IP(19)13rev2

NASCO Implementation Plan for the period 2019-2024

UK – England and Wales
(Revised version received 20 April 2020)

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Implementation Plan for the period 2019 – 2024

The main purpose of this Implementation Plan is to demonstrate what actions are being taken by the Parties / jurisdictions to implement NASCO's Resolutions, Agreements and Guidelines.

In completing this Implementation Plan please refer to the ***Guidelines for the Preparation and Evaluation of NASCO Implementation Plans and for Reporting on Progress****, CNL(18)49.*

Questions in the Implementation Plan are drawn from the following documents:

- *NASCO Guidelines for Management of Salmon Fisheries, CNL(09)43 (referred to as the 'Fisheries Guidelines');*
- *Report of the Working Group on Stock Classification, CNL(16)11;*
- *Minimum Standard for Catch Statistics, CNL(93)51 (referred to as the 'Minimum Standard');*
- *Revised matrix for the application of the six tenets for effective management of an Atlantic salmon fishery, WGCST(16)16*[1]*;*
- *NASCO Plan of Action for the Application of the Precautionary Approach to the Protection and Restoration of Atlantic Salmon Habitat, CNL(01)51;*
- *NASCO Guidelines for Protection, Restoration and Enhancement of Atlantic Salmon Habitat, CNL(10)51 (referred to as the 'Habitat Guidelines');*
- *Williamsburg Resolution, CNL(06)48;*
- *Guidance on Best Management Practices to address impacts of sea lice and escaped farmed salmon on wild salmon stocks (SLG(09)5) (referred to as the 'BMP Guidance');*
- *Guidelines for Incorporating Social and Economic Factors in Decisions under the Precautionary Approach (CNL(04)57); and*
- *Road Map' to enhance information exchange and co-operation on monitoring, research and measures to prevent the spread of G. salaris and eradicate it if introduced', NEA(18)08.*

Party:	**UK**
Jurisdiction / Region:	**England and Wales**

1. Introduction

1.1 What are the objectives for the management of wild salmon? *(Max 200 words)*

Defra and Welsh Government have policy responsibility for salmon in England and Wales (E&W), respectively; they work closely with the Environment Agency (EA) and Natural Resources Wales (NRW) who are responsible for day-to-day management and regulation.

Environment Agency and Natural Resources Wales objectives are to:

- Promote the conservation and maintain the diversity of migratory and freshwater fish, and to conserve their aquatic environment;
- Enhance the contribution migratory and freshwater fisheries make to the economy, particularly in remote rural areas and in areas with low levels of income;
- Enhance the social value of fishing as a widely available and healthy form of recreation; and
- For Wales, contribute to the Welsh Government's aims and objectives for freshwater fisheries management.

The Environment Agency strategy for sea trout and salmon (2008-2021) aims to deliver:

- Self-sustaining salmon stocks in more rivers;
- Economic and social benefits optimised for salmon fisheries; and
- Widespread and positive partnerships producing benefits.

Wales are to publish a new salmon action plan by January 2020.

For wild salmon, these objectives will be achieved by:

- Implementing the EU Water Framework (WFD), Marine Strategy Framework (MSFD) and Habitats Directives (HD) (equivalent provisions are expected to apply after EU exit);
- Managing/regulating rod/net and fixed engine fisheries to ensure sustainable exploitation.

1.2 What reference points (e.g. conservation limits, management targets or other measures of abundance) are used to assess the status of stocks? *(Max 200 words) (Reference: Sections 2.4 and 2.5 of the Fisheries Guidelines)*

Conservation limits (CLs) and Management Targets (MTs) for the principal salmon rivers in England (42) and Wales (22) (Annex 1) are used to give annual advice on stock status and to assess the need for management and conservation measures.

The CLs and MTs have not been split into age components because of difficulty establishing appropriate baselines. Age composition is considered when evaluating conservation and management actions (Section 1.4).

Additional assessments are conducted on 18 principal salmon rivers where salmon is a 'qualifying species' in Special Areas of Conservation (SACs) under the EU Habitats Directive (92/43/EEC).

The status of juvenile salmonid populations contributes to the assessment of Good Ecological Status under the EU WFD. Equivalent provisions are expected to apply after EU exit.

Several other rivers in England (see Annex 2) and Wales are regarded as 'recovering rivers' for management purposes because they are either (i) hosting low numbers of returning salmon or (ii) are at an early stage of recovery from historic degradation. Fishery and habitat management in group (i) rivers is based principally on the sea trout populations, although adjustments are made to protect salmon populations. Formal targets for group (ii) rivers will be set when stock recovery reaches reliable levels.

1.3 What is the current status of stocks under the new classification system outlined in CNL(16)11?

Stock Classification Score	Salmon Classification Category	No. rivers
0	Not at Risk	0
1	Low Risk	4
2	Moderate Risk	16

3	High Risk	44
N/A	Artificially Sustained	0
N/A	Lost	0
N/A	Unknown	0

Additional comments:

This assessment relates to the 64 rivers designated as principal salmon rivers in England and Wales (E&W) but does not include all the English and Welsh rivers in the NASCO Rivers Database. It should be noted that the criteria used for classifying stocks according to this NASCO system (CNL(16)11) differ from the national categories used in E&W and these should not be compared directly. The NASCO Classification combines a CL attainment score with an impact assessment score to derive the stock classification score / category.

1.4 How is stock diversity (e.g. genetics, age composition, run-timing, etc.) taken into account in the management of salmon stocks? *(Max 200 words)*

Stock diversity is considered in terms of: spawner distribution within the catchment (i.e. potential population structuring), changes in run-timing, and age composition of spawners, when determining what actions should be taken to manage fisheries, conserve stocks and protect/restore habitats.

Management measures are adjusted to prevent or rectify selective pressures on any one stock component. For example, national measures to protect early-run spring (mostly multi-sea-winter) salmon have been in place since 1999. These preclude netsmen from killing, and in most cases fishing for, salmon before 1 June and have imposed mandatory catch-and-release (C&R) of all salmon before 16 June in rod fisheries, together with associated method restrictions. These measures remain in force across E&W.

Stock status is monitored using catch data and juvenile surveys, together with data from adult and smolt counters and traps from a national network of monitored index rivers. All these data are used to help inform management decisions.

Genetic stock identification is used to identify population structuring within and between rivers and has been used to assess the stock composition of catches in the remaining mixed stock fisheries (see Section 2.4).

1.5 To provide a baseline for future comparison, what is the current and potential quantity of salmon habitat? *(Max 200 words)*
(Reference: Section 3.1 of the Habitat Guidelines)

The 42 principal salmon rivers in England and the 22 in Wales have a total wetted area accessible to salmon of 7,340 and 4,619 hectares, respectively. The salmon producing capacity of accessible river reaches within these catchments is accounted for in deriving CLs. These wetted areas exclude salmon habitat in 'recovering' rivers and so represent minimum national estimates. The potential salmon habitat, i.e. including that above physical and chemical barriers to upstream migration, will be determined by 2024.

1.6 What is the current extent of freshwater and marine salmonid aquaculture?

Number of marine farms	0
Marine production (tonnes)	0
Number of freshwater facilities	134 of which 25 rear Atlantic salmon.
Freshwater production (tonnes)	Statistics relate to 2016. Commercial salmonid production: 5,320 t, comprising: 5,064 t of rainbow trout, 230 t of brown trout, 23 t of other salmonids and 3 t of Atlantic salmon. Fish for human consumption comprise 3,112 t of the total (mostly rainbow trout) with 1,957 t for fishing (put-and-take) and 250 t for on-growing. Salmon stock enhancement: 400 k for stocking - mainly as

	0+ parr – reported in Salmonid and Freshwater Fisheries Statistics for England and Wales annually.

Append one or more maps showing the location of aquaculture facilities and aquaculture free zones in rivers and the sea.

A map indicating the current (2018) distribution of salmonid aquaculture facilities in England and Wales is provided at Annex 4.

1.7 Please describe the process used to consult NGOs and other stakeholders and industries in the development of this Implementation Plan. *(Max 200 words)*

In England, the draft Implementation Plan was presented to stakeholder representatives at meetings of the England Fisheries Group (EFG) in November 2018 and August 2019 (after redrafting to address comments from the NASCO IP Review Group), with invitations for comments. A follow-up email was sent to all members of the EFG, including those that had not attended the meetings. A similar process applied in Wales; the new Implementation Plan process was discussed with stakeholders at a meeting of the Wales Fisheries Forum (WFF) in late October 2018 and the draft IP was later circulated for comment through targeted emails. In both cases, NGOs present at the meetings were asked to consult more widely, for example with member organisations, and to collate the information received.

Comments provided by fishery stakeholder organisations in England and Wales were then taken into account in developing the drafts. Wherever possible, the views of stakeholders were incorporated into the revised text. However, where comments were considered to fall beyond the remit of the IP (e.g. regarding Government funding priorities) these were not incorporated.

2. Management of Salmon Fisheries:

In this section please review the management approach to each of the fisheries in your jurisdiction (i.e. commercial, recreational and other fisheries) in line with the relevant NASCO Resolutions, Agreements and Guidelines. For Parties / jurisdictions that prosecute mixed-stock fisheries, there should at least one action related to their management.

2.1 What are the objectives for the management of the fisheries for wild salmon? *(Max. 200 words)*

The 'Management Objective' (MO) for each salmon river stock is that the stock should be meeting or exceeding its CL in at least four years out of five.

Stocks are assessed using a compliance scheme designed to give an early warning that a stock may fail its MO. Bayesian regression analyses are applied to egg deposition estimates from the last ten years, on the assumption that there might be an underlying linear trend over the period. The method fits a 20-percentile regression and calculates the probability that this regression line is above the CL, and thus that the CL will be exceeded four years out of five. Compliance is reported in the current year and projected (by extrapolation of the regression line) five years into the future.

We are reviewing the assessment methodology, as well as the associated compliance scheme and Decision Structure to consider the need for possible improvements (see Section 2.8). The aim is to undertake this within the next three years with the likelihood that improvements will be introduced in stages as developments allow. The IP will be updated to reflect changes.

See also: Fisheries Management Focus Area Report for EU-UK (England and Wales) (IP(08)05(rev) [http://www.nasco.int/pdf/far_fisheries/FisheriesFAR_EnglandWales.pdf]

2.2 What is the decision-making process for the management of salmon fisheries, including predetermined decisions taken under different stock conditions (e.g. the stock levels at which regulations are triggered)? *(Max. 200 words)*
(This can be answered by providing a flow diagram if this is available.)
(Reference: Sections 2.1 and 2.7 of the Fisheries Guidelines)

The decision-making process for managing the salmon fisheries is captured in the attached Decision Structure (Annex 3). This will be reviewed along with the assessment and compliance procedures over the next three years and will involve evaluation of an annual system of assessment and management

response, including the regulatory mechanisms required to achieve this. The IP will be updated to reflect changes.

2.3 (a) Are any fisheries permitted to operate on salmon stocks that are below their reference point (e.g. Conservation Limits)? If so, (b) how many such fisheries are there and (c) what approach is taken to managing them that still promotes stock rebuilding? *(Max 200 words)*
(Reference: Section 2.7 of the Fisheries Guidelines)

(a) Yes.

(b) In 2018, salmon egg deposition estimates were above CLs on 14 of the 64 principal salmon rivers in E&W. Formal compliance assessment (Section 2.1) identified 7 river stocks in England and 8 in Wales in the worst 'risk' category (i.e. projected to have a very low probability (<5%) of meeting their MO in 5 years' time).

(c) Fisheries in E&W have principally been regulated by effort controls, designed to ensure some stability and continuity in the fisheries and engagement from stakeholder groups (e.g. riparian owners) while allowing the MO to be achieved over an appropriate period. Regulations are applied on a multi-annual basis, generally five or ten years, although the status of stocks is reviewed annually and, if there is an unexpected major change in stock status, controls may be introduced or modified that will take immediate effect (e.g. emergency byelaw provisions). The management approach that allows stock rebuilding is described in the Decision Structure (Annex 3).

Catch-and-release (C&R) of salmon plays an increasingly important role in the management of fisheries, particularly in rod fisheries. This has largely been achieved by voluntary means, although mandatory provisions have also applied. Measures to further increase levels of C&R in rod and net fisheries came into force in England in 2019, and new measures will apply in Wales from 2020 (Section 2.9, Action F3).

2.4 (a) Are there any mixed-stock salmon fisheries? If so (b) how are these defined, (c) what was the mean catch in these fisheries in the last five years and (d) how are they managed to ensure that all the contributing stocks are meeting their conservation objectives? *(Max. 300 words in total)*
(Reference: Section 2.8 of the Fisheries Guidelines)

(a) Yes.

(b) Within E&W, mixed stock fisheries (MSFs) are defined as 'fisheries that predominantly exploit mixed river stocks of salmon'. Fisheries, including MSFs, operating within estuary limits are assumed to exploit predominantly fish originating from waters upstream of the fishery. The Severn Estuary has a separate management plan from the rivers entering it, and the Severn Estuary fishery has therefore been managed as a MSF and is reported on here.

(c) Mean annual catches of salmon (numbers) in 2014-18 were:

- In the two remaining coastal MSFs - Anglian Coast drift nets (2); NE Coast drift and T&J nets (12,880);
- In the Severn Estuary net & fixed engine fishery (126) – N.B. fishery regulated by catch limits.

(d) Government policy since 1996 has been to phase out net fisheries that exploit predominantly mixed stocks where the capacity to manage and conserve individual river stocks is compromised. Most coastal MSFs have been phased out and the two fisheries remaining are subject to new measures from 2019:

NE Coast Fishery: The drift net fishery closed in 2019 and only a limited beach (T & J) net fishery will continue, subject to a phase out as fishers leave the fishery and also to mandatory C&R of salmon. The fishing season will also be reduced in some Districts; limiting the fishery to periods when sea trout predominate in the catches and so minimising the need for C&R of salmon. The efficacy of the new C&R measures will be monitored and any salmon mortality taken into account in assessments.

Anglian Coastal Fishery: Catches of salmon are very small, and the fishery is being phased out as

fishers retire; in 2018 there were 17 licensees. Mandatory C&R of any salmon caught has been required from 2019.

Estuarine MSFs: MSFs operating within estuary limits are assumed to exploit predominantly fish that originated from waters upstream of the fishery and are carefully managed to protect the weakest of the exploited stocks. In the case of the Severn Estuary fishery, stocks immediately adjacent to, but downstream of the fishery are also exploited and considered in assessments. Management decisions are guided by the Decision Structure. Stock conservation is the primary objective but, where applicable, account is taken of (i) the heritage status of the fishery (some such fisheries employ unique methods that have a heritage value and where a continued small catch is considered justified), (ii) socio-economic factors and (iii) European Conservation status (see also sections 2.2 and 2.5). Effort reductions and limits on the number of gears permitted have applied; some fisheries have also been controlled by the imposition of catch limits. Most estuary fisheries in England have either closed or been subject to mandatory C&R of salmon from 2019; this will also apply in Wales from 2020 (Section 2.9, Action F3).

2.5 How are socio-economic factors taken into account in making decisions on management of salmon fisheries? *(Max. 200 words)*
(Reference: Section 2.9 of the Fisheries Guidelines)

Although the primary objective is to ensure the conservation or restoration of salmon stock(s), socio-economic factors are taken into account when considering new management measures, to influence the nature and balance of controls affecting stakeholder groups and the planned rate of stock recovery (See Decision Structure - Annex 3).

Consideration is also given, inter alia, to:

- whether a proposed measure will have an unreasonable effect on someone's livelihood (e.g. net fishing) or the value of their property (e.g. fishing rights); this may mean it is necessary to reduce the impact of a conservation measure, for example by planning stock recovery over a longer period;
- whether one stakeholder group will be unreasonably affected relative to another; where reductions in exploitation are required, the effects on netsmen and anglers should be equitable;
- the effect of controls on the viability of fisheries; for example, C&R controls will generally have a greater economic effect on commercial than recreational fisheries;
- the heritage value of the fishery; where fishing methods are unique to a very small number of locations, consideration is given to retaining a residual fishery and/or permitting a low level of catch. [See also: Method for Assessing Heritage Value of Fisheries at: *https://www.gov.uk/government/publications/method-for-assessing-the-heritage-value-of-net-fisheries*].

2.6 What is the current level of unreported catch and what measures are being taken to reduce this? *(Max. 200 words)*
(Reference: Section 2.2 of the Fisheries Guidelines and the Minimum Standard)

The total unreported catch (including the unreported landings by licensed fishers and illegal catches by unlicensed fishers) for E&W in 2018 was estimated to be about 1,350 salmon (5.2 tonnes), representing approximately 11% of the total number of salmon caught and killed in that year. This was estimated to comprise:

- ~700 fish (52%) caught illegally;
- ~440 fish (33%) under-reported in rod fisheries; and
- ~220 fish (16%) under-reported in net fisheries.

The following measures are in place to reduce unreported catches:

- carcass tagging of net caught salmon (and sea trout);
- ban on sale of rod caught salmon;
- reminders issued to anglers to record and report their catch; and
- targeted enforcement activity to suppress illegal fishing activity.

See also: report to NASCO Special Session in 2007 on Unreported Catches in UK (England and Wales (CNL(07)26). [*http://www.nasco.int/pdf/2007%20papers/CNL(07)26.pdf*].

2.7 Has an assessment under the Six Tenets for Effective Management of an Atlantic Salmon Fishery been conducted? If so, (a) has the assessment been made available to the Secretariat and (b) what actions are planned to improve the monitoring and control of the fishery? (c) If the six tenets have not been applied, what is the timescale for doing so? *(Max. 200 words)*
(Reference: Six Tenets for Effective Management of an Atlantic Salmon Fishery, WGCST(16)16)

(a) Yes. A six tenets assessment has been completed and made available to the Secretariat (WGCIS(17)3), along with an update (WGCIS(18)08).

(b) All fishing for salmon is subject to licensing, catch reporting requirements and a range of regulatory measures. Reminders are issued to licence holders to maintain satisfactory levels of catch reporting. An on-line rod catch reporting system has been introduced to improve the timeliness and accuracy of reports; this is subject to ongoing improvements. Following recent consultations in both England and Wales, new restrictions have been proposed for net and rod fisheries. These measures have now been approved, coming into effect in England in 2019 and in Wales in 2020. Powers are also available to introduce emergency measures should these be necessary.

(c) N/A.

2.8 Identify the threats to wild salmon and challenges for management associated with their exploitation in fisheries, including bycatch of salmon in fisheries targeting other species.

Threat / challenge F1	Management decisions not based on up-to-date assessments of stock status and composition.
Threat / challenge F2	Assessments of stock status, compliance procedures and associated decision structure do not make best use of available data / remain fit for purpose.
Threat / challenge F3	Regulated fishing in estuary and river fisheries exceeds levels that are sustainable and threatens conservation of stocks.
Threat / challenge F4	Mixed stock fisheries pose unacceptable risks to stocks.
Threat / challenge F5	Lack of support from stakeholders in voluntary conservation measures.
Threat / challenge F6	Unregulated (illegal) fishing and by-catch in other fisheries threatens conservation of stocks.

Copy and paste lines to add further challenges which should be labelled F5, F6, etc.

2.9 What SMART actions are planned during the period covered by this Implementation Plan (2019 – 2024) to address each of the threats and challenges identified in section 2.8 to implement NASCO's Resolutions, Agreements and Guidelines and demonstrate progress towards achievement of its goals and objectives for the management of salmon fisheries?		
Action F1:	Description of action:	In order to ensure that management decisions are based on up-to-date assessments of stock status and composition (F1), in E&W we will (i) undertake annual assessments of the status of salmon stocks in line with the NASCO Fishery Management Guidance (paragraph 2.5), and (ii) annually review management measures and any need for changes / possible new measures (including voluntary and emergency regulatory controls) in salmon fishing These actions will also ensure that regulated fishing in estuary and river fisheries does not exceed levels that are sustainable and threaten conservation of stocks (F3), and that mixed stock fisheries do not pose unacceptable risks to stocks (F4).
	Planned timescale (include milestones where appropriate):	Assessments will be completed annually in March in time for the annual meeting of the ICES Working Group on North Atlantic Salmon (WGNAS). In addition, further assessments will be conducted as required – e.g. to meet legislative renewals or in response to emerging problems. The review of management measures and assessment of the need for changes will be completed annually and reported in the Annual Progress Report to NASCO (APR).
	Expected outcome:	An annual update on stock status for all principal salmon rivers, meeting annual reporting requirements for ICES and NASCO, and, where the annual review of management measures indicates the need for change, these changes will be implemented.
	Approach for monitoring effectiveness & enforcement:	The quantitative target is to complete 64 annual assessments for each of E&W principal salmon rivers. Completion of annual assessments and management measures will be evidenced in the annual Salmon Stocks and Fisheries in England and Wales report and in the APR.
	Funding secured for both action and monitoring programme?	Expected
Action F2:	Description of action:	In order to ensure that assessments of stock status, compliance procedures and associated Decision Structure make best use of available data and remain fit for purpose (F2), E&W will continue to assess ways in which assessment procedures and the related Decision Structure can be improved and changes implemented. These developments will be subject to discussion and review with stakeholders through the England Fisheries Group (EFG) and Welsh Fisheries Forum (WFF).
	Planned timescale (include milestones where appropriate):	The planned timescale for delivery is 2022, which is coincides with the renewal of the current salmon strategy. Four broad areas have been identified for action: (1) the setting of CLs – this will include consideration of potential improvements to current input data (e.g. wetted area estimates), methodological changes and possible alternative approaches;

		(2) possible improvements for estimating spawner numbers / egg deposition (e.g. accounting for variability in rod exploitation); (3) considering the benefits of alternative statistical compliance procedures; and (4) evaluating the merits of alternative decision-making processes for linking compliance assessments with the management response, including moving to an annual system.
	Expected outcome:	Introduction of a more robust stock assessment methodology with clearer and more timely links to management decision-making and regulatory responses.
	Approach for monitoring effectiveness & enforcement:	The quantitative measure is delivery of the new approach in 2022. Progress against the four work areas, will be reported in the APR, in the Cefas/EA/NRW annual assessment reports and at ICES meetings. Developments will also be subject to discussion and review with stakeholders through the EFG and WFF.
	Funding secured for both action and monitoring programme?	Expected
Action F3:	Description of action:	In order to ensure that regulated fishing by estuary and river fisheries does not exceed levels that are sustainable and threaten conservation of stocks (F3) (in line with the NASCO Fishery Management Guidance - paragraph 2.7), E&W will introduce new restrictions on net and rod fisheries in England from the 2019 season, and in Wales from 2020. The measures are based on the projected status of stocks for 2022, as assessed in 2017, and will be in place for 10 years. In England there will be a review of rod and line C&R in 2020. Stock status will continue to be assessed annually. These actions will also ensure that mixed stock fisheries do not pose unacceptable risks to stocks (F4). **For England (measures implemented from 2019):** • Closure of all net fisheries for 'at risk' and 'probably at risk' rivers in 2019, based on the projected status of stocks for 2022, as assessed in 2017; this includes all remaining drift net fisheries. • Mandatory C&R by anglers on the rivers that are classed as 'at risk', based on the projected status of stocks for 2022, as assessed in 2017, and on rivers that are listed as 'recovering rivers' (Annex 2). • Voluntary C&R targets in excess of 90% on rivers classed as 'probably at risk'. Compliance with the C&R target will be reviewed in 2020 with a view to either continuing the voluntary measures or implementing mandatory C&R byelaws if stocks cannot be adequately protected by voluntary means. • Renewal of the 1998 Spring Salmon Byelaws. These protect the larger, early running salmon, and do not introduce any new restrictions.

		N.B. River Severn emergency byelaws were introduced in 2019 requiring compulsory C&R. N.B. A package of rod fishing byelaws will also be developed for the cross-border rivers Wye and Dee ("Border Rivers (England) byelaws") to complement measures in Wales. **For Wales (measures implemented from 2020):** • Mandatory C&R fishing of all salmon at all times for rod fisheries in all rivers in Wales. • Introduce partial method prohibitions on bait (worm, prawn and shrimp), use of treble hooks and use of barbed hooks. • Introduce mandatory C&R fishing and method controls on 2 of the 3 cross-border rivers – Dee and Wye in Wales. (N.B. River Severn emergency byelaws were introduced in 2019 requiring compulsory C&R) • Introduce mandatory C&R of salmon at all times in all net fisheries, with arrangements for the last very small fishery under negotiation. • Introduce revised start and finish dates for net fishing seasons.
	Planned timescale (include milestones where appropriate):	The regulatory measures in England came into force in December 2018 and will apply for a period of 10 years, with a review after 5 years. The measures in Wales were approved in 2019 and will be implemented in 2020. In addition, periodic reviews of fisheries will be required as specified in regulations; the following reviews are planned between 2019 and 2024 (expiry dates in brackets): Net Limitation Orders (NLOs) in England: • River Camel (2018) – N.B. fishing on the Camel is currently precluded under the terms of an emergency Byelaw which expires in spring 2019. • River Fowey (expected to be confirmed 2019) • River Lune (2019) • River Severn (2019) • River Teign (2020) • River Exe (2021) • Taw and Torridge (2022) • Christchurch Harbour (Avon & Stour) (2022) • Anglian coast (2022) • NE coast (2022) • River Kent (2023) • River Leven (2023) • River Tamar (2024) • River Tavy (2024) • River Lynher (2024) NLOs in Wales:

		• No NLO reviews are anticipated in the IP period. Any Byelaws relative to salmon fishing in England and Wales that expire during the IP period will also be subject to review.
	Expected outcome:	Reduction in the exploitation of stocks to facilitate conservation of wild salmon stocks and to aid stock recovery.
	Approach for monitoring effectiveness & enforcement:	The quantitative measures for this action are the completion of 14 NLOs; reporting in the annual stock assessment report and APR on the levels of compliance with voluntary (>90%) and mandatory (100%) C&R targets described above; and any byelaws relative to salmon fishing in England and Wales that expire during the IP period will also be subject to review.
	Funding secured for both action and monitoring programme?	Expected
Action F4:	Description of action:	In order to ensure that mixed stock fisheries do not pose unacceptable risks to stocks (F4), E&W will introduce measures to phase out / regulate any remaining MSFs to reduce fishing mortality to sustainable levels in order to conserve stocks (in line with the NASCO Fishery Management Guidance - paragraph 2.7). Any estuarine MSFs will continue to be managed in order to safeguard the weakest contributing stock. Measures include: a. The drift net fishery on the NE coast will close in 2019 and mandatory C&R of salmon will be required in the NE T&J (beach) net and Anglian coastal fisheries. b. The 5-year review of the NLO for net fisheries in the Severn Estuary and the regulatory measures for fixed engines will be conducted and amended as appropriate. c. The 7-year review of the NLO for the remaining nets in the Anglian Coastal Fishery will be conducted and the NLO (licence numbers) and Byelaws (fishing periods and gear) amended as appropriate. d. The 10-year review of the NLO for the remaining T&J (beach) nets in the NE coast fishery will be conducted and the NLO (licence numbers) and Byelaws (fishing periods and gear) amended as appropriate.
	Planned timescale (include milestones where appropriate):	a. The new regulations for the NE coast and Anglian net fisheries were approved in December 2018 and will effectively apply from January 2019. b. Complete review and implement any required regulatory changes - 2019. c. Complete review and implement any required regulatory changes - 2022. d. Complete review and implement any required regulatory changes – 2022.
	Expected outcome:	Cessation of netting or introduction of mandatory C&R provisions for salmon in all coastal mixed stock fisheries from 2019.

		Implementation of regulations to ensure estuarine mixed stock fisheries (N.B. River Severn only, all other estuary fisheries will be closed or subject to mandatory C&R) continue to be managed in line with national policy and international guidance and to ensure that all contributing stocks achieve their management objectives.
	Approach for monitoring effectiveness & enforcement:	Quantifiable progress will be demonstrated via the reporting of the declared catch of salmon by the above named fisheries (NE beach (T&J) and drift net fisheries, Severn Estuary fishery and Anglian Coastal fishery). Qualitatively, information will be provided via the annual stock assessment report and APR on the measures taken to ensure that mixed stock fisheries do not pose unacceptable risks to stocks.
	Funding secured for both action and monitoring programme?	Expected
Action F5:	Description of action:	In order to ensure that conservation of salmon stocks and fishing mortality at sustainable levels is not threatened by lack of support from stakeholders in voluntary conservation measure (F5), E&W will work with stakeholder organisations to promote C&R in rod fisheries through enhanced guidance and communications to increase acceptance of C&R among those anglers currently reluctant to adopt this practice and to achieve required C&R targets. In Wales this is mandatory C&R in all rivers from 2020; and in England from the 2019 season - mandatory C&R in all rivers classed as 'at risk', with voluntary high C&R rates (>90%) in all stocks classed as 'probably at risk' (based on the projected status of stocks for 2022, as assessed in 2017).
	Planned timescale (include milestones where appropriate):	From 2019 enhance C&R guidance and communications. Annual review of C&R compliance with the above targets.
	Expected outcome:	Higher uptake of C&R in rod fisheries resulting in increased numbers of salmon surviving to spawn to facilitate stock recovery.
	Approach for monitoring effectiveness & enforcement:	Compliance with C&R targets provides a quantitative measure, qualitatively we will report on actions to enhance C&R guidance and communications and these will be reported in the annual stock assessment report and APR.
	Funding secured for both action and monitoring programme?	Expected
Action F6:	Description of action:	In order to ensure that unregulated (illegal) fishing and by-catch in other fisheries do not threaten conservation of stocks (F6), E&W will ensure the effective enforcement of fishery regulations (in line with the NASCO Fishery Management Guidance - paragraph 2.3), and specifically will: a) Continue with prevention, disruption and intervention of illegal fishing, including intelligence-led enforcement and

		ongoing implementation of a ban on the sale of rod-caught fish and a carcass tagging scheme for net-caught fish. b) Undertake a review of fishery enforcement priorities in England and Wales. c) work with England's ten Inshore Fisheries and Conservation Authorities (IFCAs) and Welsh Government to secure better protection for migratory salmonids from netting activities
	Planned timescale (include milestones where appropriate):	a) 2019-24 enforcement actions reported annually in the APR. b) Complete England fishery enforcement review 2020. c) IFCA byelaw reviews commented on and influenced within the period 2019-24.
	Expected outcome:	Reduced illegal fishing and by-catch of migratory salmonids in estuaries and nearshore areas, helping to ensure that as many returning salmon as possible survive to contribute to spawning, particularly for stocks in vulnerable rivers.
	Approach for monitoring effectiveness & enforcement:	For action b), a report will be produced detailing the findings and recommendations of the England fishery enforcement review in 2020. For actions a) and c), we do not have the information to provide quantitative targets, rather the APR will detail enforcement metrics on the number of incident reports, dealer checks and offences and report on progress in securing better protection for salmon through revisions to sea fisheries byelaws working with England's 10 Inshore Fisheries and Conservation Authorities and Welsh Government who are the sea fisheries regulatory body in Wales.
	Funding secured for both action and monitoring programme?	Expected

Copy and paste lines to add further actions which should be labelled F5, F6, etc.

3. Protection and Restoration of Salmon Habitat:

In this section please review the management approach to the protection and restoration of habitat in your jurisdiction in line with the relevant NASCO Resolutions, Agreements and Guidelines.

3.1 How are risks to productive capacity identified and options for restoring degraded or lost salmon habitat prioritised, taking into account the principle of 'no net loss' and the need for inventories to provide baseline data? *(Max. 200 words)* (*Reference: Section 3 of the Habitat Guidelines)*

In addition to the assessment procedures described above, risks to productive capacity are identified and options for restoring degraded or lost habitat are prioritised using a range of means including:

a) Investigative electric-fishing and other surveys (e.g. redd counting)

To prioritise habitat conservation and restoration.

b) Identification of priority barriers to migration

Development of a GIS of upstream and downstream barriers to aid fish passage improvement.

c) EU Water Framework Directive (WFD) assessment of ecological status

Assessments of habitat conditions and water quality to evaluate potential measures for restoring habitats.

d) Protected sites (Special Areas of Conservation (SAC) and Sites of Special Scientific Interest (SSSI)) condition status assessment

The Government's 25-Year Environment Plan aims to restore 750,000 hectares of protected sites to favourable condition, securing their wildlife value for the long term by 2043.

e) Priority Salmon Actions (identified in 'Know Your Rivers' reports in Wales)

Salmon Action Plans to aid recovering salmon rivers supported by catchment-based priority salmon actions working in partnership with stakeholders.

f) River restoration projects

Partnership working across E&W to restore habitat is supported by habitat surveys. In Wales, five catchments are being targeted (Teifi, Tywi, Cleddau, Clwyd and Mawddach), to enhance biodiversity and ecosystem resilience.

3.2 How are socio-economic factors taken into account in making decisions on salmon habitat management? *(Max. 200 words)*
(Reference: Section 3.9 of the Habitat Guidelines)

One of the key ways we take account of socio-economic factors in making decisions on salmon habitat management is through setting objectives for WFD. Here we assess the relative costs and benefits of working to achieve Good Status, or some less stringent objective. This makes sure that society gets back more socio-economic benefit from investing in improving the water environment than it pays out. We use economic appraisal to monetise benefits using the National Water Environment Benefits Survey (NWEBS) values. The NWEBS study estimates willingness to pay (WTP) for improvements in the water environment. In order to illicit this value, a survey of over 1,500 people in the UK was undertaken. The survey described water quality from a socio-economic viewpoint. One of the indicators of Good Status waters is salmonids. NWEBS WTP values have a range of values – a default central value and high and low alternatives that can be applied if there is a justification of doing so. When valuing salmonid habitat improvements our standard guidance is to use the high WTP value, because salmonids are highly valued species, both in terms of nature conservation and what the public hold dear. We also assess the qualitative benefits and beneficiaries of improvements in our appraisal summary tables, which provide essential context to the monetary part of the valuation when we make decisions about where to invest.

3.3 What management measures are planned to protect wild Atlantic salmon and its habitats from (a) climate change and (b) invasive aquatic species? *(Max. 200 words each)*
(Reference: Section 3.2 of the Habitat Guidelines)

(a) Climate change

In England, measures to mitigate the impact of climate change are included in the National Climate Change Adaptation Programme (2018). The focus is on increasing the resilience of stocks by reducing other pressures on them and providing more time for the species to adapt to climate change. This will be achieved by safeguarding and improving our protected sites; restoring degraded ecosystems; reducing pressures (including removing barriers to migration, enhancing habitat, safeguarding sufficient flows and improving water quality); and implementing specific salmon climate change adaptation measures such as increasing riparian shade. Efforts will continue to restrict or modify C&R practices where summer river temperatures are considered to exceed certain thresholds.

Welsh Government has recently consulted on a new Climate Change Adaptation Plan for Wales in light of new legislation and emerging evidence (https://beta.gov.wales/sites/default/files/consultations/2018-12/climate-change-adaptation-delivery-plan-for-wales.pdf).

(b) Invasive aquatic species

There are controls on the keeping and release of non-native species through the Wildlife & Countryside

Act (1981), Keeping and Introduction of Fish Regulations (2015), and Orders made under the Import of Live Fish Act (1980) (ILFA) will be maintained and continue to be enforced. The ILFA will provide for the screening, where necessary, of fish movements to prevent the spread of non-native fish and diseases. The movement of fish from waters known to contain high-risk invasive species will be prohibited, and audits of selected high-risk movements carried out to ensure compliance. Work will also continue with fishery owners to remove non-native fish from high-risk sites.

Developing techniques using eDNA analysis have provided new options for detecting the presence of non-native species. Recent concerns have also emerged due to the incidence of pink salmon in various fisheries and rivers around the UK. Work has been conducted to assess the potential risks of further invasion of this species and to consider possible management actions.

Ongoing implementation of the European Council Regulation No. 708/2007 concerning Use of Alien and Locally Absent Species in Aquaculture and the Alien and the Locally Absent Species in Aquaculture (England and Wales) Regulations (2011) will ensure that effective controls remain in place (e.g. closed containment) for any proposed aquaculture rearing of non-native species.

Efforts will continue to ensure in-river operations comply with biosecurity protocols and to encourage anglers and other water users to remain vigilant to the risk of non-native species and pathogens, to report sightings and to take biosecurity measures (e.g. the 'Check, Clean, Dry' campaign; see: *http://www.nonnativespecies.org/checkcleandry/index.cfm*). The GB non-native species secretariat, with the support of partners, are also developing a Priority Angling Pathway plan to reduce the risk of anglers spreading invasive non-native species, as required under the Invasive Alien Species Regulation 1143/2014. Further requirements under this Regulation include training Border Force personnel, poster campaigns at ports warning anglers to carry out biosecurity and liaison with other Member States to prevent aquatic invasive species, such as *Gyrodactylus salaris* entering UK.

3.4 Identify the main threats to wild salmon and challenges for management in relation to estuarine and freshwater habitat.	
Threat / challenge H1	Impacts of climate change including temperature changes, altered flow patterns and weather extremes.
Threat / challenge H2	Factors affecting the survival of salmon in estuaries and inshore waters.
Threat / challenge H3	Barriers to migration and degraded salmon spawning and juvenile habitat.
Threat / challenge H4	Other water demands causing insufficient flow affecting specific life stages of salmon and wider ecology.
Threat / challenge H5	Poor water quality associated with both diffuse and point source pollution.
Threat / challenge H6	Risk of increased levels of predation, particularly during sensitive life stages (e.g. during the smolt run) or where there may be an increased threat of predation due to other stressors (e.g. around weirs, barrages or other obstructions to free passage of fish).

Copy and paste lines to add further threats/challenges which should be labelled H5, H6, etc.

3.5 What SMART actions are planned during the period covered by this Implementation Plan (2019 – 2024) to address each of the threats and challenges identified in section 3.4 to implement NASCO's Resolutions, Agreements and Guidelines and demonstrate progress towards achievement of its goals and objectives for the Protection, Restoration and Enhancement of Atlantic Salmon Habitat?		
Action H1:	Description of action:	To increase salmon's climate change resilience (H1) we will: a) seek to safeguard and create thermal refugia through tree planting/fencing to increase riparian shade in England and Wales (target 50,000 trees and 50km fencing in England by 2024); b) work with anglers to minimise the risk to salmon when temperatures are high through supporting voluntary cessation of

		fishing (e.g. on all principal salmon rivers where water temperatures reach 19ºC at 09:00); c) ensure that salmonid thermal standards are applied and adhered to through regulation on all principal salmon rivers; d) aim to establish temperature monitoring networks on principal salmon rivers, representative of regions (target 5 rivers in England by 2024) to research and support management initiatives; and e) investigate potential impacts of future climate change scenarios on salmon and explore and seek to implement possible mitigating measures.
	Planned timescale (include milestones where appropriate):	a – d Progress will be reviewed and reported on annually for each year covered by the IP. e) Report to be delivered by 2024.
	Expected outcome:	Improved salmon survival as a result of actions to moderate the impact of climate change.
	Approach for monitoring effectiveness & enforcement:	Quantitative measures for these actions will be reported where possible, however, more descriptive, qualitative indicators of progress will be required for some issues due to uncertainty over the detail or resourcing of future work programmes. Annual Progress Reports will aim to: a) Audit environmental improvement schemes e.g. number of trees planted; kilometres of fencing delivered - reporting against formal targets where these have been established; b) Audit initiatives to voluntarily cease fishing when temperatures exceed agreed thresholds; c) Report on the application of thermal standards; d) Provide updates re. installation/application of temperature monitoring networks; e) Report on investigations into the potential impacts of future climate change scenarios on salmon and options for mitigation.
	Funding secured for both action and monitoring programme?	Expected
Action H2:	Description of action:	To improve the survival of salmon in estuaries and inshore waters (H2), we will: a) review and report on the factors affecting salmon at sea and the associated evaluation and prioritisation of potential stressors acting in estuaries and inshore waters; b) raise the profile of salmon by supporting the International Year of the Salmon (IYS) throughout 2019 (and possibly beyond); c) support research initiatives aimed at improving understanding of salmon survival at sea (including: SAMARCH (SAlmonid MAnagament Round the CHannel) 2017-2022 and the Likely Suspects initiative) and use recommendations to realise better protection for salmon in estuaries and at sea;

		d) work with England's ten Inshore Fisheries and Conservation Authorities (IFCAs) and Welsh Government to secure better protection for migratory salmonids from netting activities; e) secure improvements in water quality through the delivery of the Water Company National Environment Programmes PR14 (2015-2020) & PR19 (2020-2025) and River Basin Management Plans (2015-2021) & (2021-2027); and f) seek to ensure tidal-lagoons and power stations do not adversely impact on salmon populations.
	Planned timescale (include milestones where appropriate):	a) Reports to be produced and circulated in 2020. b) The main year of the IYS is 2019. A dedicated IYS website for England & Wales went live in November 2018 and will be updated throughout 2019. c) Report research findings from SAMARCH annually to 2022 and other initiatives to 2024; and policy changes to realise better protection for salmon in estuaries and at sea to 2024. d) IFCA byelaw reviews influenced through consultation within the period 2019-24; and reporting of related development; e) Current River Basin Management Plan runs from 2015-2021 and a further cycle from 2021-2027. f) Ongoing, where opportunities arise, to 2024.
	Expected outcome:	Improved understanding of the fate of salmon in estuaries and marine waters to inform policy and strengthen management practice in these areas. Tangible measures implemented to protect salmon in the marine environment, e.g. byelaws introduced to protect salmon from inshore netting activities.
	Approach for monitoring effectiveness & enforcement:	The quantitative target for action a) is that the report produced on the factors affecting salmon at sea and the associated evaluation and prioritisation of potential stressors acting in estuaries and inshore waters. It is not possible to set quantitative targets for actions b) - e) because the associated metrics are not known at present. Therefore, progress will be measured in qualitative terms of annual reporting in NASCO Annual Progress Reports, specifying as follows: b) Number of hits on England and Wales IYS website together with IYS events and activity highlights. c) Details of principal research findings and policy changes made to realise better protection for salmon in estuaries and at sea. d) Numbers of byelaws reviewed, in progress and planned. e) WFD status for transitional water bodies. f) Confirmation of number of impact assessments undertaken and associated outcomes protecting migratory salmonids.
	Funding secured for both action and monitoring programme?	Expected

Action H3:	Description of action:	To improve fish passage and salmon habitat (H3) through implementing River Basin Management Plans, working with key partner organisations such as the Rivers Trust across England and Wales, we will aim to: a) identify and prioritise barriers to migration and implement measures to improve fish passage (e.g. passage schemes completed on at least 25 sites in England by 2024 and 35 in Wales in 2020/21); b) identify and restore degraded salmon habitat (e.g. minimum 50 kilometres in England and a target of 100 kilometres in Wales by 2024); c) deliver new fish passage regulations; and d) seek to ensure in-river hydropower and tidal power schemes meet defined standards and do not cause deterioration in salmon populations.
	Planned timescale (include milestones where appropriate):	a) Identify and prioritise barriers to migration by 2021 and implement fish passage improvements by 2024. b) Implement programmes to identify and restore salmon habitats by 2024. c) Legislation for enhanced fish passage regulations will be advanced after EU exit. Timing will depend on government legislative priorities. d) To 2024.
	Expected outcome:	Improved fish passage allowing greater access to spawning areas and improved smolt survival combined with enhanced habitat improving spawning success and juvenile survival.
	Approach for monitoring effectiveness & enforcement:	Quantitative measures for these actions will be reported where possible however, more descriptive, qualitative indicators of progress will be required for some issues due to uncertainty over the detail or resourcing of future work programmes. The quantitative targets for action identified above are: a) to improve fish passage at 25 sites; b) restore 50 kilometres of degraded salmon habitat; and c) deliver new fish passage regulations; It is not possible to set quantitative targets for action d) because the associated metrics are not known. Therefore, progress will be measured in qualitative terms of annual reporting in the NASCO Annual Progress Reports, specifying as follows: d) Number of permits
	Funding secured for both action and monitoring programme?	Expected
Action H4:	Description of action:	To ensure sufficient flow for salmon through delivering measures to realise sustainable abstraction (H4), we will: a) continue the Restoring Sustainable Abstraction (RSA) Programme; to vary abstraction licences to meet requirements of environmental legislation (e.g. (WFD & HD), which includes 13 licences on salmon rivers in England investigated by March 2020); b) review time-limited licences due for renewal on salmon

		rivers, adjusting them as necessary to make sure they do not allow environmental damage now or in the future; c) ensure all permanent abstraction licences shown to be seriously damaging to salmon are reduced and meet environmental standards; d) revoke 116 unused licences that are no longer needed, and work with abstractors to reduce 12 under-used licences on salmon rivers in England by 2019. This will prevent increased abstraction from these licences creating new environmental pressures; e) regulate all significant abstractions that have been exempt historically to protect the water environment; f) secure sufficient flows for salmon through delivering >100 Water Industry National Environmental Programme water resource investigations during PR14 & PR19; g) work with abstractors and catchment groups to develop local solutions to existing abstraction problems, as set out in the Water Abstraction Plan 2017 (England). To support this, we will also work with stakeholders to improve available tools through the Future Local Management of Flows initiative 2019-2024; and h) ensure hydro and tidal power schemes do not cause deterioration in flows or an increase in migration barriers to the detriment of salmon populations. Where possible ensure flows and artificial spates controlled from impounding reservoirs are managed to optimise salmon production/migration.
	Planned timescale (include milestones where appropriate):	a) Target for completion March 2020 (in England). b) Target for completion – 2021. c) Target for completion – 2021 (in England). d) Target for completion 2019. e) Target for completion 2022 (Wales) and 2024 (England). f) PR14 2015-2020 and PR19 2020-2025. g) Target for completion – 2024. h) Target or completion – 2024.
	Expected outcome:	Improved flows to sustain the various life stages of salmon in freshwater (and the wider ecology of rivers) resulting in improved survival of salmon. More sustainable abstraction with more water bodies meeting environmental objectives. Under Defra's 25-year Environment Plan and set out in the Water Abstraction Plan (*https://www.gov.uk/government/publications/water-abstraction-plan-2017/water-abstraction-plan*), it is proposed to reduce the damaging abstraction of water from rivers and groundwater, ensuring that by 2021 the proportion of water bodies with enough water to support environmental standards increases from 82% to 90% for surface water bodies and from 72% to 77% for groundwater bodies. In order to meet these goals,

		the Environment Agency will implement the actions described above.
	Approach for monitoring effectiveness & enforcement:	The quantitative targets for action are: a) 13 licences to be investigated; d) revoke 116 unused licences and reduce 12 under-used licences; and f) deliver >100 water resource investigations in England. It is not possible to set quantitative targets for actions b), c), e), g) & h) because the associated metrics are not known. Therefore, progress will be measured in qualitative terms of annual reporting in the NASCO Annual Progress Reports, specifying as follows: b), c) & e) the number of abstraction licences changed and quantity of water saved; g) Report on progress with the Future Local Management of Flows initiative; h) Report on flow standards applied to hydropower/tidal power and schemes to augment flows.
	Funding secured for both action and monitoring programme?	Expected
Action H5:	Description of action:	To maximise the production of healthy smolts by improving water quality (H5), we will: a) influence River Basin Management Plans to deliver the necessary water quality improvements to protect and enhance salmon populations (England baseline principal salmon water body status (2016): 25% Good/High, 54% Moderate, 19% Poor, 2% Bad; Wales overall minimum target 42% water bodies Good or better status by 2021); b) deliver >100 Water Industry National Environment Programme water quality investigations on salmon rivers during PR14 (2015-2020) and PR19 (2020-2025); c) improve conditions for salmon through targeted agri-environment schemes e.g. Catchment Sensitive Farming, Environmental Stewardship, Countryside Stewardship and regulatory approaches such as Farming Rules for Water (or the equivalent initiatives in Wales e.g. Glastir schemes, Farm Business and Sustainable Production grants and New Water regulations ~2020); and d) seek to reduce 'serious environmental incidents' (e.g. from 419 in 2017 in (England). Includes delivery through Wales Land Management Forum sub-group on agricultural pollution and provision of advice by Farming Connect Agricultural Pollution Prevention Campaign).
	Planned timescale (include milestones where appropriate):	a) The current RBMPs (2015-2021) are expected to be followed by a further cycle (2021-2027). b) PR14 2015-2020 and PR19 2020-2025. c) To 2024. d) To 2024.

	Expected outcome:	Improved water quality to sustain the various life stages of salmon in freshwater (and the wider ecology of rivers) resulting in improved survival of salmon.
	Approach for monitoring effectiveness & enforcement:	The quantitative target for action: b) will be to deliver >100 water quality investigations. It is not possible to set quantitative targets for action a), c) or d) because the associated metrics are not known. Therefore, progress will be measured in qualitative terms of annual reporting in the NASCO Annual Progress Reports, specifying as follows: a) The percentage of salmon water bodies meeting Good Ecological Status under WFD; c) The uptake of agri-environment schemes; d) Report the number of 'serious environmental incidents' in England.
	Funding secured for both action and monitoring programme?	Expected
Action H6:	Description of action:	To reduce the risk of salmon stock depletion as a result of predation (H6), we will: a) support the continued issue of licences to control cormorants and goosanders, including the use of area-based licences and the coordination of management actions; b) complete a preliminary review of the current management of fish-eating birds in Wales and undertake a subsequent full evidence-based review of policy if a decision is made to undertake this;; c) explore options for better protecting salmon at sensitive life stages and potential predation 'pinch points' (e.g. around barriers to smolt migration) and introduce new measures where appropriate; and d) review changes in the abundance and distribution of potential predator species to facilitate management decisions (e.g. seals and fish-eating birds).
	Planned timescale (include milestones where appropriate):	a) To 2024. b) Review completed in 2019. c) Identify predation pinch points and seek to implement mitigating measures by 2024.
	Expected outcome:	Ensuring that licensing policy for the control of fish-eating birds remains fit for purpose and strikes an appropriate balance between safeguarding fish stocks and the conservation status of the birds. Better protection of salmon during sensitive life stages through co-ordinated activities at potential 'pinch points'.
	Approach for monitoring effectiveness & enforcement:	It is not possible to set quantitative targets for actions a) to d) because the associated metrics are not known. Therefore, progress will be measured in qualitative terms of annual reporting in the NASCO Annual Progress Reports, specifying as follows:

		a) The number and location of licences issued by Natural England and Natural Resources Wales and reporting of any developments in licensing practices. b) Report on outcome of preliminary review and annual reporting of subsequent developments. c) Report the number of potential predation 'pinch points' and measures adopted. d) Report on changes in predator abundance/distribution using JNCC/ British Trust for Ornithology information.
	Funding secured for both action and monitoring programme?	Expected

Copy and paste lines to add further actions which should be labelled H5, H6, etc

4. Management of Aquaculture, Introductions and Transfers, and Transgenics:

Council has requested that for Parties / jurisdictions with salmon farms, there should be a greater focus on actions to minimise impacts of salmon farming on wild salmonid stocks. Each Party / jurisdiction with salmon farming should therefore include at least one action relating to sea lice management and at least one action relating to containment, providing quantitative data in Annual Progress Reports to demonstrate progress towards the international goals agreed by NASCO and the International Salmon Farmers Association (ISFA):

- *100% of farms to have effective sea lice management such that there is no increase in sea lice loads or lice-induced mortality of wild salmonids attributable to the farms;*
- *100% farmed fish to be retained in all production facilities.*

In this section please provide information on all types of aquaculture, introductions and transfers, and transgenics (including freshwater hatcheries, smolt-rearing etc.

4.1 (a) Is the current policy concerning the protection of wild salmonids consistent with the international goals on sea lice and containment agreed by NASCO and ISFA? (b) If the current policy is not consistent with these international goals, when will current policy be adapted to ensure consistency with the international goals and what management measures are planned to ensure achievement of these goals and in what timescale? *(Max. 200 words for each)*
(Reference: BMP Guidance)

(a) There are currently no aquaculture facilities producing salmonids in marine areas in England and Wales. We will, however, continue to keep abreast of developments related to the issue of interactions between farmed and wild salmonids (e.g. through participation in relevant ICES Working Groups and via the scientific literature) and will liaise with other neighbouring jurisdictions on areas of common interest where appropriate.

(b) N/A.

4.2 (a) What quantifiable progress can be demonstrated towards the achievement of the international goals for 100% of farms to have effective sea lice management such that there is no increase in sea lice loads, or lice-induced mortality of wild salmonids attributable to sea lice? (b) How is this progress monitored, including monitoring of wild fish? (c) If progress cannot be demonstrated, what additional measures are proposed and in what timescale? *(Max. 200 words each)*
(Reference: BMP Guidance)
The measures by which these goals may be achieved, and against which the Review Group

will be measuring the effectiveness of the Implementation Plan, are set out in the BMP Guidance SLG(09)5 (Best management practice; reporting and tracking; factors facilitating implementation) as agreed by NASCO and ISFA.

(a) N/A. There are currently no aquaculture facilities producing salmonids in marine areas.

(b) N/A.

(c) N/A.

4.3 (a) What quantifiable progress can be demonstrated towards the achievement of the international goals for achieving 100% containment in all (i) freshwater and (ii) marine aquaculture production facilities? (b) How is this progress monitored, including monitoring of wild fish (genetic introgression) and proportion of escaped farmed salmon in the spawning populations? (c) If progress cannot be demonstrated, what additional measures (e.g. use of sterile salmon in fish farming) are proposed and in what timescale? *(Max. 200 words each)*
(Reference: BMP Guidance)
The measures by which these goals may be achieved, and against which the Review Group will be measuring the effectiveness of the Implementation Plan, are set out in the BMP Guidance SLG(09)5 (Best management practice; reporting and tracking; factors facilitating implementation) as agreed by NASCO and ISFA.

(a)(i) Operators of fish farms in England and Wales are required to ensure that screens are in place to prevent the entrainment of migratory salmonids (i.e. smolts or adults) into fish farms and the escape of farmed fish from the farms. The Fish Health Inspectorate (FHI) assesses compliance with this regulation by regular inspection of fish farm sites.

(a)(ii) N/A; there is currently (in November 2019) no salmonid aquaculture in marine cages.

(b) Given the lack of marine farming in England and Wales, the occurrence of escapees is expected to be extremely rare. Surveys have previously been conducted to assess whether escaped farmed salmon from neighbouring countries were appearing in catches, but no such fish were detected at that time. There have also been no reports of farm escapees from the annual monitoring of returning adult salmon at trapping facilities on various index rivers. Experience indicates that the occurrence of farmed fish would most likely be detected and reported by anglers and netsmen. For example, the last known incidence of farm escapees involved reports of small numbers of fish in rivers following a reported escape of salmon from a fish farm in Northern Ireland in 2001. There is therefore currently no evidence to suggest that farmed salmon are entering rivers in England and Wales and spawning with wild fish.

(c) N/A.

4.4 What adaptive management and / or scientific research is underway that could facilitate better achievement of NASCO's international goals for sea lice and containment such that the environmental impact on wild salmonids can be minimised? *(Max 200 words)*
(Reference: BMP Guidance and Article 11 of the Williamsburg Resolution)

N/A

4.5 What is the approach for determining the location of aquaculture facilities in (a) freshwater and (b) marine environments to minimise the risks to wild salmonid stocks? *(Max. 200 words for each)*

(a) Freshwater sites:

The Aquatic Animal Health (England and Wales) Regulations 2009 require all new fish, shellfish or crustacean farms, or any related development, or modification to an existing facility that could increase production, escape risk, etc. to be authorised by the Cefas Fish Health Inspectorate (FHI) in consultation with the Environment Agency, Natural England and NRW. Together they must consider

the potential impact of the aquaculture proposal on designated European protected sites and wild fish populations, including wild salmonids and the aquatic environment. A formal habitats regulation assessment is required when a site is located within, or has the potential to impact upon, a European protected site.

Authorisation requires various conditions and minimum standards to be met, including:

- restriction on the species farmed and the number and type of holding facilities;
- keeping records in a prescribed format of all movements;
- following good hygiene practice and biosecurity procedures to avoid spread of diseases, and
- measures (including screening, limits on abstraction and water quality standards) to protect wild fish populations, including wild salmonids and the aquatic environment.

FHI can suspend or revoke an authorisation if they believe the operator isn't complying with the conditions of the authorisation.

(b) Estuary and marine sites:

The same authorisation process applies for estuarine and marine sites, and the FHI undertakes a formal consultation with the local IFCA, Environment Agency, NE and NRW prior to authorisation

4.6 What progress has been made to implement NASCO's guidance on introductions, transfers and stocking? *(Max. 200 words)*
(Reference: Articles 5 and 6 and Annex 4 of the Williamsburg Resolution)

The Environment Agency has developed national policy and procedure to cover its own stocking activities and the determination of consents for other parties to stock salmon (and other fish species). These have been developed in line with the NASCO guidance on introductions, transfers and stocking.

In 2013, NRW undertook a review of stocking programmes for Atlantic salmon and sea trout in Wales and concluded that stocking was inherently risky to wild populations, largely ineffective, and did not support new priorities for the sustainable management of natural resources. Stocking programmes were therefore brought to an end in 2014, and the financial resource re-invested in initiatives to restore rivers to higher levels of ecological quality. This decision took account of important principles of risk and the precautionary approach, as later included in new Welsh legislation, and was intended to protect sustainability and productivity of wild salmon and sea trout stocks in Wales.

(See also: Aquaculture, Introductions and Transfers and Transgenics Focus Area Report for EU-UK (England & Wales (IP(10)3)
http://www.nasco.int/pdf/far_aquaculture/AquacultureFAR_EnglandWales.pdf)

4.7 Is there (a) a requirement to evaluate thoroughly risks and benefits before undertaking any stocking programme and (b) a presumption against stocking for purely socio-political / economic reasons? *(Max. 200 words each)*
(Reference: Guidelines for incorporating social and economic factors in decisions under the Precautionary Approach and Annex 4 of the Williamsburg Resolution)

(a) Yes. All proposals to stock fish by the Environment Agency or by other parties in England are considered against generic criteria that are used to assess the potential impact on fish stocks and fisheries (e.g. predation, competition, disease) and the general ecology of the receiving and connected waters. In addition, species-specific criteria may also apply, and in the case of salmon the potential genetic impacts on wild stocks must be considered. Since salmon broodstock are usually obtained from the wild to support a stocking programme, the impacts on the donor stock must also be considered. No stocking is permitted in Wales.

(b) Yes. Stocking activities in England are limited to selected mitigation and restoration activities only. There is no stocking in Wales.

4.8 What is the policy / strategy on use of transgenic salmon? *(Max. 200 words)*
(Reference: Article 7 and Annex 5 of the Williamsburg Resolution)

Any proposal to use transgenic salmon in the UK would be subject to the legislative controls established by the EU in relation to genetically modified (GM) organisms and GM food products, and the

corresponding UK legislation which implements the EU rules. The definition of what constitutes a 'genetically modified organism' in this context will include 'transgenic salmon' as defined by NASCO.

The principal pieces of EU legislation are Directive 2001/18/EC and Regulation (EC) 1829/2003 (equivalent provisions would be expected to apply after EU exit). These provide for GM organisms or products made from them to be authorised for research trials or commercial marketing, if a science-based, case-by-case risk assessment indicates that human health and the environment will not be compromised. The UK Government is open to the potential use of GM organisms on this basis, but we are not aware of any plans to produce or market transgenic salmon in the EU at the current time.

4.9 ***For Members of the North-East Atlantic Commission only:*** **What measures are in place, or are planned, to implement the eleven recommendations contained in the 'Road Map' to enhance information exchange and co-operation on monitoring, research and measures to prevent the spread of *Gyrodactylus salaris* and eradicate it if introduced, including the development and testing of contingency plans?** *(Max. 200 words)*
(Reference 'Road Map' to enhance information exchange and co-operation on monitoring, research and measures to prevent the spread of G. salaris and eradicate it if introduced, NEA(18)08)

Gyrodactylus salaris has not been detected in the UK. Great Britain continues to maintain an OIE listed diseases free zone, including *G. salaris*, likely to impact on salmonid aquaculture and wild salmon populations, and the FHI ensure that relevant animals enter UK only from sources officially free of these diseases (Road Map 1, 10).

- A surveillance programme for *G. salaris* is in place to test fish on various salmon rivers. Since 2007, 57 sites on 43 catchments have been sampled. Several other gyrodactylid species native to the UK have been identified (Road Map 3 & 4).
- A new non-destructive method has been developed that enables gyrodactylids to be collected whilst leaving fish unharmed and through using molecular speciation of gyrodactylids using DNA analysis techniques it is hoped that a new assay can be used to detect the presence of single *G. salaris* parasites in a pooled sample helping to screen the large numbers of parasites (Road Map 5 & 9).
- Cefas sit on the *G.salaris* Working Group and participate in collaborative exercises (Road Map 2) with Government contingency plans in place to control any outbreaks of exotic diseases including *G. salaris*, see: http://www.oie.int/fileadmin/Home/eng/Animal_Health_in_the_World/docs/pdf/gs-contingency-plan.pdf and publicity material (Road Map 2, 7, 8 & 11)

4.10 Identify the main threats to wild salmon and challenges for management in relation to aquaculture, introductions and transfers, and transgenics.

Threat / Challenge A1	Pressure to increase salmon stocking as a means to support fisheries and/or stocks.
Threat / challenge A2	Introduction and spread of non-native fish, invertebrate species, parasites and diseases, excluding *G. salaris.*
Threat / challenge A3	Introduction and spread of the parasite *G. salaris.*
Threat / challenge A4	Adverse environmental impacts of aquaculture.

Copy and paste lines to add further threats/challenges which should be labelled A5, A6, etc.

4.11 What SMART actions are planned during the period covered by this Implementation Plan (2019 – 2024) to address each of the threats and challenges identified in section 4.10 to implement NASCO's Resolutions, Agreements and Guidelines and demonstrate progress towards achievement of its goals and objectives for aquaculture, introductions and transfers, and transgenics?

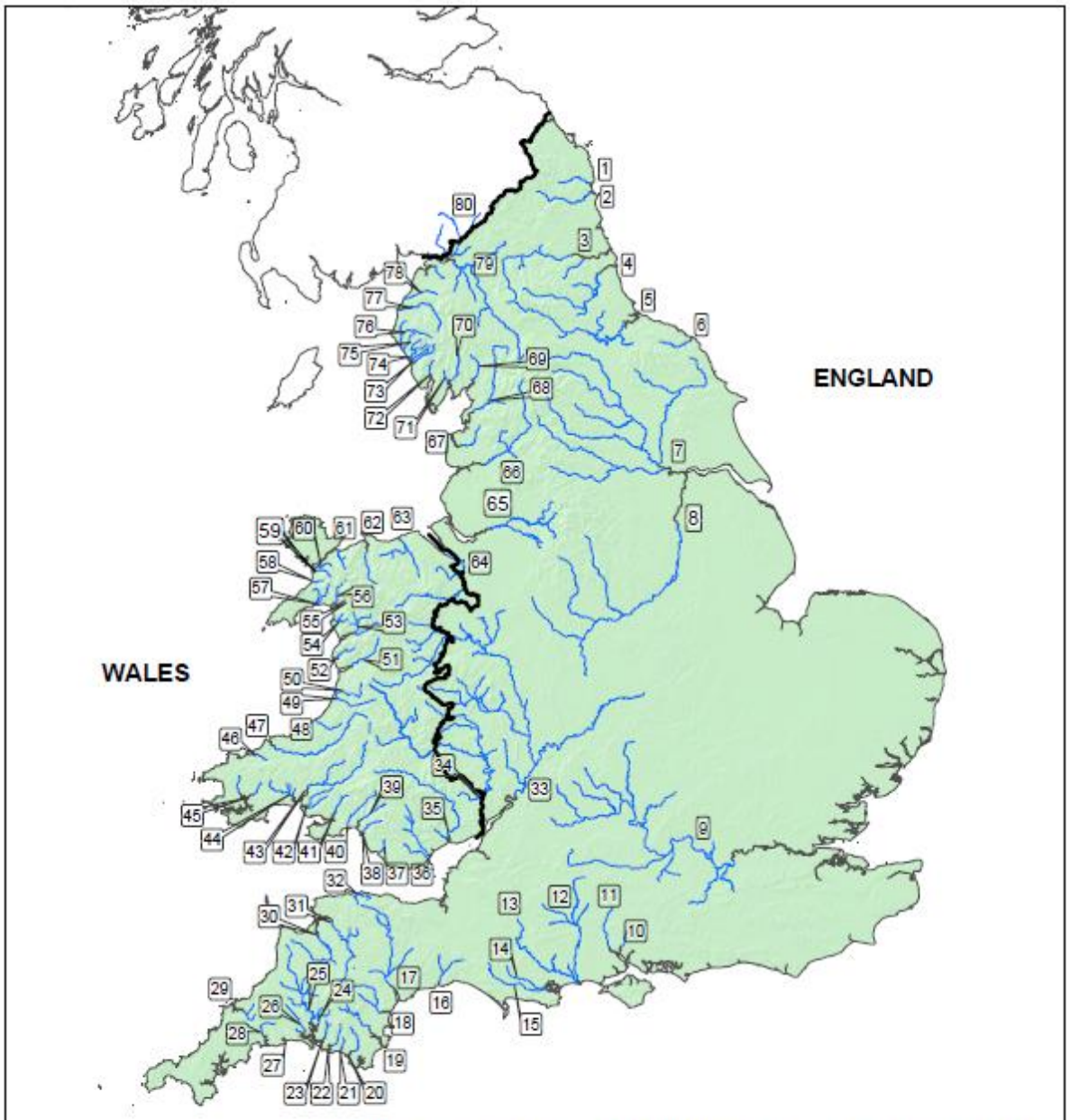
Action A1:	Description of action:	In response to pressure to increase salmon stocking as a means to support fisheries and/or stocks (A1), we will: a) regulate salmon stocking in English rivers by implementing the Environment Agency's stocking policy, which requires the production of a stocking plan; b) continue to highlight the evidence about the impacts of salmon stocking; and c) not allow salmon stocking in Wales. These actions will also address the threat from the introduction and spread of non-native fish, invertebrate species, parasites and diseases, excluding *G. salaris.*
	Planned timescale (include milestones where appropriate):	a)-c) To 2024.
	Expected outcome:	All authorised stocking operations ensure the protection of genetic integrity and fitness of wild salmon populations.
	Approach for monitoring effectiveness & enforcement:	The quantitative target for action c) is zero stocking in Wales. It is not possible to set quantitative targets for action a) & b) because the associated metrics are not known. Therefore, progress will be measured in qualitative terms in the NASCO Annual Progress Reports, specifying as follows: a) The number and details of all salmon stocked will be reported in annual Salmonid and Freshwater Fisheries Statistics for England and Wales and report number of stocking plans reviewed; b) The reporting of actions to highlight evidence about the impacts of salmon stocking.
	Funding secured for both action and monitoring programme?	Expected
Action A2:	Description of action:	To prevent the introduction and spread of non-native fish, invertebrate species, parasites and diseases, excluding *G. salaris* (A2), we will: a) implement and enforce Keeping and Introduction of Fish Regulations (in 2015, the Environment Agency issued 5,207); b) implement European Council Regulation No. 708/2007 concerning the Use of Alien and Locally Absent Species in Aquaculture and the Alien and Locally Absent Species in Aquaculture (England and Wales) Regulations 2011; c) monitor disease threats (e.g. *Saprolegnia* and red vent syndrome) and the occurrence of non-native species (e.g. pink salmon) together with providing timely management advice; d) implement biosecurity protocols including the 'Check, Clean, Dry' campaign: and e) remove non-native fish at high-risk sites and/or applying Import of Live Fish Act (IFLA) or fish movement regulations to take appropriate enforcement action where site owners are not

		compliant.
	Planned timescale (include milestones where appropriate):	Progress reviewed and reported annually.
	Expected outcome:	Containment and/or eradication of undesirable non-native fish species and prevention of *G. salaris* and other parasites and diseases occurring in England and Wales.
	Approach for monitoring effectiveness & enforcement:	It is not possible to set quantitative targets for action a)-e) because the associated metrics are not known. Therefore, progress will be measured in qualitative terms in the NASCO Annual Progress Reports, specifying as follows: a) Report of the number of permits issued; b) Number of cases; c) Number of disease screening samples analysed and reports of non-native species. FHI monitors aquaculture sites and investigates all potential outbreaks of notifiable disease in farmed, managed and wild fish populations; d) Report on any developments and uptake of biosecurity protocols; e) Number of successful non-native species removal exercises (e.g. for topmouth gudgeon).
	Funding secured for both action and monitoring programme?	Expected
Action A3:	Description of action:	To prevent the introduction and spread of the non-native parasite *G. salaris* (A3), we will: a) deliver the *G. salaris* surveillance programme, contingency planning and scenario testing/exercises; and b) implement biosecurity protocols, including ensuring in-river operations comply with best practice and encouraging anglers and other water users to remain vigilant to the risk of non-native species and pathogens, to report sightings and to take biosecurity measures (the 'Check, Clean, Dry' campaign)
	Planned timescale (include milestones where appropriate):	To 2024.
	Expected outcome:	Protection of salmon from impact of *G. salaris*.
	Approach for monitoring effectiveness & enforcement:	Progress will be measured in qualitative terms in the NASCO Annual Progress Reports, specifying as follows: a) Report on preparedness of participating agencies for a disease outbreak. b) Report the latest results of the *G.s* surveillance in wild stocks programme. c) Report on any developments and uptake of biosecurity protocols.
	Funding secured for	Expected

	both action and monitoring programme?	
Action A4:	Description of action:	To prevent adverse environmental impacts of aquaculture on adjacent water bodies and ecosystems (A4), we will: a) for freshwater aquaculture sites, fish farm discharge controls and EU restrictions on prohibited substances will continue to be applied and any breaches in consents will be reported; and b) for marine aquaculture sites, any proposal must comply with the Aquatic Animal Health (England and Wales) Regulations 2009 and will be subject to consultation with the Environment Agency, Natural England and NRW to protect wild fish populations, including wild salmonids and the aquatic environment.
	Planned timescale (include milestones where appropriate):	To 2024.
	Expected outcome:	Avoidance of deleterious impacts on water quality to ensure waters achieve compliance with WFD GES/GEP status and requirements of protected sites.
	Approach for monitoring effectiveness & enforcement:	Progress will be measured in qualitative terms in the NASCO Annual Progress Reports, specifying as follows: a) the number of consent breaches and b) details of marine aquaculture applications and conditions applied.
	Funding secured for both action and monitoring programme?	Expected

Copy and paste lines to add further actions which should be labelled A5, A6, etc

ANNEX 1. Map of England and Wales showing the main salmon river systems; denoting those with Salmon Action Plans (*) and those designated as Special Areas of Conservation ($) in which salmon must be maintained or restored to favourable conservation status.



English river systems

1 Aln
2 Coquet*
3 Tyne*
4 Wear*
5 Tees*
6 Esk (Yorkshire)*
7 Ouse
8 Trent
9 Thames*
10 Itchen*$
11 Test*
12 Avon (Hants)*$
13 Stour (Dorset)*
14 Piddle*
15 Frome*
16 Axe*
17 Exe*
18 Teign*$
19 Dart*$
20 Avon (Devon)*
21 Erme*$
22 Yealm*$
23 Plym*
24 Tavy*$
25 Tamar*
26 Lynher*
27 Looe
28 Fowey*
29 Camel*$
30 Torridge*
31 Taw*$
32 Lyn*
33 Severn*
65 Mersey
66 Ribble*
67 Wyre*
68 Lune*
69 Kent*
70 Leven*
71 Crake*
72 Duddon*
73 Esk (Cumbria)*
74 Irt*
75 Calder*
76 Ehen*$
77 Derwent*$
78 Ellen
79 Eden*$
80 Esk (Border)*

Welsh river systems

34 Wye*$
35 Usk*$
36 Taff*
37 Ogmore*
38 Afan*
39 Neath
40 Tawe*
41 Loughor*
42 Gwendraeth Fawr
43 Tywi*
44 Taf*
45 E & W Cleddau*
46 Nevern*
47 Teifi*$
48 Aeron
49 Ystwyth
50 Rheidol*
51 Dyfi*
52 Dysynni*
53 Mawddach*$ & Wnion*
54 Artro
55 Dwyryd*
56 Glaslyn*
57 Dwyfach & Dwyfawr*
58 Llyfni
59 Gwyrfai$
60 Seiont*
61 Ogwen*
62 Conwy*
63 Clwyd*
64 Dee*$

ANNEX 2. Rivers in England designated as 'recovering rivers'. These will be subject to mandatory catch-and-release of salmon from 2019.

Name of River	County
Allen	Cornwall
Aln	Northumberland
Annas	Cumbria
Avill	Somerset
Bela	Cumbria
Belford Burn	Northumberland
Blackeney Brook or Backpool Brook	Gloucestershire
Blyth	Northumberland
Bristol Avon	
Brit	Dorset
Derwent (Tyne)	Tyne and Wear/County Durham
Don	Tyne and Wear
Doniford	Somerset
Ellen	Cumbria
Ems	West Sussex
Fal	Cornwall
Gilpin	Cumbria
Harbourne	Devon
Heddon	Devon
Keer	Lancashire
Lerryn	Cornwall
Looe	Cornwall
Meon	Hampshire
Medway	Sussex and Kent
Mersey	
Mite	Cumbria
Otter	Devon
Par	Cornwall
Parrett	Dorset/Somerset
Porth	Cornwall
Seaton	Cornwall
Sid	Devon
Skelton Beck	North Yorkshire
Skinningrove Beck	North Yorkshire
Stour	Kent
Team	Tyne and Wear
Thames	
Trent	
Valency	Cornwall
Wansbeck	Northumberland
Waren Burn	Northumberland
Washford	Somerset
Weaver	Cheshire
Winster	Cumbria
Yorshire Ouse	Yorkshire

ANNEX 3. Decision Structure for developing fishing controls in England and Wales

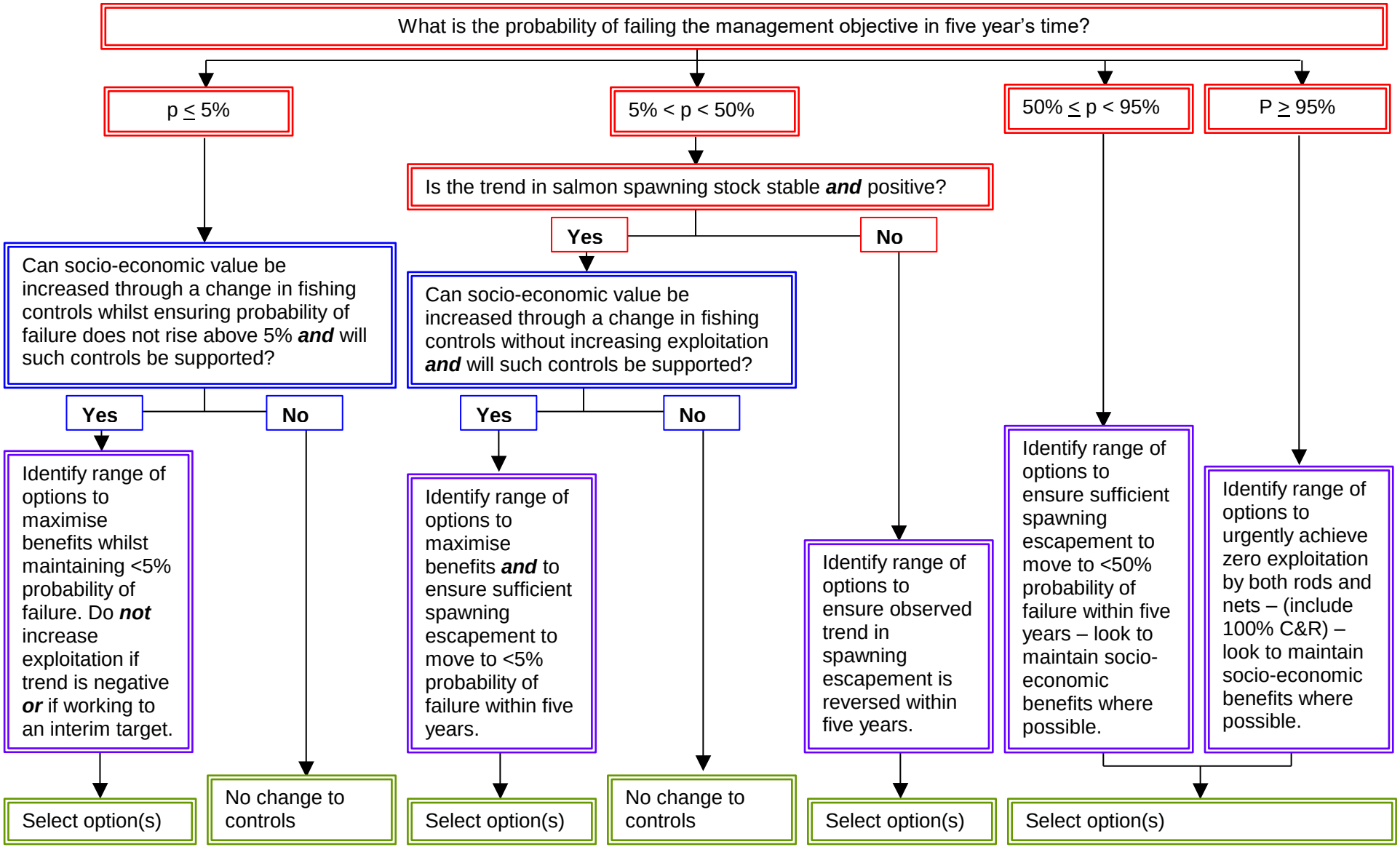
Compliance against the management objective (that a river must meet its Conservation Limit four years out of five) is assessed annually for each principal salmon river together with a forecast of that assessment in 5 years' time. A 'Decision Structure' is then applied and a process begun of deciding whether and what changes in regulation are appropriate.

Rivers that are recovering from historical degradation that do not yet have CLs set are deemed to have a >95% probability that they are failing unless there is better information available. Fishers on such rivers are encouraged to practice 100% C&R (catch and release) at the same time as regulators and partner organisations work on the necessary environmental improvements. If the potential for these rivers is greater than an average rod catch of 20 salmon, then mandatory C&R is considered throughout the season as an interim measure. However, controlled development of fisheries may be permitted on these rivers in parallel with the recovery of stocks.

Compliance assessments are considered alongside the Water Framework Directive (WFD) Good Ecological Status (GES) assessments for juvenile salmon (where available) for the constituent water bodies in that catchment before deciding the appropriate management response.

The 'Decision Structure' is shown in the schematic flow chart below, together with explanatory notes for its use.

ANNEX 3 (Continued). Decision Structure for developing fishing controls for salmon fisheries in England and Wales



ANNEX 3 (Continued) Notes to accompany Decision Structure

1. Initial stage - stock assessment (red boxes)

This the assessment of the probability that the salmon river will be meeting its CL four years out of five (the management objective) in five years' time.

2. Second stage – initial screening for potential options (blue boxes)

This stage screens options appropriate to those rivers that have a **<50% probability of failing the management objective** taking into consideration socio-economic concerns and stakeholder support. Management options that would not be supported by stakeholders can be ruled out. One of the possible options is to 'do nothing'.

For rivers where there is **>50% probability of failing the management objective**, all options must be carried through to the next (evaluation) stage.

3. Third stage - option evaluation (purple boxes)

The purpose of this stage is to set out and evaluate options to realise the required changes in exploitation.

For rivers where 50%≤p<95% (where p= probability of failing the management objective) **and the trend is down** and with an annual catch of >20 salmon and C&R rate < 90%, then voluntary C&R will be promoted for 1 year. If this fails to significantly improve C&R rates, mandatory C&R or closure of the fishery will be considered. Protected rivers such as SACs (Special Areas of Conservation) are given particular emphasis

For rivers where the above criteria apply, except that the annual mean salmon catch is <20 salmon, voluntary measures will be promoted

For rivers where p>95% (i.e. the management objective is clearly being failed) and with an annual catch of >20 salmon and a C&R rate < 90%, then voluntary C&R will be promoted for 1 year. If this fails to significantly improve C&R, mandatory C&R or closure of the fishery will be considered.

For rivers where p≤95% for 5 consecutive years (i.e. the management objective is clearly being met), the possibility of relaxing controls including on nets will be considered if stakeholders agree

4. Final stage – selection and implementation (green boxes)

The final stage of the Decision Structure is the final selection and implementation of the appropriate regulatory action.

ANNEX 4. Map of salmonid production facilities in England and Wales in 2018.