>  | <b>6.53</b> |  |
| <b>Revised Fecundity &amp; reverting to the historic Severn Specific yearly weight distribution data - Variable 1SW &amp; MSW proportions by lb class catch weights</b> |              |              |              |              |              |              |              |              |              |              |             |  |
| 1SW Females   | 217          | 374          | 292          | 206          | 228          | 160          | 419          | 231          | 297          | 172          | 48          |  |
| MSW Females   | 798          | 648          | 1518         | 1074         | 1496         | 925          | 2589         | 1894         | 1695         | 1176         | 855         |  |
| <b>Total Females</b>  | <b>1016</b>  | <b>1022</b>  | <b>1810</b>  | <b>1280</b>  | <b>1724</b>  | <b>1085</b>  | <b>3008</b>  | <b>2125</b>  | <b>1992</b>  | <b>1348</b>  | <b>903</b>  |  |
| MSW %   | 78%          | 63%          | 84%          | 84%          | 87%          | 85%          | 86%          | 89%          | 85%          | 87%          | 95%         |  |

**Annexe 4 - EA/NRW Accuracy of 2013 - 2018 Five Year Forward Forecasting Predictions**

| EA & NRW Accuracy of 2013 - 2019 Five year forward Predictive Stock Status Forecasting |                   |                    |                   |                   |                    |                   |                   |             |                   |                   |             |                   |                    |                    |                   |                   |                    |                   |
|--|-------------------|--------------------|-------------------|-------------------|--------------------|-------------------|-------------------|-------------|-------------------|-------------------|-------------|-------------------|--------------------|--------------------|-------------------|-------------------|--------------------|-------------------|
|  | 2013              |                    |                   | 2014              |                    |                   | 2015              |             |                   | 2016              |             |                   | 2017               |                    |                   | 2018              |                    |                   |
|  | 2008-5yr Forecast | 2013 Actual Status | YES - ✓<br>NO - X | 2009-5yr Forecast | 2014 Actual Status | YES - ✓<br>NO - X | 2010-5yr Forecast | 2015 Actual | YES - ✓<br>NO - X | 2011-5yr Forecast | 2016 Actual | YES - ✓<br>NO - X | 2012 -5yr Forecast | 2017 Actual Status | YES - ✓<br>NO - X | 2013-5yr Forecast | 2018 Actual Status | YES - ✓<br>NO - X |
| NE   |                   | 4Y - 1N            |                   |                   | 1Y - 4N            |                   |                   | 2Y - 3N     |                   |                   | 1Y - 4N     |                   |                    | 2Y - 5N            |                   |                   | 3Y - 2N            |                   |
| Coquet   | NaR               | NaR                | ✓                 | PNaR              | PaR                | X                 | NaR               | PaR         | X                 | NaR               | PaR         | X                 | NaR                | PaR                | X                 | PNaR              | PaR                | NO - X            |
| Tyne   | NaR               | NaR                | ✓                 | NaR               | PNaR               | X                 | NaR               | PNaR        | X                 | NaR               | PNaR        | X                 | NaR                | PNaR               | X                 | PNaR              | PNaR               | YES - ✓           |
| Wear   | NaR               | NaR                | ✓                 | NaR               | PnaR               | X                 | NaR               | PNaR        | X                 | NaR               | PNaR        | X                 | NaR                | PNaR               | X                 | NaR               | PNaR               | NO - X            |
| Tees   | AR                | AR                 | ✓                 | AR                | AR                 | ✓                 | AR                | AR          | ✓                 | AR                | AR          | ✓                 | AR                 | AR                 | ✓                 | AR                | AR                 | YES - ✓           |
| Esk - Yorks  | NaR               | PaR                | X                 | PNaR              | PaR                | X                 | PaR               | PaR         | ✓                 | PNaR              | PaR         | X                 | PaR                | PaR                | ✓                 | PaR               | PaR                | YES - ✓           |
| Southern   |                   | 2Y - 0N            |                   |                   | 2Y - 0N            |                   |                   | 2Y - 0N     |                   |                   | 1Y - 1N     |                   |                    | 1Y - 1N            |                   |                   | 1Y - 1N            |                   |
| Test   | PaR               | AR                 | X                 | PaR               | PaR                | ✓                 | PaR               | PaR         | X                 | PaR               | PaR         | ✓                 | PaR                | PaR                | ✓                 | AR                | PaR                | NO - X            |
| Itchen   | PNaR              | PaR                | X                 | PaR               | PaR                | ✓                 | PNaR              | PNaR        | ✓                 | PNaR              | PaR         | X                 | PNaR               | PaR                | X                 | PaR               | PaR                | YES - ✓           |
| SW   |                   | 10Y - 10N          |                   |                   | 7Y - 13N           |                   |                   | 6Y - 14N    |                   |                   | 5Y - 15N    |                   |                    | 5Y - 15N           |                   |                   | 7Y - 13N           |                   |
| Avon- Hants  | AR                | AR                 | ✓                 | AR                | PaR                | X                 | AR                | PaR         | X                 | AR                | PaR         | X                 | AR                 | PaR                | X                 | PaR               | PaR                | YES - ✓           |
| Stour  | AR                | AR                 | ✓                 | AR                | AR                 | ✓                 | AR                | AR          | ✓                 | AR                | AR          | ✓                 | AR                 | AR                 | ✓                 | AR                | AR                 | YES - ✓           |
| Piddle   | AR                | AR                 | ✓                 | AR                | AR                 | ✓                 | PaR               | PaR         | ✓                 | PNaR              | PaR         | X                 | PaR                | PaR                | ✓                 | AR                | PaR                | NO - X            |
| Frome  | PNaR              | PaR                | X                 | PNaR              | PaR                | X                 | PNaR              | PaR         | X                 | NaR               | PaR         | X                 | PNaR               | PaR                | X                 | PaR               | PaR                | YES - ✓           |
| Axe  | AR                | AR                 | ✓                 | PaR               | PaR                | ✓                 | AR                | PaR         | X                 | PaR               | PaR         | ✓                 | PaR                | AR                 | X                 | PaR               | AR                 | NO - X            |
| Exe  | PNaR              | PNaR               | ✓                 | PNaR              | PaR                | X                 | PNaR              | PaR         | X                 | NaR               | PaR         | X                 | NaR                | PaR                | X                 | PaR               | PaR                | YES - ✓           |
| Teign  | PNaR              | PNaR               | ✓                 | PNaR              | PaR                | X                 | PNaR              | PaR         | X                 | PNaR              | PaR         | X                 | PNaR               | PaR                | X                 | PNaR              | PaR                | NO - X            |
| Dart   | PaR               | AR                 | X                 | PaR               | AR                 | X                 | PaR               | AR          | X                 | PNaR              | AR          | X                 | PNaR               | AR                 | X                 | PaR               | AR                 | NO - X            |
| Avon- Devon  | NaR               | AR                 | X                 | PNaR              | PaR                | X                 | PaR               | PaR         | ✓                 | PaR               | PaR         | ✓                 | PaR                | PaR                | ✓                 | PaR               | PaR                | YES - ✓           |
| Erme   | AR                | AR                 | ✓                 | PaR               | PaR                | ✓                 | PaR               | AR          | X                 | PaR               | AR          | X                 | PaR                | PaR                | ✓                 | PaR               | PaR                | YES - ✓           |
| Yealm  | PaR               | AR                 | X                 | PaR               | AR                 | X                 | PaR               | AR          | X                 | PaR               | AR          | X                 | PNaR               | AR                 | X                 | PaR               | AR                 | NO - X            |
| Plym   | PaR               | AR                 | X                 | AR                | PaR                | X                 | AR                | AR          | ✓                 | PaR               | AR          | X                 | PaR                | AR                 | X                 | PaR               | PaR                | YES - ✓           |
| Tavy   | PaR               | AR                 | X                 | PaR               | AR                 | X                 | PNaR              | PaR         | X                 | PNaR              | AR          | X                 | PNaR               | PaR                | X                 | PaR               | PaR                | YES - ✓           |
| Tamar  | PaR               | PaR                | ✓                 | PaR               | PaR                | ✓                 | PaR               | PaR         | ✓                 | PaR               | PaR         | ✓                 | AR                 | PaR                | X                 | PaR               | PaR                | YES - ✓           |
| Lynher   | PNaR              | PNaR               | ✓                 | PNaR              | PaR                | X                 | NaR               | PNaR        | X                 | PNaR              | PaR         | X                 | PNaR               | PNaR               | ✓                 | PNaR              | PaR                | NO - X            |
| Fowey  | NaR               | NaR                | X                 | NaR               | PNaR               | X                 | NaR               | PNaR        | X                 | PNaR              | PaR         | X                 | PNaR               | PaR                | X                 | PNaR              | PaR                | NO - X            |
| Camel  | NaR               | PNaR               | X                 | NaR               | PaR                | X                 | NaR               | PaR         | X                 | NaR               | PaR         | X                 | PNaR               | PaR                | X                 | PaR               | PaR                | YES - ✓           |
| Taw  | PNaR              | PaR                | X                 | PNaR              | PaR                | X                 | PNaR              | PaR         | X                 | PNaR              | PaR         | X                 | PNaR               | PaR                | X                 | PaR               | PaR                | YES - ✓           |
| Torrige  | PaR               | AR                 | X                 | PaR               | PaR                | ✓                 | PNaR              | PaR         | X                 | PaR               | PaR         | ✓                 | PNaR               | PaR                | X                 | PaR               | PaR                | YES - ✓           |
| Lyn  | PNaR              | PaR                | X                 | PaR               | PaR                | ✓                 | PaR               | PaR         | ✓                 | PNaR              | AR          | X                 | PNaR               | PaR                | X                 | PaR               | PaR                | YES - ✓           |



|                        |      |                    |                 |      |                    |                 |      |                    |                 |      |                    |                 |      |                    |                 |      |                    |                 |
|------------------------|------|--------------------|-----------------|------|--------------------|-----------------|------|--------------------|-----------------|------|--------------------|-----------------|------|--------------------|-----------------|------|--------------------|-----------------|
| <b>MIDLANDS</b>        |      | 0 Y - 1 N          |                 |      | 1 Y - 0 N          |                 |      | 0 Y - 1 N          |                 |      | 0 Y - 1 N          |                 |      | 0 Y - 1 N          |                 |      | 1 Y - 0 N          |                 |
| Severn                 | PNaR | PaR                | X               | PaR  | PaR                | X               | PaR  | PNaR               | X               | PaR  | PNaR               | X               | PaR  | PNaR               | X               | PaR  | PaR                | YES - ✓         |
| <b>NW</b>              |      | <b>5 Y - 9N</b>    | <b>Y - 36%</b>  |      | <b>4 Y - 10 N</b>  | <b>Y - 29%</b>  |      | <b>0 Y - 14 N</b>  | <b>Y - NIL%</b> |      | <b>2 Y - 12 N</b>  | <b>Y - 14%</b>  |      | <b>4 Y - 10 N</b>  | <b>Y - 29%</b>  |      | <b>5 Y - 9 N</b>   | <b>Y - 36%</b>  |
| Ribble                 | NaR  | AR                 | X               | PNaR | AR                 | X               | PNaR | PaR                | X               | PNaR | PaR                | X               | PNaR | PaR                | X               | AR   | PaR                | NO - X          |
| Wyre                   | PaR  | AR                 | X               | PaR  | AR                 | X               | PaR  | AR                 | X               | PaR  | AR                 | X               | PaR  | AR                 | X               | AR   | PaR                | NO - X          |
| Lune                   | NaR  | PaR                | X               | PNaR | AR                 | X               | NaR  | AR                 | X               | PNaR | AR                 | X               | PaR  | PaR                | ✓               | AR   | AR                 | YES - ✓         |
| Kent                   | PNaR | PNaR               | ✓               | PNaR | PaR                | X               | PNaR | PaR                | X               | PNaR | PaR                | X               | PaR  | PaR                | ✓               | PaR  | PaR                | YES - ✓         |
| Leven                  | PNaR | PaR                | X               | PaR  | PaR                | ✓               | PaR  | PNaR               | X               | PaR  | PaR                | ✓               | PaR  | PaR                | ✓               | PaR  | PNaR               | NO - X          |
| Crake                  | PaR  | PaR                | ✓               | PaR  | PaR                | ✓               | PaR  | AR                 | X               | PaR  | AR                 | X               | PNaR | PaR                | X               | PaR  | PaR                | YES - ✓         |
| Duddon(&Lickle)        | NaR  | NaR                | ✓               | NaR  | PaR                | X               | NaR  | PNaR               | X               | NaR  | PNaR               | X               | NaR  | PNaR               | X               | NaR  | PNaR               | NO - X          |
| Esk                    | PNaR | PaR                | X               | PNaR | PaR                | X               | PNaR | PaR                | X               | PaR  | PaR                | ✓               | PaR  | PNaR               | X               | PaR  | PNaR               | NO - X          |
| Irt                    | PNaR | PNaR               | ✓               | PNaR | PaR                | X               | PNaR | AR                 | X               | PNaR | AR                 | X               | PNaR | PaR                | X               | PNaR | PaR                | NO - X          |
| Ehen                   | PNaR | NaR                | X               | PNaR | PNaR               | ✓               | NaR  | PaR                | X               | NaR  | PaR                | X               | NaR  | PaR                | X               | NaR  | PaR                | NO - X          |
| Calder                 | PaR  | PaR                | ✓               | PaR  | PaR                | ✓               | PaR  | AR                 | X               | PaR  | AR                 | X               | PNaR | AR                 | X               | PaR  | AR                 | NO - X          |
| Derwent                | NaR  | PNaR               | X               | PNaR | PaR                | X               | NaR  | AR                 | X               | PNaR | AR                 | X               | PNaR | PaR                | X               | PaR  | PaR                | YES - ✓         |
| Eden                   | PNaR | AR                 | X               | PNaR | AR                 | X               | PNaR | PaR                | X               | PNaR | PaR                | X               | PaR  | PaR                | ✓               | AR   | PaR                | NO - X          |
| Esk-Border             | PNaR | PaR                | X               | PNaR | PaR                | X               | NaR  | PaR                | X               | NaR  | PaR                | X               | PNaR | AR                 | X               | PaR  | PaR                | YES - ✓         |
| <b>ENGLAND TOTAL</b>   |      | <b>21 Y - 21 N</b> | <b>Y - 50 %</b> |      | <b>15 Y - 27 N</b> | <b>Y - 36 %</b> |      | <b>10 Y - 32 N</b> | <b>Y - 24 %</b> |      | <b>9 Y - 33 N</b>  | <b>Y - 21 %</b> |      | <b>12 Y - 30 N</b> | <b>Y - 29%</b>  |      | <b>17 Y - 25 N</b> | <b>Y - 40%</b>  |
| <b>Wales</b>           |      |                    |                 |      |                    |                 |      |                    |                 |      |                    |                 |      |                    |                 |      |                    |                 |
| Wye                    | AR   | AR                 | ✓               | AR   | AR                 | ✓               | AR   | PaR                | X               | AR   | PaR                | X               | AR   | PaR                | X               | PaR  | PaR                | YES - ✓         |
| Usk                    | PNaR | PaR                | X               | PaR  | PaR                | ✓               | PaR  | PaR                | ✓               | PaR  | PNaR               | X               | PNaR | PNaR               | ✓               | PaR  | PaR                | YES - ✓         |
| Taff & Ely             | AR   | AR                 | ✓               | AR   | AR                 | ✓               | AR   | AR                 | ✓               | AR   | AR                 | ✓               | AR   | AR                 | ✓               | PaR  | AR                 | NO - X          |
| Ogmore                 | AR   | AR                 | ✓               | PaR  | AR                 | X               | PaR  | AR                 | X               | PaR  | AR                 | X               | PaR  | AR                 | X               | AR   | AR                 | YES - ✓         |
| Tawe                   | PNaR | AR                 | X               | PNaR | AR                 | X               | PaR  | AR                 | X               | PaR  | AR                 | X               | PaR  | AR                 | X               | AR   | AR                 | YES - ✓         |
| Tywi                   | NaR  | AR                 | X               | PNaR | AR                 | X               | PNaR | AR                 | X               | PNaR | PaR                | X               | PaR  | PaR                | ✓               | AR   | PaR                | NO - X          |
| Taf                    | PaR  | AR                 | X               | PaR  | PaR                | ✓               | PNaR | PaR                | X               | PNaR | AR                 | X               | PaR  | PaR                | ✓               | AR   | PaR                | NO - X          |
| E&W Cleddau            | PaR  | AR                 | X               | PaR  | AR                 | X               | PNaR | AR                 | X               | PaR  | AR                 | X               | PaR  | AR                 | X               | AR   | AR                 | YES - ✓         |
| Teifi                  | PNaR | PaR                | X               | PaR  | PaR                | ✓               | PNaR | PaR                | X               | PNaR | PaR                | X               | PaR  | PaR                | ✓               | PaR  | AR                 | NO - X          |
| Rheidol                | PaR  | AR                 | X               | PaR  | AR                 | X               | PaR  | AR                 | X               | PaR  | AR                 | X               | AR   | AR                 | ✓               | AR   | AR                 | YES - ✓         |
| Nevern                 | PNaR | AR                 | X               | PaR  | PaR                | ✓               | PaR  | PaR                | ✓               | PaR  | PaR                | ✓               | AR   | PaR                | X               | AR   | PaR                | NO - X          |
| Dyfi                   | PNaR | AR                 | X               | PaR  | AR                 | X               | PaR  | AR                 | X               | PNaR | AR                 | X               | PaR  | AR                 | X               | AR   | PaR                | NO - X          |
| Dysinni                | AR   | AR                 | ✓               | AR   | PaR                | X               | AR   | PaR                | X               | AR   | PaR                | X               | AR   | PaR                | X               | AR   | PaR                | NO - X          |
| Mawdach                | AR   | PaR                | X               | AR   | PaR                | X               | PaR  | PaR                | ✓               | PNaR | PaR                | X               | PNaR | PaR                | X               | PaR  | PaR                | YES - ✓         |
| Dwyrhyd                | PNaR | AR                 | X               | PaR  | PaR                | ✓               | AR   | PaR                | X               | AR   | AR                 | ✓               | AR   | PaR                | X               | AR   | PaR                | NO - X          |
| Glaslyn                | PNaR | PNaR               | ✓               | PNaR | PaR                | X               | PNaR | PNaR               | ✓               | PNaR | PaR                | X               | PNaR | PaR                | X               | PNaR | PaR                | NO - X          |
| Dwyfawr                | AR   | AR                 | ✓               | AR   | AR                 | ✓               | AR   | AR                 | ✓               | AR   | PaR                | X               | AR   | AR                 | ✓               | AR   | PaR                | NO - X          |
| Seiont                 | PNaR | AR                 | X               | PNaR | AR                 | X               | PNaR | AR                 | X               | PNaR | AR                 | X               | PaR  | AR                 | X               | AR   | AR                 | YES - ✓         |
| Ogwen                  | PNaR | PNaR               | ✓               | PNaR | AR                 | X               | PNaR | PaR                | X               | PNaR | PaR                | X               | PNaR | PaR                | X               | PaR  | PaR                | YES - ✓         |
| Conwy                  | NaR  | NaR                | ✓               | NaR  | PaR                | X               | NaR  | PaR                | X               | NaR  | PaR                | X               | NaR  | PaR                | X               | PNaR | PaR                | NO - X          |
| Clwyd                  | PaR  | PaR                | ✓               | PaR  | PaR                | ✓               | PNaR | AR                 | X               | PNaR | AR                 | X               | PNaR | AR                 | X               | PaR  | AR                 | NO - X          |
| Dee                    | PaR  | AR                 | X               | PNaR | PaR                | X               | PaR  | AR                 | X               | AR   | AR                 | ✓               | AR   | AR                 | ✓               | AR   | PaR                | NO - X          |
| <b>WALES TOTAL</b>     |      | <b>9 Y - 13 N</b>  | <b>Y - 41 %</b> |      | <b>9 Y - 13 N</b>  | <b>Y - 41 %</b> |      | <b>6 Y - 16 N</b>  | <b>Y - 27 %</b> |      | <b>4 Y - 18 N</b>  | <b>Y - 18 %</b> |      | <b>8 Y - 14 N</b>  | <b>Y - 36 %</b> |      | <b>9 Y - 13 N</b>  | <b>Y - 41 %</b> |
| <b>E &amp; W TOTAL</b> |      | <b>30 Y - 34 N</b> | <b>Y - 47%</b>  |      | <b>24 Y - 40 N</b> | <b>Y - 37 %</b> |      | <b>16 Y - 48 N</b> | <b>Y - 25 %</b> |      | <b>13 Y - 51 N</b> | <b>Y - 20 %</b> |      | <b>20 Y - 44 N</b> | <b>Y - 34%</b>  |      | <b>26 Y - 38 N</b> | <b>Y - 41%</b>  |

**Annexe 5 - 3 alternate River Classification and C & R Decision Structure models**  
 Please note the Severn Assessments and models use the original unadjusted estimates)

| English Rivers CL Attainment - Proposed EA Model stock status - 3 model alternatives with Classifications/Measures |  |                     |                   |                   |                              |                                |                  |                        |                  |  |                  |
|--|--|---------------------|-------------------|-------------------|------------------------------|--------------------------------|------------------|------------------------|------------------|--|------------------|
| mja_redfa/nwatfcc 06.03.18   |  |                     |                   |                   |                              |                                |                  |                        |                  |  |                  |
|  | Nos of years exceeding CL (last 5 yrs) | 5 year Average CL % | 2016 stock status | 2021 stock status | EA proposed C & R % Measures | MODEL 1 Number years Exceed CL | C & R % Measures | MODEL 2 5 yrs Ave % CL | C & R % Measures | MODEL 3 best 4 out of 5 years Ave % CL | C & R % Measures |
|  |  |                     |                   |                   |                              | 5 yrs CL                       | V1 - 80%         | > 100%                 | V1 - 80%         | > 100%                                 | V1 - 80%         |
|  |  |                     |                   |                   |                              | 3/4 " "                        | V2 - 90%         | 80 - 100%              | V2 - 90%         | 80 - 100%                              | V2 - 90%         |
|  |  |                     |                   |                   |                              | 1/2 " "                        | M3 - 100%        | < 80%                  | M3 - 100%        | < 80%                                  | M3 - 100%        |
| <b>NE</b>  |  |                     |                   |                   |                              |                                |                  |                        |                  |  |                  |
| Couquet  | 4                                      | 196                 | PaR               | PaR               | V - 90%                      | 4 yrs - V2                     | 90%              | 196                    | V1 - 80%         | 222                                    | V1 - 80%         |
| Tyne   | 5                                      | 381                 | PNaR              | PNaR              | V increase                   | 5 " - V1                       | 80%              | 381                    | V1 - 80%         | 407                                    | V1 - 80%         |
| Wear   | 5                                      | 324                 | PNaR              | PNaR              | V increase                   | 5 " - V1                       | 80%              | 324                    | V1 - 80%         | 356                                    | V1 - 80%         |
| Tees   | 0                                      | 20                  | AR                | AR                | M - 100%                     | 0 " - M3                       | 100%             | 20                     | M3 - 100%        | 23                                     | M3 - 100%        |
| Esk - Yorks  | 1                                      | 89                  | PaR               | PaR               | V - 90%                      | 1 " - M3                       | 100%             | 89                     | V2 - 90%         | 93                                     | V2 - 90%         |
| <b>Southern</b>  |  |                     |                   |                   |                              |                                |                  |                        |                  |  |                  |
| Test   | 2                                      | 92                  | PaR               | PNaR              | V increase                   | 2 " - M3                       | 100%             | 92                     | V2 - 90%         | 98                                     | V2 - 90%         |
| Itchen   | 2                                      | 94                  | PaR               | PaR               | V - 90%                      | 2 " - M3                       | 100%             | 94                     | V2 - 90%         | 104                                    | V1 - 80%         |
| <b>SW</b>  |  |                     |                   |                   |                              |                                |                  |                        |                  |  |                  |
| Avon - Hant  | 0                                      | 57                  | PaR               | PaR               | V - 90%                      | 0 " - M3                       | 100%             | 57                     | M3 - 100%        | 62                                     | M3 - 100%        |
| Stour  | 0                                      | 12                  | AR                | AR                | M - 100%                     | 0 " - M3                       | 100%             | 12                     | M3 - 100%        | 13                                     | M3 - 100%        |
| Piddle   | 0                                      | 47                  | PaR               | PaR               | V - 90%                      | 0 " - M3                       | 100%             | 47                     | M3 - 100%        | 52                                     | M3 - 100%        |
| Frome  | 2                                      | 92                  | PaR               | PaR               | V - 90%                      | 2 " - M3                       | 100%             | 92                     | V2 - 90%         | 102                                    | V1 - 80%         |
| Axe  | 0                                      | 39                  | PaR               | PaR               | V - 90%                      | 0 " - M3                       | 100%             | 39                     | M3 - 100%        | 44                                     | M3 - 100%        |
| Ere  | 2                                      | 122                 | PaR               | PaR               | V - 90%                      | 2 " - M3                       | 100%             | 122                    | V1 - 80%         | 141                                    | V1 - 80%         |
| Teign  | 4                                      | 124                 | PaR               | PaR               | V - 90%                      | 4 " - V2                       | 90%              | 124                    | V1 - 80%         | 138                                    | V1 - 80%         |
| Dart   | 1                                      | 54                  | AR                | PaR               | V - 90%                      | 1 " - M3                       | 100%             | 54                     | M3 - 100%        | 64                                     | M3 - 100%        |
| Avon-Devon   | 1                                      | 75                  | PaR               | PaR               | V - 90%                      | 1 " - M3                       | 100%             | 75                     | M3 - 100%        | 81                                     | V2 - 90%         |
| Ere  | 0                                      | 38                  | AR                | PaR               | V - 90%                      | 0 " - M3                       | 100%             | 38                     | M3 - 100%        | 44                                     | M3 - 100%        |
| Yealm  | 0                                      | 37                  | AR                | AR                | M - 100%                     | 0 " - M3                       | 100%             | 37                     | M3 - 100%        | 40                                     | M3 - 100%        |
| Plym   | 0                                      | 28                  | AR                | AR                | M - 100%                     | 0 " - M3                       | 100%             | 28                     | M3 - 100%        | 38                                     | M3 - 100%        |
| Tavy   | 2                                      | 76                  | AR                | PaR               | V - 90%                      | 2 " - M3                       | 100%             | 76                     | M3 - 100%        | 85                                     | V2 - 90%         |
| Tamar  | 2                                      | 94                  | PaR               | PaR               | V - 90%                      | 2 " - M3                       | 100%             | 94                     | M3 - 100%        | 99.50%                                 | V2 - 90%         |
| Lynher   | 4                                      | 168                 | PaR               | PaR               | V - 90%                      | 4 " - V2                       | 90%              | 168                    | V1 - 80%         | 191                                    | V1 - 80%         |
| Fowey  | 5                                      | 178                 | PaR               | PaR               | V - 90%                      | 5 " - V1                       | 80%              | 178                    | V1 - 80%         | 197                                    | V1 - 80%         |
| Camel  | 3                                      | 118                 | PaR               | PaR               | V - 90%                      | 3 " - V2                       | 90%              | 118                    | V1 - 80%         | 125                                    | V1 - 80%         |
| Taw  | 4                                      | 150                 | PaR               | PaR               | V - 90%                      | 4 " - V2                       | 90%              | 150                    | V1 - 80%         | 175                                    | V1 - 80%         |
| Torridge   | 1                                      | 81                  | PaR               | PaR               | V - 90%                      | 1 " - M3                       | 100%             | 81                     | V2 - 90%         | 89                                     | V2 - 90%         |
| Lyn  | 2                                      | 98                  | AR                | PaR               | V - 90%                      | 2 " - M3                       | 100%             | 98                     | V2 - 90%         | 112                                    | V1 - 80%         |
| <b>Midlands</b>  |  |                     |                   |                   |                              |                                |                  |                        |                  |  |                  |
| Severn   | 4                                      | 166                 | PNaR              | PNaR              | V - 80%                      | 4 " - V2                       | 90%              | 166                    | V1 - 80%         | 182                                    | V1 - 80%         |
| <b>NW</b>  |  |                     |                   |                   |                              |                                |                  |                        |                  |  |                  |
| Ribble   | 5                                      | 130                 | PaR               | AR                | M - 100%                     | 5 " - V1                       | 80%              | 130                    | V1 - 80%         | 136                                    | V1 - 80%         |
| Wyre   | 0                                      | 19                  | AR                | AR                | M - 100%                     | 0 " - M3                       | 100%             | 19                     | M3 - 100%        | 23                                     | M3 - 100%        |
| Lune   | 4                                      | 105                 | AR                | AR                | M - 100%                     | 4 " - V2                       | 90%              | 105                    | V1 - 80%         | 109                                    | V1 - 80%         |
| Kent   | 2                                      | 102                 | PaR               | PaR               | V - 90%                      | 2 " - M3                       | 100%             | 102                    | V1 - 80%         | 114                                    | V1 - 80%         |
| Leven  | 3                                      | 119                 | PaR               | PaR               | V - 90%                      | 3 " - V2                       | 90%              | 119                    | V1 - 80%         | 134                                    | V1 - 80%         |
| Crake  | 1                                      | 59                  | AR                | AR                | M - 100%                     | 1 " - M3                       | 100%             | 59                     | M3 - 100%        | 71                                     | M3 - 100%        |
| Duddon   | 5                                      | 280                 | PNaR              | PNaR              | V - 80%                      | 5 " - V1                       | 80%              | 280                    | V1 - 80%         | 306                                    | V1 - 80%         |
| Esk  | 4                                      | 139                 | PaR               | PaR               | V - 90%                      | 4 " - V2                       | 90%              | 139                    | V1 - 80%         | 149                                    | V1 - 80%         |
| Irt  | 2                                      | 91                  | AR                | PaR               | V - 90%                      | 2 " - M3                       | 100%             | 91                     | V2 - 90%         | 103                                    | V1 - 80%         |
| Ehen   | 4                                      | 170                 | PaR               | PaR               | V - 90%                      | 4 " - V2                       | 90%              | 170                    | V1 - 80%         | 184                                    | V1 - 80%         |
| Calder   | 1                                      | 57                  | AR                | AR                | M - 100%                     | 1 " - M3                       | 100%             | 57                     | M3 - 100%        | 68                                     | M3 - 100%        |
| Derwent  | 2                                      | 105                 | AR                | AR                | M - 100%                     | 2 " - M3                       | 100%             | 105                    | V1 - 80%         | 117                                    | V1 - 80%         |
| Eden   | 2                                      | 87                  | PaR               | PaR               | V - 90%                      | 2 " - M3                       | 100%             | 87                     | V2 - 90%         | 95                                     | V2 - 90%         |
| Esh-Border   | 1                                      | 83                  | PaR               | PaR               | V - 90%                      | 1 " - M3                       | 100%             | 83                     | V2 - 90%         | 86                                     | V2 - 90%         |

## Appendix 5

### Two peculiarities of the Severn

There are a two special features of the Severn salmon fishery that the Agency have never properly taken into account when assessing either stocks or the impact of regulatory measures.

1. **The spring byelaws had more impact in reducing angling numbers on the Severn than on any other river.** In 1995 there were 29,786 days fished<sup>xxxvii</sup>. By 2005 this had fallen to 5,521. This happened because most of the system has steep overgrown banks where only bait fishing is practicable<sup>xxxviii</sup>. Therefore, the ban on bait fishing before June 16<sup>th</sup> effectively closed most of the fishery for most of the peak salmon run, leaving only the weir pools and a few other locations for people to fish. This has never been taken into account by the agency when making their stock assessment as the same exploitation rate was applied to the river prior to and after this massive reduction in effort.<sup>xxxix</sup>
  
2. **The construction of the navigable river and weirs in the mid 19<sup>th</sup> century holds the stock back and has created a late run of fish into the main fishery after the season is over.** Low flows in late spring and early summer create a situation in which a sizeable portion of the main run get stuck either in the estuary or in the 29 miles of lower river between Diglis and Gloucester. <sup>xi</sup> The overwhelming majority occupy positions away from the weir pools in the deep slow canal like water where the ban on float fishing means there is no legal means of catching them. Every year there is a substantial run of fish over Diglis weir in October and November after the season closes. This was recognised as far back as 1885 by J W Willis Bund chair of the board of conservators in his book salmon problems<sup>xli</sup>. In contrast the River Dee from which much data is imported into the Severn assessment sees no such late run of fish outside of the season<sup>xlii</sup>.

## APPENDIX 6

### Collective Anglers' Response to River Severn Net Limitation Order and Byelaws Proposals 2021

Severn Fisheries Group was aware from previous consultation experience that there was a high risk that a large number of anglers would fail to respond to the consultation. There are a number of reasons for this including:

- Some anglers were unaware that a consultation was taking place. e.g. one message we received read *"As the Leader of a syndicate on a Tanat beat, appalled, as we have never been informed/approached/consulted"* although most reports did come through casual conversations and telephone calls
- Some anglers do not have access to a computer/tablet/smartphone /internet etc
- Many of those that do have access to IT are not everyday users and lack the confidence to complete an online form
- A significant number felt that the online form would lead them into giving answers the EA wanted rather than being able to raise their own concerns

To that end we circulated a standardised response which anglers could sign and submit if they agreed with its content. This was hosted on the PAAS website which automatically emailed the response to [severnfisheriesgroup@btinternet.com](mailto:severnfisheriesgroup@btinternet.com). A copy of their objection to the consultation is included below followed by a list of the names of the 865 anglers who were in agreement with the contents and the date on which they signed. In compliance with General Data Protection Regulation, we have not included their email addresses although we can provide further proof of authenticity as required.

#### Angler Objection Statement to the 2021 River Severn Net Limitation Order and Byelaws Proposals.

I am very much opposed to what is being proposed here for the River Severn and its tributaries and believe that in reality more harm than good will be the result if these byelaws are approved. I have not filled in the EA consultation form as there are too many leading questions which do not allow me to give my honest opinions on the real issues. The reason for my objections are as follows:

- **Where is the evidence that these proposals will make any difference to the numbers of salmon in the Severn?**  
We have had the spring byelaws in place for many years and they have made no difference to the numbers of salmon in the river. The River Wye has had similar byelaws to those proposed for the Severn for 9 years now and there are less salmon in the river not more. The best answer the EA seem to come up with is they don't know how much worse it would have been. So where is the evidence that this is going to make a difference?
- **I am very suspicious of the real reason for the byelaws**  
The emergency byelaws for the Severn were introduced on the Severn on 14<sup>th</sup> June 2019, just 2 days before it would have been legal to take a salmon. So why did the EA suddenly discover it was using the wrong figures? It seems suspicious that this was at the same time that the same restrictions were being approved for the whole of Wales and this was just to make the Severn fit in with that. It even says on Page 49 of the Technical Case Structure that we need to fit in with Wales and this will make the Severn different than other similar English rivers. Surely that can't be right.



- **These Byelaws will result in less salmon in the Severn not more!**  
Anglers are “the eyes and ears” of the river and simply by being out on the river they act as a deterrent to poachers who will cause far more damage than a law abiding angler taking an occasional fish could ever do. They also help deter cormorants and goosanders who cause a lot of damage to the stocks of salmon parr in the river. More importantly they are able to report pollution to the authorities which causes the death of far more fish than anglers do yet very little happens to those responsible.
- **The byelaws will have a damaging effect on anglers’ health and wellbeing.**  
It is widely accepted that angling is beneficial for both mental and physical health. Being out in the fresh and walking along the riverbank provides us with both exercise and allows us to appreciate the natural environment. It is not coincidental that most anglers are also keen naturalists. Along with the social contact when we meet other anglers we all feel better after a day on the river. To hear anglers talking about being despondent and depressed about the possibility of byelaws being in place for 10 years undoes all of the benefits at a stroke. For elderly anglers, and there are many of them, 10 years of byelaws seems like a life sentence.
- **The method restrictions within the byelaws make it far more difficult to catch a salmon and large parts of the river will become unfishable.**  
Many parts of the River Severn are impossible to fish with anything other than a worm. The area upstream of the confluence with the River Vyrnwy is a prime example. Elderly and less able anglers are unable to stand and fish using the only methods left available to them and therefore this is an example of age discrimination. Making single barbless hooks makes landing a fish ever more difficult and what the EA don’t seem to recognise or care about is the harder you make it to catch a fish the fewer people will go fishing. As previously stated the fewer legitimate anglers on the river the more poaching there will be. Unfortunately the EA seem to have their heads buried in the sand by not recognising that. In any case the method restrictions are practically unenforceable as anglers can simply claim that they are fishing for another species. When the EA tell me that at least I can carry on fishing for other species instead of salmon I find it shows a complete lack of understanding. It’s like being told you can longer order your favourite steak when you go out for a meal but never mind you can still go out and enjoy a bowl of rice instead.
- **Who is going to encourage youngsters to take up fishing when anglers are driven away from the river?**  
Many anglers first start to fish when they are taken to the river by their father or grandfather. If the parents or grandparents are discouraged from fishing then how are they going to be encouraged? You only have to look how many anglers no longer choose to fish in Wales now that new byelaws have been introduced to realise what the effect will be on the Severn. The anglers have not left because there are no fish in the river, they have left because byelaws make it far too difficult for many of them to catch fish.

It is time for the EA to wake up and realise that their proposals will do more harm than good and that there are many consequences that they are either ignoring or simply do not care about. As things stand I have no confidence in the EA’s ability to look after the river and it really is time for them to start listening to those who actually spend time on the river and really do care about the future of the River Severn.

**Your email address (optional) - We will NEVER share your email address with any third parties.**

**Your Name:**

|    | <b>Angler Objecting To Severn<br/>Byelaw Proposals</b> | <b>Date Of<br/>Completion</b> |    |                         |           |
|----|--|-------------------------------|----|-------------------------|-----------|
| 1  | A Davies   | 07-Apr-21                     | 46 | Andrew Dandy            | 06-Apr-21 |
| 2  | A Penswick   | 06-Apr-21                     | 47 | Andrew Eden             | 06-Apr-21 |
| 3  | A. Buckley   | 07-Apr-21                     | 48 | Andrew Fairclough       | 07-Apr-21 |
| 4  | A.T. Cottrill  | 07-Apr-21                     | 49 | Andrew Figgins          | 06-Apr-21 |
| 5  | Adam Aleixos   | 06-Apr-21                     | 50 | Andrew Ford             | 06-Apr-21 |
| 6  | Adam Charlesworth                                      | 10-Apr-21                     | 51 | Andrew Hills            | 06-Apr-21 |
| 7  | Adam Clark   | 06-Apr-21                     | 52 | Andrew Holden           | 06-Apr-21 |
| 8  | Adrian Kendrick  | 06-Apr-21                     | 53 | Andrew Holmes           | 07-Apr-21 |
| 9  | Adrian Pountney  | 06-Apr-21                     | 54 | Andrew Johnson          | 06-Apr-21 |
| 10 | Adrian Watkiss   | 06-Apr-21                     | 55 | Andrew Mossop           | 06-Apr-21 |
| 11 | Adrian Wild  | 07-Apr-21                     | 56 | Andrew Myerscough       | 06-Apr-21 |
| 12 | Aiden Defoe  | 06-Apr-21                     | 57 | Andrew Overend          | 08-Apr-21 |
| 13 | Alan Bethell   | 06-Apr-21                     | 58 | Andrew Peart            | 06-Apr-21 |
| 14 | Alan Brittain  | 06-Apr-21                     | 59 | Andrew Poynton          | 08-Apr-21 |
| 15 | Alan Brown   | 08-Apr-21                     | 60 | Andrew Reay-Robinson    | 06-Apr-21 |
| 16 | Alan David Bowker                                      | 06-Apr-21                     | 61 | Andrew Shrigley         | 06-Apr-21 |
| 17 | Alan Dawson  | 04-Apr-21                     | 62 | Andrewblastland         | 07-Apr-21 |
| 18 | Alan Dunn  | 06-Apr-21                     | 63 | Andy Brunwin            | 07-Apr-21 |
| 19 | Alan Hedley  | 06-Apr-21                     | 64 | Andy Hinchliffe         | 06-Apr-21 |
| 20 | Alan Jones   | 07-Apr-21                     | 65 | Andy Kelly              | 07-Apr-21 |
| 21 | Alan Knowles   | 07-Apr-21                     | 66 | Andy Owen               | 07-Apr-21 |
| 22 | Alan Micklethwaite                                     | 06-Apr-21                     | 67 | Andy Sutcliffe          | 06-Apr-21 |
| 23 | Alan Mottram   | 07-Apr-21                     | 68 | Andy Tracey             | 06-Apr-21 |
| 24 | Alan Parker  | 07-Apr-21                     | 69 | Andy Wilkinson          | 06-Apr-21 |
| 25 | Alan Percox  | 06-Apr-21                     | 70 | Angela Akkor            | 07-Apr-21 |
| 26 | Alan Richardson  | 06-Apr-21                     | 71 | Anthony Abrahams        | 06-Apr-21 |
| 27 | Alan Tosh  | 06-Apr-21                     | 72 | Anthony Allen           | 06-Apr-21 |
| 28 | Alan Uttley  | 06-Apr-21                     | 73 | Anthony D L Norville    | 07-Apr-21 |
| 29 | Alan Vertigan  | 08-Apr-21                     | 74 | Anthony Gilman          | 07-Apr-21 |
| 30 | Alan Worthington                                       | 06-Apr-21                     | 75 | Anthony Harris          | 06-Apr-21 |
| 31 | Alan Yoxall  | 06-Apr-21                     | 76 | Anthony Hartley         | 07-Apr-21 |
| 32 | Alec Boughey   | 06-Apr-21                     | 77 | Anthony Mulrenan        | 06-Apr-21 |
| 33 | Alex Cruickshanks                                      | 06-Apr-21                     | 78 | Anthony N Hall          | 07-Apr-21 |
| 34 | Alex Deane   | 07-Apr-21                     | 79 | Anthony Parton          | 07-Apr-21 |
| 35 | Alfred Patrick Atkins                                  | 07-Apr-21                     | 80 | Arthur Edward Leen      | 07-Apr-21 |
| 36 | Alistair Dobie   | 08-Apr-21                     | 81 | Arthur Leonard Bradshaw | 07-Apr-21 |
| 37 | Alistair Dobie   | 08-Apr-21                     | 82 | Aubrey Hudson           | 07-Apr-21 |
| 38 | Alistair Murray  | 07-Apr-21                     | 83 | Austin Jones            | 07-Apr-21 |
| 39 | Allan Cuthbert   | 04-Apr-21                     | 84 | B Kellock               | 06-Apr-21 |
| 40 | Allan William Amey                                     | 07-Apr-21                     | 85 | B Phillips              | 06-Apr-21 |
| 41 | Allen Norris   | 07-Apr-21                     | 86 | Barrie Greenwood        | 06-Apr-21 |
| 42 | Andrea Humphries                                       | 07-Apr-21                     | 87 | Barry Charles Gardiner  | 07-Apr-21 |
| 43 | Andrej Salibi  | 06-Apr-21                     | 88 | Barry Cubbins           | 07-Apr-21 |
| 44 | Andrew Bailey  | 07-Apr-21                     | 89 | Barry Hamer             | 06-Apr-21 |
| 45 | Andrew Curley  | 06-Apr-21                     | 90 | Barry Leeson            | 06-Apr-21 |
|    |  |                               | 91 | Bernard Coslett         | 10-Apr-21 |
|    |  |                               | 92 | Bernard Keiley          | 06-Apr-21 |

|     |                         |           |     |                    |           |
|-----|-------------------------|-----------|-----|--------------------|-----------|
| 93  | Bernard Kettle          | 04-Apr-21 | 142 | Colin Smith        | 06-Apr-21 |
| 94  | Bernard Morgan          | 06-Apr-21 | 143 | Colin Wait         | 10-Apr-21 |
| 95  | Blackett Mr             | 07-Apr-21 | 144 | Colin Watson       | 06-Apr-21 |
| 96  | Bob Charity             | 06-Apr-21 | 145 | Craig Davies       | 07-Apr-21 |
| 97  | Bob Gibbon              | 06-Apr-21 | 146 | Cyril Wright       | 07-Apr-21 |
| 98  | Bob Hawkes              | 07-Apr-21 | 147 | D J Cockayne       | 07-Apr-21 |
| 99  | Bob Williams            | 06-Apr-21 | 148 | D J Kettle         | 06-Apr-21 |
| 100 | Brad Hibbert            | 07-Apr-21 | 149 | D J Reade          | 09-Apr-21 |
| 101 | Brian Davies            | 07-Apr-21 | 150 | D P Couling        | 07-Apr-21 |
| 102 | Brian George Handley    | 07-Apr-21 | 151 | D Snape            | 06-Apr-21 |
| 103 | Brian Hope              | 06-Apr-21 | 152 | D Sumner           | 07-Apr-21 |
| 104 | Brian Moxon             | 06-Apr-21 | 153 | D. Stevenson       | 07-Apr-21 |
| 105 | Brian Ogden             | 08-Apr-21 | 154 | Dale Asher         | 06-Apr-21 |
| 106 | Brian Smith             | 07-Apr-21 | 155 | Dale Green         | 06-Apr-21 |
| 107 | Brian Williamson        | 06-Apr-21 | 156 | Damian Harrison    | 07-Apr-21 |
| 108 | Bryan Baron             | 07-Apr-21 | 157 | Daniel R Jones     | 06-Apr-21 |
| 109 | Bryan Chisnall          | 07-Apr-21 | 158 | Darren Albert Hood | 07-Apr-21 |
| 110 | C J Glover              | 07-Apr-21 | 159 | Darren Barlow      | 06-Apr-21 |
| 111 | C.R.Ellis               | 07-Apr-21 | 160 | Darren Evans       | 06-Apr-21 |
| 112 | Carl Clewley            | 06-Apr-21 | 161 | Darren King        | 06-Apr-21 |
| 113 | Charles A Abbott        | 04-Apr-21 | 162 | Darren Mcdonnell   | 06-Apr-21 |
| 114 | Charles Fox             | 06-Apr-21 | 163 | Dave Bassett       | 06-Apr-21 |
| 115 | Charles Wilk            | 06-Apr-21 | 164 | Dave Booth         | 07-Apr-21 |
| 116 | Chris C Bulman          | 06-Apr-21 | 165 | Dave Bull          | 07-Apr-21 |
| 117 | Chris Dudman            | 07-Apr-21 | 166 | Dave Pickering     | 06-Apr-21 |
| 118 | Chris Emberton          | 07-Apr-21 | 167 | Dave Taplin        | 06-Apr-21 |
| 119 | Chris Hart              | 06-Apr-21 | 168 | Dave Turner        | 07-Apr-21 |
| 120 | Chris Horwell           | 07-Apr-21 | 169 | David Acton        | 06-Apr-21 |
| 121 | Chris Mabbott           | 07-Apr-21 | 170 | David Allott       | 06-Apr-21 |
| 122 | Chris Shore             | 06-Apr-21 | 171 | David Armstrong    | 06-Apr-21 |
| 123 | Chris Tudgay            | 07-Apr-21 | 172 | David Atkinson     | 06-Apr-21 |
| 124 | Chris White             | 04-Apr-21 | 173 | David Barlow       | 07-Apr-21 |
| 125 | Christian Ingham        | 07-Apr-21 | 174 | David Berry        | 07-Apr-21 |
| 126 | Christopher Birch Price | 07-Apr-21 | 175 | David Birkbeck     | 06-Apr-21 |
| 127 | Christopher Gerrard     | 07-Apr-21 | 176 | David Boardman     | 06-Apr-21 |
| 128 | Christopher Neil Watson | 08-Apr-21 | 177 | David Brealey      | 06-Apr-21 |
| 129 | Christopher Pitts       | 07-Apr-21 | 178 | David Calladine    | 07-Apr-21 |
| 130 | Christopher Roberts     | 07-Apr-21 | 179 | David Cartlich     | 07-Apr-21 |
| 131 | Cliff Beardmore         | 07-Apr-21 | 180 | David Charlesworth | 06-Apr-21 |
| 132 | Cliff Taylor            | 06-Apr-21 | 181 | David Clegg        | 06-Apr-21 |
| 133 | Cliff.Hemming           | 07-Apr-21 | 182 | David Connelly     | 06-Apr-21 |
| 134 | Clive Evans             | 06-Apr-21 | 183 | David Dale         | 07-Apr-21 |
| 135 | Clive Fawkes            | 06-Apr-21 | 184 | David E Smith      | 07-Apr-21 |
| 136 | Clive Sawbridge         | 07-Apr-21 | 185 | David England      | 06-Apr-21 |
| 137 | Clive Wilcock           | 07-Apr-21 | 186 | David Evans        | 06-Apr-21 |
| 138 | Colin Betts             | 07-Apr-21 | 187 | David Felton       | 07-Apr-21 |
| 139 | Colin Bowell            | 07-Apr-21 | 188 | David G Calladine  | 07-Apr-21 |
| 140 | Colin Fairbrother       | 07-Apr-21 | 189 | David Goodwin      | 06-Apr-21 |
| 141 | Colin Peter Fowler      | 07-Apr-21 | 190 | David Gorton       | 06-Apr-21 |

|     |                   |           |     |                       |           |
|-----|-------------------|-----------|-----|-----------------------|-----------|
| 191 | David Haskett     | 06-Apr-21 | 242 | Dominic Sidoli        | 06-Apr-21 |
| 192 | David Hindle      | 06-Apr-21 | 243 | Donald Hilton Haughin | 07-Apr-21 |
| 194 | David Hitchen     | 06-Apr-21 | 244 | Dr Anthony Bethwaite  | 08-Apr-21 |
| 195 | David Hunter      | 06-Apr-21 | 245 | Dr Iain Gibb          | 08-Apr-21 |
| 196 | David Isherwood   | 07-Apr-21 | 246 | Dr N C P Woodyatt     | 06-Apr-21 |
| 197 | David J Newman    | 06-Apr-21 | 247 | Dr Nicholas Swift     | 06-Apr-21 |
| 198 | David John Hardy  | 06-Apr-21 | 248 | Dr Richard White      | 07-Apr-21 |
| 199 | David Johnson     | 06-Apr-21 | 249 | Duncan Brown          | 07-Apr-21 |
| 200 | David Jones       | 07-Apr-21 | 250 | Eddie Strange         | 06-Apr-21 |
| 201 | David Jozefczyk   | 09-Apr-21 | 251 | Edward Currie         | 06-Apr-21 |
| 202 | David Kittson     | 06-Apr-21 | 252 | Edward Leligdowicz    | 07-Apr-21 |
| 203 | David Leader      | 07-Apr-21 | 253 | Edward Mc Coy         | 08-Apr-21 |
| 204 | David Luckhurst   | 06-Apr-21 | 254 | Edward Small          | 07-Apr-21 |
| 205 | David Massam      | 07-Apr-21 | 255 | Edward Tate           | 07-Apr-21 |
| 206 | David Moore       | 06-Apr-21 | 256 | Ellis Brazier         | 04-Apr-21 |
| 207 | David Norman      | 06-Apr-21 | 257 | Eric Hughes           | 08-Apr-21 |
| 208 | David Ogden       | 07-Apr-21 | 258 | Eric Stott            | 07-Apr-21 |
| 209 | David Owen        | 07-Apr-21 | 259 | Francis Brown         | 06-Apr-21 |
| 210 | David Paul Walker | 06-Apr-21 | 260 | Frank Alan Booth      | 07-Apr-21 |
| 211 | David Pointon     | 06-Apr-21 | 261 | Frank Cherry          | 07-Apr-21 |
| 212 | David Purslow     | 06-Apr-21 | 262 | Frank Gleeson         | 07-Apr-21 |
| 213 | David Riding      | 07-Apr-21 | 263 | Frank Savery          | 06-Apr-21 |
| 214 | David Riley       | 06-Apr-21 | 264 | Frank Walton Age 94   | 04-Apr-21 |
| 215 | David Roberts     | 06-Apr-21 | 265 | Fred Salt             | 04-Apr-21 |
| 216 | David Seabury     | 06-Apr-21 | 266 | G M Howson            | 06-Apr-21 |
| 217 | David Sharman     | 07-Apr-21 | 267 | G.B Flood             | 06-Apr-21 |
| 218 | David Sherratt    | 06-Apr-21 | 268 | Gail Nelson           | 06-Apr-21 |
| 219 | David Smith       | 07-Apr-21 | 269 | Gareth Baines         | 06-Apr-21 |
| 221 | David Stackhouse  | 06-Apr-21 | 270 | Gareth Davies         | 06-Apr-21 |
| 222 | David Thompson    | 07-Apr-21 | 271 | Gareth Griffiths      | 06-Apr-21 |
| 223 | David Urwin       | 06-Apr-21 | 272 | Garrett Barry         | 06-Apr-21 |
| 224 | David Vanderhook  | 06-Apr-21 | 273 | Garry Carradice       | 06-Apr-21 |
| 225 | David Webster     | 07-Apr-21 | 274 | Garry Davies          | 07-Apr-21 |
| 226 | David Wildey      | 06-Apr-21 | 275 | Gary Birchall         | 08-Apr-21 |
| 227 | David Wilkinson   | 07-Apr-21 | 276 | Gary Brookfield       | 06-Apr-21 |
| 228 | David Wood        | 06-Apr-21 | 277 | Gary Butcher          | 07-Apr-21 |
| 229 | Dean Walker       | 07-Apr-21 | 278 | Gary Clarke           | 07-Apr-21 |
| 230 | Denis Maloney     | 06-Apr-21 | 279 | Gary Earnshaw         | 06-Apr-21 |
| 231 | Denis Noden       | 07-Apr-21 | 280 | Gary Graham           | 07-Apr-21 |
| 232 | Derek Evans       | 08-Apr-21 | 281 | Gary Lord             | 06-Apr-21 |
| 233 | Derek Makinson    | 06-Apr-21 | 282 | Gary McMahon          | 06-Apr-21 |
| 234 | Derek Rutter      | 06-Apr-21 | 283 | Gary Turner           | 06-Apr-21 |
| 235 | Derek Ryley       | 06-Apr-21 | 284 | Gavin Banks           | 07-Apr-21 |
| 236 | Derek Thew        | 08-Apr-21 | 285 | Gavin Laidlaw         | 06-Apr-21 |
| 237 | Derek Wood        | 07-Apr-21 | 286 | Geoff Jones           | 08-Apr-21 |
| 238 | Derick Ramsbottom | 07-Apr-21 | 287 | Geoff Rothwell        | 06-Apr-21 |
| 239 | Derrick Whitelegg | 06-Apr-21 | 288 | Geoff Yates           | 07-Apr-21 |
| 240 | Des Crosby        | 08-Apr-21 | 289 | Geoffrey Rimell       | 09-Apr-21 |
| 241 | Diane Bartlett    | 07-Apr-21 | 290 | George Lonsdale       | 07-Apr-21 |

|     |                         |           |     |                             |           |
|-----|-------------------------|-----------|-----|-----------------------------|-----------|
| 291 | George Wallace          | 04-Apr-21 | 340 | Ian Marcroft                | 07-Apr-21 |
| 292 | Gerald Guy              | 07-Apr-21 | 341 | Ian Mitchell                | 06-Apr-21 |
| 293 | Gerald Lennon           | 06-Apr-21 | 342 | Ian Nelson                  | 06-Apr-21 |
| 294 | Gerald Walters          | 07-Apr-21 | 343 | Ian Rhodes                  | 06-Apr-21 |
| 295 | Gil Higham              | 06-Apr-21 | 344 | Ian Robert Snowdon          | 07-Apr-21 |
| 296 | Glyn Marshall           | 06-Apr-21 | 345 | Ian Sutton                  | 06-Apr-21 |
| 297 | Glyn Roger Phillips     | 07-Apr-21 | 346 | Ian Swan                    | 06-Apr-21 |
| 298 | Glynne Williamson       | 06-Apr-21 | 347 | Ian Tomlinson               | 06-Apr-21 |
| 299 | Gordon Mackay           | 06-Apr-21 | 348 | Ian Whittaker               | 07-Apr-21 |
| 300 | Gordon Sharp            | 06-Apr-21 | 349 | Ian Woods                   | 06-Apr-21 |
| 301 | Graham Bergeret         | 07-Apr-21 | 350 | Ivor Preece                 | 08-Apr-21 |
| 302 | Graham Bond             | 07-Apr-21 | 351 | J Barry                     | 06-Apr-21 |
| 303 | Graham Booth            | 07-Apr-21 | 352 | J G Moore                   | 07-Apr-21 |
| 304 | Graham Bretherton       | 07-Apr-21 | 353 | J R Mason                   | 06-Apr-21 |
| 305 | Graham Foster           | 08-Apr-21 | 354 | J S Morten                  | 09-Apr-21 |
| 306 | Graham Fox              | 07-Apr-21 |     | J. Noel Hulmston - I Lead A |           |
| 307 | Graham Goodare          | 07-Apr-21 | 355 | Syndcate On The Tanat - Not |           |
| 308 | Graham Harrison         | 07-Apr-21 |     | Been Consulted On This!!    | 05-Apr-21 |
| 309 | Graham Hill             | 06-Apr-21 | 356 | Jack Shepherd               | 06-Apr-21 |
| 310 | Graham Langshaw         | 08-Apr-21 | 357 | Jacqueline Karbowski        | 07-Apr-21 |
| 311 | Graham Price            | 06-Apr-21 | 358 | James Biggerstaff           | 07-Apr-21 |
| 312 | Graham Rogerson         | 06-Apr-21 | 359 | James Kilmartin             | 07-Apr-21 |
| 313 | Graham Ward             | 07-Apr-21 | 360 | James Lally                 | 06-Apr-21 |
| 314 | Graham Woolley          | 06-Apr-21 | 361 | James Macdonald             | 07-Apr-21 |
| 315 | Graham Wortley          | 07-Apr-21 | 362 | James Morris                | 06-Apr-21 |
| 316 | Greg Lee                | 06-Apr-21 | 363 | James Nigel Jones           | 06-Apr-21 |
| 317 | H G Farnworth           | 06-Apr-21 | 364 | James Twite                 | 06-Apr-21 |
| 318 | Harry Dawson            | 06-Apr-21 | 365 | James Verney                | 07-Apr-21 |
| 319 | Henry Brownlow          | 07-Apr-21 | 366 | Jamie Chambers              | 06-Apr-21 |
| 320 | Henry Roy Jefferies     | 07-Apr-21 | 367 | Jamie Harrison              | 06-Apr-21 |
| 321 | Howard Davy             | 06-Apr-21 | 368 | Jamie Kay                   | 07-Apr-21 |
| 322 | Howard Hulme            | 07-Apr-21 | 369 | Jamie Lenahan               | 06-Apr-21 |
| 323 | Howard Podmore          | 08-Apr-21 | 370 | Jan Scott                   | 07-Apr-21 |
| 324 | Hywel Bromley Davenport | 04-Apr-21 | 371 | Jason Bignell               | 06-Apr-21 |
| 325 | Iain Baddeley           | 07-Apr-21 | 372 | Jason Lawley                | 06-Apr-21 |
| 326 | Ian Bibby               | 06-Apr-21 | 373 | Jason Middleton             | 06-Apr-21 |
| 327 | Ian Bradley             | 07-Apr-21 | 374 | Jason Screen                | 07-Apr-21 |
| 328 | Ian Cameron-Mcintosh    | 06-Apr-21 | 375 | Jeff Powell                 | 06-Apr-21 |
| 329 | Ian Clark               | 06-Apr-21 | 376 | Jeffrey Wilson              | 07-Apr-21 |
| 330 | Ian Clarke              | 07-Apr-21 | 377 | Jeremy Kettle               | 04-Apr-21 |
| 331 | Ian Doyle               | 06-Apr-21 | 378 | Jimmy Foster                | 06-Apr-21 |
| 332 | Ian Eckersley           | 07-Apr-21 | 379 | Joe Dootson                 | 06-Apr-21 |
| 333 | Ian F Jennings          | 06-Apr-21 | 380 | John Aitchison              | 07-Apr-21 |
| 334 | Ian Hall                | 06-Apr-21 | 381 | John Allan Morgan           | 08-Apr-21 |
| 335 | Ian Heathcote           | 06-Apr-21 | 382 | John Barry Holmes           | 06-Apr-21 |
| 336 | Ian J. Fox              | 07-Apr-21 | 383 | John Beggs                  | 06-Apr-21 |
| 337 | Ian Kitching            | 06-Apr-21 | 384 | John Booth                  | 07-Apr-21 |
| 338 | Ian Kitson              | 06-Apr-21 | 385 | John Broadhurst             | 09-Apr-21 |
| 339 | Ian Locker              | 06-Apr-21 | 386 | John Cadman                 | 07-Apr-21 |

|     |                       |           |     |                       |           |
|-----|-----------------------|-----------|-----|-----------------------|-----------|
| 387 | John Charles          | 07-Apr-21 | 436 | Karl Houlton          | 06-Apr-21 |
| 388 | John Charles Munnery  | 07-Apr-21 | 437 | Karl Humphries        | 07-Apr-21 |
| 389 | John Clarke           | 07-Apr-21 | 438 | Karl Mellor           | 07-Apr-21 |
| 390 | John Clarke           | 07-Apr-21 | 439 | Keith J Robinson      | 06-Apr-21 |
| 391 | John Coleman          | 06-Apr-21 | 440 | Keith Moore           | 06-Apr-21 |
| 392 | John Cotton           | 06-Apr-21 | 441 | Keith Pope            | 07-Apr-21 |
| 393 | John Dixon            | 06-Apr-21 | 442 | Keith Purvis          | 07-Apr-21 |
| 394 | John Eardley          | 31-Mar-21 | 443 | Keith Watkinson       | 07-Apr-21 |
| 395 | John Edge             | 06-Apr-21 | 444 | Kelvin Abraham        | 06-Apr-21 |
| 396 | John Fisher           | 07-Apr-21 | 445 | Kelvin Wales          | 07-Apr-21 |
| 397 | John Foster           | 07-Apr-21 | 446 | Ken Allen             | 06-Apr-21 |
| 398 | John G Hames          | 06-Apr-21 | 447 | Ken Booth             | 06-Apr-21 |
| 399 | John Gradwell         | 06-Apr-21 | 448 | Kenneth Forster       | 08-Apr-21 |
| 400 | John Hands            | 07-Apr-21 | 449 | Kenneth Pollard       | 06-Apr-21 |
| 401 | John Humphreys        | 05-Apr-21 | 450 | Kenneth Ward          | 07-Apr-21 |
| 402 | John Kershaw          | 06-Apr-21 | 451 | Kenny Pollard         | 04-Apr-21 |
| 403 | John Lee Mytton       | 07-Apr-21 | 452 | Kevin Byrom           | 06-Apr-21 |
| 404 | John Lucas            | 07-Apr-21 | 453 | Kevin Cunningham      | 08-Apr-21 |
| 405 | John Lynch-Smith      | 08-Apr-21 | 454 | Kevin Envis           | 07-Apr-21 |
| 406 | John Mann             | 08-Apr-21 | 455 | Kevin Haughtonl       | 06-Apr-21 |
| 407 | John Marriott         | 07-Apr-21 | 456 | Kevin James Caldecott | 07-Apr-21 |
| 408 | John McLaren          | 07-Apr-21 | 457 | Kevin Lonergan        | 06-Apr-21 |
| 409 | John Morley           | 06-Apr-21 | 458 | Kevin Mcdougall       | 07-Apr-21 |
| 410 | John Morris           | 07-Apr-21 | 459 | Kevin Pountney        | 06-Apr-21 |
| 411 | John Oakes            | 07-Apr-21 | 460 | Kevin Reddish         | 06-Apr-21 |
| 412 | John Richardson       | 07-Apr-21 | 461 | Kevin Saunders        | 06-Apr-21 |
| 413 | John Rollo Burnham    | 06-Apr-21 | 462 | Kevin Swift           | 07-Apr-21 |
| 414 | John Sleigh           | 07-Apr-21 | 463 | Kevin Thornley        | 07-Apr-21 |
| 415 | John Speight          | 06-Apr-21 | 464 | Kevin Tonks           | 06-Apr-21 |
| 416 | John Stirrup          | 06-Apr-21 | 465 | Laurie Parker         | 06-Apr-21 |
| 417 | John Stokes           | 07-Apr-21 | 466 | Lee Anderson          | 06-Apr-21 |
| 418 | John Thornton         | 07-Apr-21 | 467 | Lee Barry Davies      | 07-Apr-21 |
| 419 | John Walsh            | 07-Apr-21 | 468 | Lee Burley            | 06-Apr-21 |
| 420 | John Wardle           | 06-Apr-21 | 469 | Lee Collins           | 06-Apr-21 |
| 421 | John Washington       | 07-Apr-21 | 470 | Lee Marsden           | 06-Apr-21 |
| 422 | John Whitham          | 07-Apr-21 | 471 | Leif Davey            | 06-Apr-21 |
| 423 | John Whittaker        | 07-Apr-21 | 472 | Leighton Davies       | 06-Apr-21 |
| 424 | John Wilkinson        | 06-Apr-21 | 473 | Len Cleeton           | 07-Apr-21 |
| 425 | John William Richards | 07-Apr-21 | 474 | Len Smith             | 07-Apr-21 |
| 426 | John Wilson           | 06-Apr-21 | 475 | Les Bickley           | 07-Apr-21 |
| 427 | John Winkle           | 07-Apr-21 | 476 | Les Capper            | 08-Apr-21 |
| 428 | Jon Pugh              | 06-Apr-21 | 477 | Les Mountford         | 06-Apr-21 |
| 429 | Jon Rodgers           | 06-Apr-21 | 478 | Leslie Oldfield       | 07-Apr-21 |
| 430 | Jonathan Price        | 07-Apr-21 | 479 | Leslie Richmond       | 07-Apr-21 |
| 431 | Joseph Bryan Upton    | 07-Apr-21 | 480 | Liam Monaghan         | 06-Apr-21 |
| 432 | Joseph Hirst          | 06-Apr-21 | 481 | Lucy Glover           | 07-Apr-21 |
| 433 | Julian Young          | 07-Apr-21 | 482 | Lyndon Ford           | 06-Apr-21 |
| 434 | Justin Isaacs         | 07-Apr-21 | 483 | M Handyside           | 07-Apr-21 |
| 435 | Karen Johnson         | 06-Apr-21 | 484 | M I Watson            | 07-Apr-21 |

|     |                             |           |     |                              |           |
|-----|-----------------------------|-----------|-----|------------------------------|-----------|
| 485 | M.Bowden                    | 07-Apr-21 | 534 | Michael Davis                | 06-Apr-21 |
| 486 | Mac Stephens                | 06-Apr-21 | 535 | Michael Edwards Marsh        | 07-Apr-21 |
| 487 | Major (Retired) Peter Banks | 06-Apr-21 | 536 | Michael Ellison              | 08-Apr-21 |
| 488 | Malcolm Bexon               | 07-Apr-21 | 537 | Michael Goodwin              | 06-Apr-21 |
| 489 | Malcolm Bliss               | 07-Apr-21 | 538 | Michael Hardaker             | 06-Apr-21 |
| 490 | Malcolm Browne              | 07-Apr-21 | 539 | Michael Holloway             | 07-Apr-21 |
| 491 | Malcolm Crawshaw            | 06-Apr-21 | 540 | Michael Jacks                | 06-Apr-21 |
| 492 | Malcolm Haworth             | 06-Apr-21 | 541 | Michael James Wildman        | 08-Apr-21 |
| 493 | Malcolm Norbury             | 06-Apr-21 | 542 | Michael Lisin                | 07-Apr-21 |
| 494 | Manfred Spille              | 07-Apr-21 | 543 | Michael Ollis                | 07-Apr-21 |
| 495 | Mark Bowman                 | 06-Apr-21 | 544 | Michael Rawlinson            | 06-Apr-21 |
| 496 | Mark Cumpston               | 07-Apr-21 | 545 | Michael Roskell              | 06-Apr-21 |
| 497 | Mark Davies                 | 06-Apr-21 | 546 | Michael Vaughan              | 09-Apr-21 |
| 498 | Mark Germani                | 06-Apr-21 | 547 | Michael Waters               | 06-Apr-21 |
| 499 | Mark Hedley Cleaver         | 06-Apr-21 | 548 | Michael Whitman              | 07-Apr-21 |
| 500 | Mark Johnson                | 07-Apr-21 | 549 | Michael.Forrest              | 07-Apr-21 |
| 501 | Mark Langford Rotton        | 06-Apr-21 | 550 | Michelle Moore               | 06-Apr-21 |
| 502 | Mark Mabbitt                | 06-Apr-21 | 551 | Mick Bennett                 | 07-Apr-21 |
| 503 | Mark Marshall               | 07-Apr-21 | 552 | Mike Bush                    | 07-Apr-21 |
| 504 | Mark Norwood                | 09-Apr-21 | 553 | Mike Ford                    | 07-Apr-21 |
| 505 | Mark Ramsden                | 07-Apr-21 | 554 | Mike Goddard                 | 07-Apr-21 |
| 506 | Mark Ridley                 | 07-Apr-21 | 555 | Mike Kalnins                 | 06-Apr-21 |
| 507 | Mark Roebuck                | 07-Apr-21 | 556 | Mike Middleton               | 04-Apr-21 |
| 508 | Mark Saxon                  | 07-Apr-21 | 557 | Mike Norbury                 | 07-Apr-21 |
| 509 | Mark Siviter                | 06-Apr-21 | 558 | Mike Whitman                 | 06-Apr-21 |
| 510 | Mark Storer                 | 07-Apr-21 | 559 | Mohammed Arshadul Haque      | 06-Apr-21 |
| 511 | Mark Sulway                 | 07-Apr-21 | 560 | Mr A J Nicholson             | 04-Apr-21 |
| 512 | Mark Swaine                 | 06-Apr-21 | 561 | Mr A Moore                   | 07-Apr-21 |
| 513 | Mark Tucker                 | 06-Apr-21 | 562 | Mr C Yearsley                | 07-Apr-21 |
| 514 | Mark Vickers                | 09-Apr-21 | 563 | Mr Colin Stracey             | 07-Apr-21 |
| 515 | Mark Whalley                | 07-Apr-21 | 564 | Mr David A Swift             | 06-Apr-21 |
| 516 | Mark Young                  | 06-Apr-21 | 565 | Mr David Stevenson           | 06-Apr-21 |
| 517 | Martin Burgess              | 07-Apr-21 | 566 | Mr G Williams                | 06-Apr-21 |
| 518 | Martin Gregory              | 09-Apr-21 | 567 | Mr Geoffrey Evans            | 06-Apr-21 |
| 519 | Martin Stubbs               | 04-Apr-21 | 568 | Mr Jonathan William Jennings | 07-Apr-21 |
| 520 | Martin Swindley             | 06-Apr-21 | 569 | Mr Leonard Bartlett          | 07-Apr-21 |
| 521 | Martin Vidler               | 10-Apr-21 | 570 | Mr Leslie Ward               | 06-Apr-21 |
| 522 | Martin Wormald              | 07-Apr-21 | 571 | Mr Mark Pedley               | 06-Apr-21 |
| 523 | Martyn Sime                 | 06-Apr-21 | 572 | Mr P Clayton                 | 06-Apr-21 |
| 524 | Matt Corker                 | 06-Apr-21 | 573 | Mr P Mawdsley                | 06-Apr-21 |
| 525 | Matt Oliver                 | 07-Apr-21 | 574 | Mr Peter Brown               | 07-Apr-21 |
| 526 | Matthew Counsel             | 06-Apr-21 | 575 | Mr R Webster                 | 07-Apr-21 |
| 527 | Matthew Gower               | 06-Apr-21 | 576 | Mr Richard Shuttleworth      | 07-Apr-21 |
| 528 | Mervyn Bellis               | 07-Apr-21 | 577 | Mr V J Hodgson               | 07-Apr-21 |
| 529 | Michael Antony Eccles       | 07-Apr-21 | 578 | Mr Vincent Floyd             | 07-Apr-21 |
| 530 | Michael Archer              | 07-Apr-21 | 579 | N. Robinson.                 | 06-Apr-21 |
| 531 | Michael Barrell             | 06-Apr-21 | 580 | Neil Atkins                  | 06-Apr-21 |
| 532 | Michael Bullock             | 07-Apr-21 | 581 | Neil Clayton                 | 07-Apr-21 |
| 533 | Michael Davies              | 06-Apr-21 | 582 | Neil Darling                 | 07-Apr-21 |

|     |                          |           |     |                        |           |
|-----|--------------------------|-----------|-----|------------------------|-----------|
| 583 | Neil Jones               | 06-Apr-21 | 632 | Paul Phillips          | 07-Apr-21 |
| 584 | Neil Mcilhagga           | 06-Apr-21 | 633 | Paul Reay              | 07-Apr-21 |
| 585 | Neil Paul Brooks         | 06-Apr-21 | 634 | Paul Reddington        | 06-Apr-21 |
| 586 | Neil Stewart             | 06-Apr-21 | 635 | Paul Rushton           | 07-Apr-21 |
| 587 | Neil Storey              | 07-Apr-21 | 636 | Paul S Bristow         | 06-Apr-21 |
| 588 | Neil Turner              | 06-Apr-21 | 637 | Paul Stowell           | 06-Apr-21 |
| 589 | Neil Whittle             | 06-Apr-21 | 638 | Paul Wharton           | 06-Apr-21 |
| 590 | Neville Higgins          | 07-Apr-21 | 639 | Paul Williams          | 07-Apr-21 |
| 591 | Nicholas Oliver Metcalfe | 06-Apr-21 | 640 | Paul Worrall           | 07-Apr-21 |
| 592 | Nick Bairstow            | 07-Apr-21 | 641 | Pe Dickinson           | 06-Apr-21 |
| 593 | Nick Eyre                | 06-Apr-21 | 642 | Peter Ashmore          | 06-Apr-21 |
| 594 | Nick Fesmer              | 06-Apr-21 | 643 | Peter Astbury          | 06-Apr-21 |
| 595 | Niels Winder             | 07-Apr-21 | 644 | Peter Christley        | 06-Apr-21 |
| 596 | Nigel Barnes             | 06-Apr-21 | 645 | Peter Coddington       | 06-Apr-21 |
| 597 | Nigel Holden             | 07-Apr-21 | 646 | Peter Collier          | 07-Apr-21 |
| 598 | Nigel Margerison         | 07-Apr-21 | 647 | Peter Danson           | 06-Apr-21 |
| 599 | Nigel Tucker             | 06-Apr-21 | 648 | Peter Duerden          | 07-Apr-21 |
| 600 | Nigel Varty              | 07-Apr-21 | 649 | Peter Emerson          | 07-Apr-21 |
| 601 | Norman Watson            | 07-Apr-21 | 650 | Peter Evans            | 06-Apr-21 |
| 602 | P Johnston               | 06-Apr-21 | 651 | Peter Foster           | 07-Apr-21 |
| 603 | P Just Pearce            | 06-Apr-21 | 652 | Peter Francis Ladyman  | 08-Apr-21 |
| 604 | P Morrison               | 07-Apr-21 | 653 | Peter Henery           | 07-Apr-21 |
| 605 | Pat Seals                | 06-Apr-21 | 654 | Peter Henry Lawn       | 08-Apr-21 |
| 606 | Patrick Mcdonald         | 06-Apr-21 | 655 | Peter Hunt             | 06-Apr-21 |
| 607 | Paul Bell                | 06-Apr-21 | 656 | Peter Johnson          | 07-Apr-21 |
| 608 | Paul Brown               | 06-Apr-21 | 657 | Peter Kenyon           | 09-Apr-21 |
| 609 | Paul Churchill           | 06-Apr-21 | 658 | Peter Knox             | 06-Apr-21 |
| 610 | Paul Ciaputa             | 07-Apr-21 | 659 | Peter Laws             | 07-Apr-21 |
| 611 | Paul Cooper              | 08-Apr-21 | 660 | Peter Mcandrew         | 06-Apr-21 |
| 612 | Paul Cross               | 07-Apr-21 | 661 | Peter Miller           | 07-Apr-21 |
| 613 | Paul Davis               | 07-Apr-21 | 662 | Peter Monk             | 06-Apr-21 |
| 614 | Paul Douras              | 09-Apr-21 | 663 | Peter Nickson          | 06-Apr-21 |
| 615 | Paul Ellams              | 06-Apr-21 | 664 | Peter Nixon            | 06-Apr-21 |
| 616 | Paul Fellows             | 06-Apr-21 | 665 | Peter Oldham           | 06-Apr-21 |
| 617 | Paul Fox                 | 06-Apr-21 | 666 | Peter R Owen Owen      | 06-Apr-21 |
| 618 | Paul Franklin            | 06-Apr-21 | 667 | Peter Rigby            | 06-Apr-21 |
| 619 | Paul G Burge             | 06-Apr-21 | 668 | Peter Robinson         | 07-Apr-21 |
| 620 | Paul Harris              | 06-Apr-21 | 669 | Peter S Monaghan       | 06-Apr-21 |
| 621 | Paul Heavyside           | 06-Apr-21 | 670 | Peter St John          | 07-Apr-21 |
| 622 | Paul Holloway            | 07-Apr-21 | 671 | Peter Tattersall E6702 | 09-Apr-21 |
| 623 | Paul Jones               | 07-Apr-21 | 672 | Peter Thomas           | 06-Apr-21 |
| 624 | Paul Kittson             | 06-Apr-21 | 673 | Peter Tomlinson        | 08-Apr-21 |
| 625 | Paul Llewellyn           | 07-Apr-21 | 674 | Peter Wellock          | 07-Apr-21 |
| 626 | Paul Mallen              | 02-Apr-21 | 675 | Peter Wood             | 06-Apr-21 |
| 627 | Paul Morgan              | 07-Apr-21 | 676 | Peter.Gilman           | 06-Apr-21 |
| 628 | Paul Morris              | 06-Apr-21 | 677 | Phil Cordrey           | 07-Apr-21 |
| 629 | Paul Moscrop             | 07-Apr-21 | 678 | Phil Godson            | 06-Apr-21 |
| 630 | Paul Needham             | 07-Apr-21 | 679 | Phil Hatton            | 06-Apr-21 |
| 631 | Paul Nevins              | 06-Apr-21 | 680 | Phil Hatton            | 10-Apr-21 |



|     |                         |           |     |                         |           |
|-----|-------------------------|-----------|-----|-------------------------|-----------|
| 681 | Phil Johnson            | 07-Apr-21 | 730 | Robert Kelly            | 06-Apr-21 |
| 682 | Phil Marland            | 07-Apr-21 | 731 | Robert Lucey            | 06-Apr-21 |
| 683 | Phil Plant              | 05-Apr-21 | 732 | Robert Powell           | 08-Apr-21 |
| 684 | Phil Powell             | 06-Apr-21 | 733 | Robert Ranby            | 06-Apr-21 |
| 685 | Philip Andrew Hartwell  | 07-Apr-21 | 734 | Robert Reginald Stoker  | 07-Apr-21 |
| 686 | Philip Benting          | 07-Apr-21 | 735 | Robert Simms            | 07-Apr-21 |
| 687 | Philip Bradbury         | 07-Apr-21 | 736 | Rodney Kaye             | 09-Apr-21 |
| 688 | Philip Burgess          | 07-Apr-21 | 737 | Roger Aston             | 07-Apr-21 |
| 689 | Philip Clutton          | 07-Apr-21 | 738 | Roger Bisby             | 06-Apr-21 |
| 690 | Philip Cunningham       | 06-Apr-21 | 739 | Roger Chandler          | 06-Apr-21 |
| 691 | Philip Hampson          | 06-Apr-21 | 740 | Roger Phillips          | 06-Apr-21 |
| 692 | Philip Hartwell         | 05-Apr-21 | 741 | Roger Taylor            | 06-Apr-21 |
| 693 | Philip Rickman          | 06-Apr-21 | 742 | Roger Walker            | 06-Apr-21 |
| 694 | Philip Trifonoff        | 06-Apr-21 | 743 | Roger Waterhouse        | 04-Apr-21 |
| 695 | Philip Whalley          | 07-Apr-21 | 744 | Roman Mikolajewicz      | 06-Apr-21 |
| 696 | Philip Whittaker        | 06-Apr-21 | 745 | Ron Ball                | 07-Apr-21 |
| 697 | Professor Keith Hartley | 06-Apr-21 | 746 | Ron Grabner             | 06-Apr-21 |
| 698 | R B Taylor              | 07-Apr-21 | 747 | Ron Weston              | 06-Apr-21 |
| 699 | R Gardiner              | 06-Apr-21 | 748 | Ronald Gray             | 08-Apr-21 |
| 700 | Ray Ellison             | 06-Apr-21 | 749 | Rosemary Eardley        | 08-Apr-21 |
| 701 | Ray Farrell             | 06-Apr-21 | 750 | Ross Sheppard           | 07-Apr-21 |
| 702 | Ray Martindale          | 07-Apr-21 | 751 | Ross Sutton             | 06-Apr-21 |
| 703 | Raymond Baxter.         | 06-Apr-21 | 752 | Rowland Dudley          | 06-Apr-21 |
| 704 | Reg Holdcroft           | 06-Apr-21 | 753 | Roy Evans               | 07-Apr-21 |
| 705 | Reinier Vrijenhoek      | 06-Apr-21 | 754 | Roy Groom               | 07-Apr-21 |
| 706 | Reuben Woodford         | 04-Apr-21 | 755 | Roy Naylor              | 07-Apr-21 |
| 707 | Richard Bates           | 07-Apr-21 | 756 | Russell Dilks           | 04-Apr-21 |
| 708 | Richard Cheetham        | 04-Apr-21 | 757 | Russell Edwards         | 06-Apr-21 |
| 709 | Richard Creasey         | 06-Apr-21 | 758 | Ryan Stanford           | 07-Apr-21 |
| 710 | Richard Davies          | 06-Apr-21 | 759 | S Collinge              | 07-Apr-21 |
| 711 | Richard Fairbanks       | 06-Apr-21 | 760 | Sam Heath               | 07-Apr-21 |
| 712 | Richard Houghton        | 08-Apr-21 | 761 | Samcskimming1@Gmail.Com | 07-Apr-21 |
| 713 | Richard Jones           | 06-Apr-21 | 762 | Samuel Vodos            | 07-Apr-21 |
| 714 | Richard Sheard          | 07-Apr-21 | 763 | Sean Chambers           | 08-Apr-21 |
| 715 | Richard Smith           | 07-Apr-21 | 764 | Sean Whiston            | 07-Apr-21 |
| 716 | Richard Stokes          | 07-Apr-21 | 765 | Shamey                  | 04-Apr-21 |
| 717 | Richard Walton          | 07-Apr-21 | 766 | Shamey Lee              | 07-Apr-21 |
| 718 | Richard Woodhouse       | 06-Apr-21 | 767 | Shane Bilson            | 06-Apr-21 |
| 719 | Rob Crutchley           | 06-Apr-21 | 768 | Shaun Robinson          | 06-Apr-21 |
| 720 | Rob Hargreaves          | 07-Apr-21 | 769 | Simon Davies            | 06-Apr-21 |
| 721 | Robert Baker            | 08-Apr-21 | 770 | Simon Dowson            | 07-Apr-21 |
| 722 | Robert Barton           | 06-Apr-21 | 771 | Simon Harris            | 06-Apr-21 |
| 723 | Robert Blackwell        | 06-Apr-21 | 772 | Simon John Ivor Amos    | 05-Apr-21 |
| 724 | Robert Boyce            | 07-Apr-21 | 773 | Simon Taylor            | 10-Apr-21 |
| 725 | Robert Cartledge        | 08-Apr-21 | 774 | Simon Todd              | 06-Apr-21 |
| 726 | Robert Day              | 06-Apr-21 | 775 | Simon Wood              | 06-Apr-21 |
| 727 | Robert Gillies          | 07-Apr-21 | 776 | Stan Martin             | 07-Apr-21 |
| 728 | Robert Hackney          | 06-Apr-21 | 777 | Stella Somerville       | 07-Apr-21 |
| 729 | Robert Harbin           | 09-Apr-21 | 778 | Stephen Ainscow         | 07-Apr-21 |

|     |                    |           |     |                       |           |
|-----|--------------------|-----------|-----|-----------------------|-----------|
| 779 | Stephen Barnes     | 06-Apr-21 | 823 | Stuart Thompson       | 06-Apr-21 |
| 780 | Stephen Booth      | 07-Apr-21 | 824 | Stuart Vinter         | 06-Apr-21 |
| 781 | Stephen Cotton     | 06-Apr-21 | 825 | Sue Chapman           | 06-Apr-21 |
| 782 | Stephen Edge       | 06-Apr-21 | 826 | T Carruthers          | 07-Apr-21 |
| 783 | Stephen Fogg       | 06-Apr-21 | 827 | T.Hyde                | 06-Apr-21 |
| 784 | Stephen Halsall    | 08-Apr-21 | 828 | Terence Davies        | 06-Apr-21 |
| 785 | Stephen Hayes      | 06-Apr-21 | 829 | Terry Boulton         | 03-Apr-21 |
| 786 | Stephen K Lomax    | 07-Apr-21 | 830 | Tim Bacon             | 08-Apr-21 |
| 787 | Stephen K Makin    | 06-Apr-21 | 831 | Tim Mander            | 06-Apr-21 |
| 788 | Stephen Maxfield   | 07-Apr-21 | 832 | Tim Matyus            | 06-Apr-21 |
| 789 | Stephen Morris     | 06-Apr-21 | 833 | Timothy Skinner       | 09-Apr-21 |
| 790 | Stephen Newell     | 07-Apr-21 | 834 | Toby Fletcher         | 07-Apr-21 |
| 791 | Stephen Perry      | 06-Apr-21 | 835 | Tom                   | 05-Apr-21 |
| 792 | Stephen Pritchard  | 06-Apr-21 | 836 | Tom Bond              | 06-Apr-21 |
| 793 | Stephen Ratcliffe  | 07-Apr-21 | 837 | Tom Davies            | 06-Apr-21 |
| 794 | Stephen Somerville | 07-Apr-21 | 838 | Tom Kelly             | 06-Apr-21 |
| 795 | Stephen W. Bales   | 07-Apr-21 | 839 | Tom Pritchard         | 07-Apr-21 |
| 796 | Stephen Watson     | 07-Apr-21 | 840 | Tom Rigby             | 07-Apr-21 |
| 797 | Stephen White      | 07-Apr-21 | 841 | Tom Seward            | 04-Apr-21 |
| 798 | Stephen Whitfield  | 07-Apr-21 | 842 | Tony Bradbury         | 06-Apr-21 |
| 799 | Stev Stone         | 06-Apr-21 | 843 | Tony Robinson         | 06-Apr-21 |
| 800 | Steve Abbott       | 06-Apr-21 | 844 | Tony Rose             | 07-Apr-21 |
| 801 | Steve Dunn         | 06-Apr-21 | 845 | Tony Ryan             | 06-Apr-21 |
| 802 | Steve Gilbey       | 06-Apr-21 | 846 | Tony Shepherd         | 07-Apr-21 |
| 803 | Steve Jones        | 06-Apr-21 | 847 | Tony Spencer          | 06-Apr-21 |
| 804 | Steve Marsden      | 06-Apr-21 | 848 | Tony Young            | 06-Apr-21 |
| 805 | Steve Mulligan     | 06-Apr-21 | 849 | Trevor Holloway       | 06-Apr-21 |
| 806 | Steve Oliver       | 06-Apr-21 | 850 | Trevor Kneebone       | 06-Apr-21 |
| 807 | Steve Street       | 06-Apr-21 | 851 | Trevor Mcvittie       | 06-Apr-21 |
| 808 | Steven Andrews     | 06-Apr-21 | 852 | Trevor Teasdale       | 07-Apr-21 |
| 809 | Steven Ashworth    | 07-Apr-21 | 853 | Vic Randle            | 07-Apr-21 |
| 810 | Steven Brown       | 07-Apr-21 | 854 | Victoria Aleixos      | 06-Apr-21 |
| 811 | Steven Hiatt       | 07-Apr-21 | 855 | Vince Bowen           | 08-Apr-21 |
| 812 | Steven Neil Haddow | 07-Apr-21 | 856 | Vince Green           | 08-Apr-21 |
| 813 | Stewart Horn       | 07-Apr-21 | 857 | Vince Green           | 08-Apr-21 |
| 814 | Stewart Jones      | 06-Apr-21 | 858 | William Black         | 07-Apr-21 |
| 815 | Stewart Watson     | 06-Apr-21 | 859 | William Candeland     | 06-Apr-21 |
| 816 | Stuart Dillon      | 06-Apr-21 | 860 | William Clarkson      | 07-Apr-21 |
| 817 | Stuart Hall        | 06-Apr-21 | 861 | William Hannan        | 06-Apr-21 |
| 818 | Stuart Hayhurst    | 06-Apr-21 | 862 | William John Wallbank | 06-Apr-21 |
| 819 | Stuart Kelsall     | 07-Apr-21 | 863 | William Roberts       | 06-Apr-21 |
| 820 | Stuart Maddocks    | 06-Apr-21 | 864 | William Teague        | 06-Apr-21 |
| 821 | Stuart Pugh        | 06-Apr-21 | 865 | Zl Drewnicki          | 06-Apr-21 |
| 822 | Stuart Roberts     | 07-Apr-21 |     |                       |           |

## ENDNOTES

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- i. As stated in CNL15.1469\_UK – England and Wales Annual Progress Report on Actions taken under the Implementation Plan for the Calendar Year 2020 Section ; and in Action F2 1.Quality assurance of the current assessment process
- ii. 2. Review of methods for the setting of Conservation Limits 3. Improved adult and juvenile monitoring processes
- iii. 4. Consideration of statistical compliance procedures 5. Improving the Decision Structure.
- iv. 6. Improved reporting requirements to keep stakeholders engaged and informed Where we note little positive outcome.
- v. Lessons to be learned from Wales Appendix 1
- vi. Restriction of liberties requires a particularly high threshold of justification. See Appendix 2 on why that threshold is not reached in present situation, due to distorted Environment Agency stock calculations and suboptimal risk modelling including use of a Bayesian methodology with minimal information content and statistical evidence of its robustness..
- vii. [Severn anglers face ban on taking salmon home | News | The Times](#) “poachers could be given free rein on the River Severn if law-abiding fishermen are driven away by plans to ban them from taking home any of their catch”
- viii. Lessons to be learnt from Wales, Appendix 1
- ix. EA claims that anglers can go coarse fishing instead without detriment show a startling lack of appreciation of differential branches of the sport.
- x. Claims made verbally by EA management that coarse anglers will patrol the banks for the EA during the coarse close season when the main MSW spring run occurs appear wishful thinking to cover up lack adequate staffing level for enforcement.
- xi. Claims made verbally by EA management that coarse anglers will patrol the banks for the EA during the coarse close season when the main MSW spring run occurs are self-serving wishful thinking to cover up lack adequate staffing level for enforcement. Equally worrying is the idea that coarse anglers could provide eyes and ears on the upper reaches and main spawning areas where there is little or no coarse fishing.
- xii. The EA has refused to provide a methodology for estimating poaching loss, following the deficiency in NRW ‘technical’ case. See by contrast NASCO p6 in. [https://nasco.int/wp-content/uploads/2020/02/IP1913rev\\_IP\\_EU-UK-England-and-Wales.pdf](https://nasco.int/wp-content/uploads/2020/02/IP1913rev_IP_EU-UK-England-and-Wales.pdf)
- xiii. This is problematic as salmon poaching has always been recognised as a problem on the Severn system particularly on the Teme and the upper reaches. See River Severn Salmon Action Plan – consultative document 1998. .
- xiv. Voluntary bailiffing to reduce EA costs is part of a well-funded partnership working agreement with Angling Trust, the migratory fish dimension of which will be fatally undermined by this byelaw being imposed without community consent.
- xv. This would also help heal the wounds caused in Wales by NRW hiring a barrister to “aggressively” question and undermine anglers who have displayed decades-long partnership working on habitat restoration and pollution reporting, increasingly necessary to support the cutback-led “intelligence-based” EA/NRW enforcement approach.
- xvi. As is evident from the selection bias (only 1 option mentioned) and confirmation bias (assertive questions re agreement) in the online and paper consultation document
- xvii. See unanswered point 5 in SFG letter of /3/21 to Kay Champion, with incomplete reply of 21/3/21
- xviii. See appendix 1
- xix. SFG trusts EA management will not wish to undermine Heidi Stone’s enthusiastic wellbeing promotion:
- xx. *“we’re seeing a true revival for the sport as people recognise all it has to offer. As lockdown restrictions have eased there has been a boom in licence sales as now, more than ever, people have a desire to get outdoors and escape their daily stresses. Fishing is a sport that can be done by a person of any age or ability and it provides a great opportunity for families to try something new during the school holidays.”*
- xxi. Indirect discrimination occurs when the introduction of a policy, criteria or practice results in less favourable treatment to a group with protected characteristics. In this case only allowing spinning and fly fishing, which are the more active forms of angling, would result in less favourable treatment of those older or disabled anglers who are not capable of that level of activity and can only fish with bait. Both age and disability are protected characteristics under the Equality Act. Furthermore, failure to offer an exemption to any bait fishing ban to anglers with a disability would almost certainly amount to a failure to make reasonable adjustments. The only defence available to the Agency to the claim of indirect discrimination would be that the bait ban is a ‘proportionate means of achieving a legitimate aim’. It is difficult to see how the level of salmon mortality involved (especially given C&R the mitigating measures available such as use of circle hooks) would balance the less favourable treatment and impact on individual wellbeing of removing salmon angling as a pursuit for a significant number of people. Whether or not there is any defence against the point of failure to make reasonable adjustment is a moot point. If an Equality Impact Assessment (EIA) had been carried out these issues would have been highlighted. For guidance on the use of EIAs to eliminate discrimination by public bodies see The public sector equality duty and equality impact assessments, House of Commons Library, July 2020 <https://commonslibrary.parliament.uk/research-briefings/sn06591/>
- xxii. <sup>xv</sup> **begun with highly contested NRW board meeting 18/1/18 chaired by Diane McCrae, at which a one-sided officers’ paper to the board led to motion being determined by chair without a vote. Permission to address the board on the subject by angling representatives was refused. One board member even apologised for the decision!** – source John Eardley
- xxiii. See also Angling Trust: “We would urge the EA to learn from this action in Wales and work with local angling groups to achieve a beneficial outcome”
- xxiv. <sup>xvii</sup>an impression compounded by leaving an agenda item about the impact of the Welsh byelaw, probably the biggest change for decades, off the Welsh Fisheries Forum agenda afterwards, to avoid documentation of the obvious wide negative impact to sidestep accountability?
- xxv. <sup>xviii</sup>he sudden appearance of a non-consulted NRW byelaw just before the start of the EA Severn byelaw consultation period reinforces the impression of precipitate action without including substantive stakeholder engagement.
- <sup>xviii</sup>See Appendix 2 Sections VI and VII
- xxvi. <sup>xix</sup>See Appendix 2 Section III
- xxvii. <sup>xx</sup>The sequence of this influential recalculation has never been made clear, but was referred to in meeting 1/4/21 without full explanation
- xxviii. What is the evidence base to justify this transferral?

- xxix. See Appendix 2 Section VI
- xxx. <sup>xxii</sup>This starting point was explicitly confirmed by EA staff involved in the review, in their meeting with the SFG on 1/4/21.
- xxxi. See appendix 1 - exhaustive analysis of the unidirectional nature of revisions – an indirect indicator of underlying predetermination?
- xxxii. <sup>xxiv</sup> Over a 10 year period 3,500 salmon were aged weighed and sexed in a project involving Fisheries officers and the Lydney Park putcher fishery in the Severn estuary..
- xxxiii. Given that the EA recognise that the spring byelaws have depressed the Severn spring rod catch by 58%, and that does not reflect a reduced run of spring fish ( EA Spring Salmon Byelaw review Appendix 1: A SUMMARY OF THE STATUS OF SPRING SALMON STOCKS IN ENGLAND AND WALES AT APRIL 2007) and given that the majority of larger fish run early and are only available to the rod fishery during this period of reduced effort it is difficult to understand the rationale for taking angler estimates of weights over a huge systematic scientific study of this scale. The age/weight tables were published in the River Severn Salmon Action Plan Consultative document 1998.
- xxxv. See Appendix 2 section IV
- xxxvi. See Appendix 2 Section 1 for an analysis of Exploitation rates.
- xxxviii. We would be interested to see any EA evidence that shows this to be a temporary reduction, justifying optimism the impact of proposed byelaw will not be permanently damaging to angler participation. We trust Defra will request such data from the EA.
- xxxix. Evidence base to justify this transferral?
- xl. Separate letter from NWFCC refers.
- xli. Recorded by retired lawyer as direct reportage heard from EA key byelaw character on Severn tributary. Further detail available.
- xlii. Email 24/2/21 to Tamara Finkelstein and Victoria Prentis. Clearly a Defra evaluation rather than EA internal assessment is needed.
- xliii. See Appendix 2
- xliv. Angling Trust: “The experience in Wales with regard to salmon management in Welsh rivers followed an approach based on “top down” legal measures, requiring monitoring and enforcement from a heavily underfunded regulator. The lack of engagement with anglers has been problematic and is claimed to have led to a series of unintended consequences including an increase in the poaching of salmon. We would urge the EA to learn from this action in Wales and work with local angling groups to achieve a beneficial outcome, a point we have advocated in previous consultations; Angling Trust Calls for Voluntary Approach to Regulating Salmon and Sea Trout Angling (nemisys3.uk.com)”
- xlvi. [River Severn Net Limitation Order and Byelaws 2021 - Environment Agency - Citizen Space \(environment-agency.gov.uk\)](https://www.environment-agency.gov.uk/news-stories/river-severn-net-limitation-order-and-byelaws-2021)
- xlvi. [New National Angling Strategy aims to get more people fishing - GOV.UK \(www.gov.uk\)](https://www.gov.uk/news/stories/new-national-angling-strategy-aims-to-get-more-people-fishing)
- xlvii. Very recently restarted on the Teme for unknown reason
- xlviii. [Is Environment Agency taking the easy way out by targetting recreational salmon anglers on the R Severn while neglecting to remedy the major factors which impact severely on salmon stocks - a Freedom of Information request to Environment Agency - WhatDoTheyKnow](https://www.environment-agency.gov.uk/news-stories/is-environment-agency-taking-the-easy-way-out-by-targetting-recreational-salmon-anglers-on-the-r-severn-while-neglecting-to-remedy-the-major-factors-which-impact-severely-on-salmon-stocks-a-freedom-of-information-request-to-environment-agency-what-do-they-know)
- xlix. River Severn Salmon Action Plan – consultation document 1998 p 9
- I. Op cit p 4 ‘As water temperatures rise worms increasingly become the main bait’
- li. Evidence provided by Charles Crundwell for the EA in the Mott judicial review. Spreadsheet entitled Severn-egg-corrected-12
- lii. <http://severnsalmon.blogspot.com/2012/02/how-industry-shaped-severn-salmon-runs.html>
- liii. <http://severnsalmon.blogspot.com/2012/02/severn-salmon-runs-in-19th-century.html>
- liv. Dee stock assessment reports 2010 to 2020.