WATER RESOURCES ACT 1991

THE WALES ROD AND LINE (SALMON AND SEA TROUT) BYELAWS 2017

THE WALES NET FISHING (SALMON AND SEA TROUT) BYELAWS 2017

DOCUMENT NRW/4

PROOF OF EVIDENCE

OF

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on behalf of

CENTRE FOR ENVIRONMENT FISHERIES AND AQUACULTURE SCIENCE (CEFAS)

and

NATURAL RESOURCES WALES

NOVEMBER 2018

1 Personal background

1.1 My name is Ian Russell. I have a B.Sc. in biological sciences (Plymouth Polytechnic) and an M.Sc. in applied hydrobiology (London University). I have been employed as a fishery scientist for over 40 years, initially with the Ministry of Agriculture, Fisheries and Food and more recently at Cefas, which is an executive agency of the Department for Environment, Food and Rural Affairs (**Defra**). In the early part of my career I was primarily involved in leading research investigations on a range of issues related to the management of migratory fish (e.g. salmon, sea trout, eel) and freshwater fish stocks.

1.2 In the latter part of my career, extending back over 20 years, I have primarily been involved in providing expert advice to government and other bodies. This has included advice on issues such as the management of migratory salmonids, eels and freshwater fish species and the fisheries dependent upon them; predation by fish-eating birds and the impacts, management and control of non-native fish species. I am currently the senior Cefas advisor to Defra on inland fishery issues. I am thus working at the interface between policy makers, scientists and stakeholders, and am required to synthesise complex scientific information across disciplines into clear evidence that can be understood by non-specialists.

1.3 I have extensive national and international experience in the investigation and management of inland fisheries. I have been a member of the ICES[1] Working Group on North Atlantic Salmon since 2001, chairing the Group from 2013 to 2015. I have also participated in, and chaired, many other ICES Expert Groups. Since 2012 I have also participated in the annual meetings of NASCO[2]. During my time as chair of the

[1] The International Council for the Exploration of the Sea (ICES) provides biological information and advice on a wide range of fish stocks in order to help fisheries managers maintain viable fisheries within sustainable ecosystems. Information is compiled, and assessments are conducted, by Working Groups, which are comprised of national experts on the specific fish stocks. The Working Group reports are passed to the Advisory Committee (**ACOM**) for peer review and to provide the formal advice to managers. The advice may take many forms, but in general it involves: assessments of stock dynamics; evaluation of the status of the stocks; projections of various stock parameters into the future; and management options. For Atlantic salmon, ICES provides advice relating to a list of questions posed by NASCO each year.

[2] The North Atlantic Salmon Conservation Organisation (**NASCO**) was established in 1984 following calls for international co-operation on the management of salmon stocks. It is an international body with the objective of contributing through consultation and co-operation to the conservation and rational management of salmon stocks taking account of the best available scientific evidence. The Contracting Parties to the NASCO Convention are currently: Canada; Denmark (in respect of the Faroe Islands and Greenland); European Union; Norway; the Russian Federation; and the USA. One of the main functions of NASCO is to propose regulatory measures for

ICES Working Group, I attended this meeting as a representative of ICES to present the scientific advice to the NASCO Council and each of its three Commissions. At other meetings I have provided expert scientific support to the EU delegation and have performed a range of roles in ad hoc NASCO groups and various NASCO intersessional meetings.

1.4 Aside from these roles, I have had extensive experience of interpreting and reporting fisheries-related data. I have authored over 30 papers in refereed journals, as well as numerous Cefas contract reports and reports to ICES and other bodies. For the past 20 years, I have also had responsibility for co-ordinating the preparation and publication of the annual assessment report on the status of salmon stocks and fisheries in England and Wales. This report is produced by Cefas, but compiled in collaboration with scientists from the Environment Agency (**EA**) and Natural Resources Wales (**NRW**). I am thus very familiar with the annual salmon stock assessment process and how this information is used to inform management decisions.

1.5 My involvement in the NRW Byelaws has been as a technical assessor of the NRW Technical Case[3] that was prepared in support of the proposed measures.

1.6 My involvement in the NRW Byelaws stems from a request made by Welsh Government (**WG**) on 12 June 2017, to undertake a formal review of the NRW Technical Case being prepared in support of the proposed new measures. I subsequently received a number of draft documents to review between 23 June and 5 July, and sent my review to WG, copied to NRW, on 6 July 2017[4].

fisheries of one Party to the NASCO Convention, which exploit salmon originating in the rivers of other Parties. To support this process, NASCO obtains scientific advice on the status of salmon stocks and fisheries and their management from ICES. In 1998, NASCO and its Parties agreed to 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. To this end, NASCO has adopted a number of Resolutions and Agreements which address the Organisation's principal areas of concern for the management of salmon stocks.

[3] APP/4.

[4] My response to WG is appended to my proof of evidence as NRW/4(B).

2 Scope of evidence

2.1 In my evidence, I address the basis on which NRW have concluded that the proposed Byelaws are necessary and proportionate. In particular, my evidence focuses on the the statistical analysis underpinning the identification of the problem that the Byelaws seek to address, and how the nature and extent of that problem is assessed.

2.2 These issues are further discussed in the proofs of Mr Peter Gough[5], Mr Ian Davidson[6] and Dr Jon Barry[7].

2.3 Capitalised terms used in this proof of evidence that are not defined in the proof are defined in the Glossary appended to the proof of Mr Gough[8].

3 Overview

3.1 In brief, as reflected in my report, my evidence is that the NRW Technical Case provided a comprehensive evidence base in support of the proposed measures. I also noted (and remain of the view) that the measures had been designed to ensure proportionality in balancing the interests of both net and rod fishery sectors, while addressing the underlying need to better protect Welsh salmon and sea trout stocks. I therefore endorsed the proposals and continue to do so.

[5] NRW/1.
[6] NRW/2.
[7] NRW/3.
[8] NRW/1(D).

4 Current international guidance for sustainable salmon stock management

4.1 NASCO and its Parties have agreed 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, their objective for the management of salmon fisheries is to promote and protect the diversity and abundance of salmon stocks, and in support of this, they have developed a number of guidelines and agreements.

4.2 To protect the abundance and diversity of salmon stocks, the NASCO guidelines for the management of salmon fisheries set out a number of elements that should be applied in all jurisdictions[9]. In summary, these guidelines establish the need for:

4.2.1 **Decision-making process** - Consistent with the application of the Precautionary Approach, there should be clear descriptions available to all stakeholders of the process by which management decisions will be taken, together with an indication of the types of decisions that might be expected under different stock conditions; this could take the form of a flow diagram or decision structure.

4.2.2 **Description of the fisheries and the stocks exploited** - A range of information should be collected on a routine basis through reporting and monitoring programmes, time series should be maintained, and reports should be published. This information should be collected for recreational, commercial, subsistence and scientific fisheries and include: records of fishing activity (e.g. licence numbers, gear type, effort, location and timing); catch statistics (e.g. number, size, age and river of origin of fish caught (both retained and released)); and estimates of the level of unreported catches and other mortalities associated with the fishery.

4.2.3 **Powers to control exploitation** - Managers should have the capability to close fisheries and regulate fishing effort and/or harvests through controls on the numbers of fish caught or the amount and type of fishing gear used so as to maintain the abundance and diversity of all river stocks. Managers should be able to respond with appropriate speed to changes in individual stock status and, ideally, be able to implement pre-agreed measures to

[9] POL/14.

adjust harvest levels or fishing effort in-season to take account of actual run sizes or environmental conditions. Managers should be able to enforce the measures that are in place to regulate fishing activity and to minimise the level of unreported catches.

4.2.4 **Reference points (conservation limits or other measures of abundance and diversity)** - Conservation Limits should be established to define adequate levels of abundance for all river stocks of salmon. Management Targets should also be established at a level above the Conservation Limit to assist fishery managers in ensuring that there is a high probability of stocks exceeding their Conservation Limits; this probability level should be defined by managers. Information should also be collected on the diversity of stocks (e.g. run-timing, age, size etc) to provide a basis for management.

4.2.5 **Achievement of the reference points or other measures of abundance and diversity** - It should be normal practice to evaluate the extent to which stock levels have met the Management Objectives with regard to stock abundance and diversity each year. Ideally, stock levels should also be forecast for one or more years ahead to provide some predictions of future expected achievement of management objectives under current (or modified) management measures. Assessments of stock abundance and diversity based on catches involve considerable uncertainty, so other sources of information should be used to confirm the status of stocks (e.g. juvenile surveys, counter and trap data). The management measures introduced should take into account the uncertainties in the data used. Assessing the status of the stock and determining the need for management action should take account of the duration and degree of any failure to achieve the reference point, and the trend in stock abundance.

4.2.6 **Other factors influencing the stock(s)** - While the short-term response to a stock failing to exceed its reference point may be to reduce or eliminate exploitation in salmon fisheries, other factors may be driving abundance, and actions should also be taken to identify and address these problems.

4.2.7 **Management actions to control harvest** - In managing salmon fisheries, priority should be given to conserving the productive capacity of all individual salmon river stocks. Managers should demonstrate that they are being more cautious when information is uncertain, unreliable or inadequate, and the

absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures. Fishing on stocks that are below Conservation Limits should not be permitted. If a decision is made to allow fishing on a stock that is below its Conservation Limit, on the basis of overriding socio-economic factors, fishing should clearly be limited to a level that will still permit stock recovery within a stated timeframe.

4.3 Advice from ICES to NASCO affirms that the management of all fisheries should be based upon assessments of the status of individual stocks and that fisheries on mixed-stocks, particularly in coastal waters or on the high seas, pose particular difficulties for management as they target all stocks present, whether or not they are meeting their individual conservation limits. Conservation is best achieved if fisheries target stocks that have been shown to be meeting Conservation Limits. Fisheries in estuaries and especially rivers are more likely to meet this requirement since these will largely only be exploiting fish from that specific stock and management actions can be targeted more effectively. ICES has also cautioned that while the abundance of stocks remains low, particular care should be taken to ensure that fisheries in homewaters are managed to protect stocks that are below their Conservation Limits.

4.4 While the NASCO guidelines for fisheries management fall short of legal obligations, the UK government has been committed to managing their fisheries in line with international best practice and a Ministerial Direction[10] was issued in 1998 to the Environment Agency requiring them to establish Conservation Limits (as defined by NASCO) to all their principal river stocks, to assess compliance with the Conservation Limits annually and take management action as appropriate. This Direction applies to both England and Wales.

4.5 The proposed NRW Byelaws are entirely consistent with the NASCO guidelines and with a precautionary approach. The measures are responding to the widespread poor status of stocks in Wales, have been developed in accordance with the current national decision structure and are aimed at conserving the resource, which is the overriding management requirement. The NASCO guidelines also make clear that managers should have the capability to close fisheries and regulate fishing effort

[10] LEG/13, LEG/14.

and/or harvests, as required, so as to maintain the abundance and diversity of river stocks.

5 On what basis are the Byelaws Proposed? Comments on the Technical Case

5.1 Low salmon stock abundance has been evidenced across much of the North Atlantic in recent years, particularly for countries towards the more southerly extent of the species distribution (i.e. including the UK). As a result, management actions to restrict exploitation have been implemented in many jurisdictions to facilitate stock recovery. For example, extensive new controls on exploitation have been introduced in Scotland and the Republic of Ireland in recent years in order to protect declining stocks. These measures have included various fishery restrictions, including the implementation of mandatory catch-and-release, and, in Ireland, the closure of many rivers to all forms of fishing. NRW's proposed measures fit within this context of action being taken in many jurisdictions. However, NRW have sought to recognise socio-economic considerations and are seeking to retain fishing opportunities where possible, for example through the proposed catch-and-release provisions.

5.2 The decline in the status of salmon stocks in Wales (and England) is well documented and the assessment of salmon stock status[11] confirms that the majority of stocks remain in a depleted state. There was a marked downturn in stock status in 2014 and little appears to have changed since this time, with the vast majority of rivers in Wales currently categorised as being 'at risk' or 'probably at risk' - i.e. having a less than 50% probability of meeting conservation limits on a regular basis (in 4 years out of 5 - i.e. >80% of the time - the defined management objective). In addition, juvenile surveys in freshwater indicate a downward trend in salmon fry abundance over the last 15 years in the majority of catchments for which suitable data are available. The subsequent assessment[12] continued to categorise the majority of salmon stocks in Wales as being 'at risk' or 'probably at risk'.

5.3 Further, particular concerns have been raised about the very poor salmon fry levels observed in rivers across Wales (and England) in 2016. This appears to have been caused by a combination of abnormally high winter temperatures and, in some cases, elevated flows, alongside relatively low numbers of spawning fish. The unusual winter conditions experienced in 2015 are consistent with climate change predictions and highlight the increasing uncertainty that stocks are likely to face in the future. The low

[11] APP/10.
[12] ACC/31, ACC/32.

fry abundance in 2016 is likely to result in reduced smolt output and lower adult returns in coming years.

5.4 The status of sea trout in Wales appears to be a little better than salmon, but also gives cause for concern. The primary method for assessing the status of sea trout stocks in recent years has relied on examining trends in catch per unit effort[13]. As such, this has substantial drawbacks compared to the assessment approach used for salmon and, while the same category descriptions are used, it should be recognised that these are not directly comparable. Based on the latest application of this approach, around one third of the principal sea trout rivers in Wales have been assessed as either 'at risk' or 'probably at risk'.

5.5 NRW have, however, developed and applied a new approach for assessing sea trout stocks that is more biologically meaningful and provides reference points for assessing stock status that mirror the approach used for salmon[14]. The application of this new approach is to be welcomed, although as with other approaches it relies on certain underlying assumptions which will ideally need to be verified further in the future. Using this new approach, closer to two thirds of Welsh sea trout stocks currently fall into the 'at risk' and 'probably at risk' categories.

5.6 Juvenile surveys for trout are more positive than those for salmon, with most catchments having relatively stable abundances or indicating positive trends over the last 15 years. However, trout fry densities in 2016 were also markedly below the recent 5-year averages in most catchments, indicating that they were also impacted by conditions in the winter of 2015.

5.7 The Technical Case thus constitutes a compelling argument for further urgent conservation action to help arrest the decline in the status of salmon stocks, and to a slightly lesser extent sea trout, and to help restore stocks to healthier and more sustainable levels. The report recognises that both species are facing a wide range of environmental factors and stressors which are constraining productivity and stock status (and details some of the ongoing actions being made to address these). For salmon, the ongoing issues associated with poor survival at sea are a key concern, and highlight the continued importance of ensuring that conditions in freshwater are optimised.

[13] This approach is discussed further in paragraphs 5.6 to 5.8 of NRW/2.
[14] This new approach is also described further in paragraphs 5.9 to 5.17 of NRW/2.

5.8 NRW note that the current levels of exploitation are not the primary cause of the current low abundance and that the proposed measures will thus result in relatively modest increases in spawner numbers, although accumulated benefits would be expected over time. Nonetheless, it is entirely justifiable to aim to maximise spawner numbers in the short term and, while it is clearly important to continue to address the many other factors affecting stocks (e.g. water quality, habitat), it needs to be recognised that such improvements are only likely to be achieved over the longer term. As such, it clearly makes sense to implement appropriate fishery control measures in the short term to increase the numbers of fish surviving to spawn and to facilitate recovery.

5.9 Following my review of the NRW Technical Case, I concluded that it provides a comprehensive evidence base in support of these proposed measures, and that these appear proportionate and reasonable. I remain of this view. The measures set out in the Technical Case have been designed to ensure proportionality in balancing the interests of both net and rod fishery sectors while addressing the underlying need to better protect Welsh salmon and sea trout stocks. I am therefore happy to endorse them. I further consider that a solution to the urgent and severe problem of salmon and trout stock depletion can only be provided by means of a raft of measures to be deployed simultaneously and in combination and that these measures must include the proposed Byelaws.

6 Summary and conclusions

6.1 I am satisfied that the NRW Technical Case provides a comprehensive review of the current status of salmon and sea trout stocks in Wales and represents a robust evidence base in support of the proposed measures. I believe the proposed Byelaws have been designed to ensure proportionality in balancing the interests of both net and rod fishery sectors while addressing the underlying need to better protect Welsh salmon and sea trout stocks.

7 Statement of truth

7.1 I hereby declare that:

I. This proof of evidence includes all the facts which I regard as being relevant to the opinions that I have expressed and that the inquiry's attention has been drawn to any matter which would affect the validity of that opinion;

II. I believe the facts that I have stated in this proof of evidence are true and that the opinions I have expressed are correct; and

III. I understand my duty to the inquiry to help it with matters within my expertise and I have complied with that duty.

Ian Russell

Cefas

on behalf of Natural Resources Wales