	Council ***Annual Progress Report on Actions taken under the Implementation Plan for the Calendar Year 2022 UK – England and Wales***	**CNL(23)42**

Annual Progress Report on Actions taken under the Implementation Plan for the Calendar Year 2022

The Annual Progress Reports allow NASCO to evaluate progress on actions taken by Parties / jurisdictions to implement its internationally agreed Resolutions, Agreements and Guidelines and, consequently, the achievement of their objectives and actions taken in accordance with the Convention. The following information should be provided through the Annual Progress Reports:

- any changes to the management regime for salmon and consequent changes to the Implementation Plan;
- actions that have been taken under the Implementation Plan in the previous year;
- significant changes to the status of stocks, and a report on catches; and
- actions taken in accordance with the provisions of the Convention.

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

These reports will be reviewed by the Council. Please complete this form and return it to the Secretariat **no later than 1 April 2023**.

Party:	**United Kingdom**
Jurisdiction / Region:	**England and Wales**

1: Changes to the Implementation Plan

1.1 Describe any proposed revisions to the Implementation Plan ***(Where changes are proposed, the revised Implementation Plans should be submitted to the Secretariat by 1 November).***

None.

1.2 Describe any major new initiatives or achievements for salmon conservation and management that you wish to highlight.

In 2022, in light of the ongoing rapid decline in salmon (and some sea trout) stocks in Wales, Natural Resources Wales (NRW) commissioned an evidence report (No. 674) on the identification and characterisation of small salmon populations to support their conservation and management. This was initiated after a workshop hosted by NRW in 2017 and has been completed. The report focuses on whether and how small and critically small populations can be identified and the degree to which demographic or genetic parameters can be used to establish "red flags" as triggers for increased actions. The report makes nine conclusions/recommendations, which are being reviewed/prioritised for implementation.

In 2022, an England *Chalk Stream Restoration Implementation Plan* was published, which encompasses six principal salmon rivers: Piddle, Frome, Stour, Hampshire Avon, Test and Itchen. This sits under England's *Chalk Stream Restoration Strategy, 2021*.

In January 2023, the Angling Trust launched a *Salmon Charter A Manifesto for Salmon Angling in England & Wales*. In February 2023, the Institute of Fisheries Management published a *Position Statement on Atlantic Salmon Conservation and Protection*.

In 2022, the International Union for the Conservation of Nature (IUCN) progressed its UK and global assessment of the state of Atlantic salmon populations.

2: Stock status and catches.

2.1 Provide a description of any new factors that may affect the abundance of salmon stocks significantly and, if there has been any significant change in stock status since the development of the Implementation Plan, provide a brief (200 word max) summary of these changes.

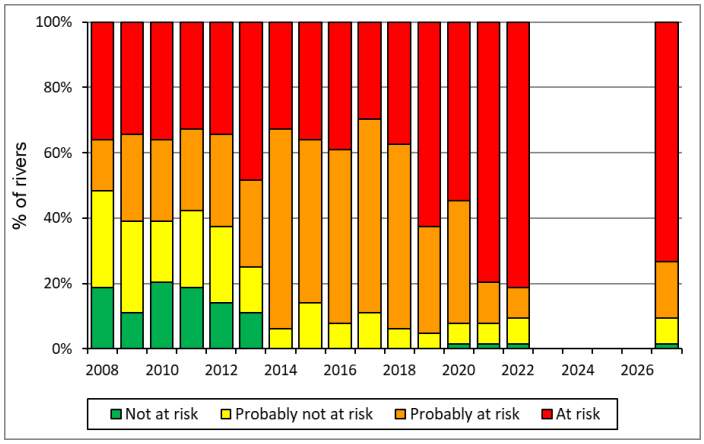
In 2022, the provisional salmon rod catch in England and Wales (E&W) of 6,303 was the second lowest on record (2021 was the lowest – 5,814). Salmon stocks are in an increasingly critical state when assessed against Conservation Limits (CLs) (see Action F1) with 90% of principal salmon rivers in E&W projected to be assessed as At Risk or Probably At Risk in 2027 if recent trends continue. The state of E&W salmon populations reflects the increasingly stressful environmental conditions in fresh, transitional and marine waters impacting on salmon most notably from climate change, diffuse and point-source pollution, habitat quality and barriers to migration. Prolonged periods of low river flows and warm water temperatures, which were most pronounced in South Wales and Southwest England, resulted in designated 'drought' conditions and were likely to have caused delayed upstream migration of salmon and, in extreme cases, were associated with increased mortality of adult fish on some rivers, notably on the River Wye. Reports of fungal (*Saprolegnia*) infections due to environmental stress, mainly in the spring, caused mortalities of fish most notably in some Northwest rivers. As expected, no pink salmon were reported in 2022.

2.2 Provide the following information on catches: *(nominal catch equals reported quantity of salmon caught and retained in tonnes 'round fresh weight' (i.e. weight of whole, ungutted, unfrozen fish) or 'round fresh weight equivalent').*

	In-river	Estuarine	Coastal	Total
(a) provisional nominal catch (which may be subject to revision) for 2022 (tonnes)	**1.1**	**0**	**0**	**1.1**
(b) confirmed nominal catch of salmon for 2021 (tonnes)	**1.1**	**0**	**0**	**1.1**
(c) estimated unreported catch for 2022 (tonnes)	**0.11**	**0**	**0**	**0.11**
(d) number and percentage of salmon caught and released in recreational fisheries in 2022	In E&W, 6,032 salmon were released from 6,303 salmon caught, which equates to 96% overall C&R (based on provisional 2022 rod catch data). This reflects a combination of voluntary and mandatory C&R requirements and is the highest percentage on record.			

3: Implementation Plan Actions.

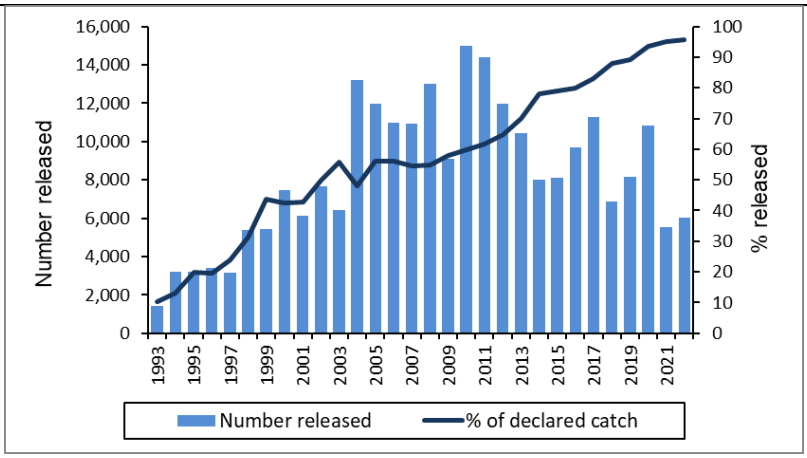
3.1 Provide an update on progress on actions relating to the Management of Salmon Fisheries *(section 2.9 of the Implementation Plan).*
***Note:** the reports under 'Progress on action to date' should provide a **brief overview** of each action. For all actions, provide **clear and concise** quantitative information to demonstrate progress. In*

	circumstances where quantitative information cannot be provided for a particular action because of its nature, a clear rationale must be given for not providing quantitative information and other information should be provided to enable progress with that action to be evaluated. While referring to additional material (e.g. via links to websites) may assist those seeking more detailed information, this will not be evaluated by the Review Group.	
Action F1:	Description of action (*as submitted in the IP*):	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).
	Expected outcome (*as submitted in the IP*):	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.
	Progress on action to date *(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):*	(i) In 2022, the status of salmon stocks was assessed for all 64 of E&W's principal salmon rivers to meet annual reporting requirements for ICES and NASCO. These will be published in the report: *Salmon Stocks and Fisheries in England and Wales 2022.* The assessment places each rivers' salmon stock into one of four categories with the strongest classed as 'Not at Risk' and the weakest as 'At Risk', see Figure 1. below. In 2022, 90% of principal salmon rivers in E&W were At Risk or Probably At Risk, which is a significant concern. (ii) Details of revised management measures are described in F3 and F4.  *Figure 1. Percentage of principal salmon rivers in England and Wales in each risk category, assessed against their management objective, for 2008-2022 and as projected for 2027, if recent trends continue.*
	Current status of action:	Ongoing

	If 'Completed', has the action achieved its objective?	
Action F2:	Description of action (*as submitted in the IP*):	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).
	Expected outcome (*as submitted in the IP*):	Introduction of a more robust stock assessment methodology with clearer and more timely links to management decision-making and regulatory responses.
	Progress on action to date *(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):*	In 2022, the national salmon stock assessment review group met regularly and progressed work in a number of areas, including: (i) Development of an improved modelling procedure to estimate angling exploitation rates on rivers without fishery independent measures of returning stock (the latter obtained from counters/traps). Model outputs are key to the estimation of run, spawner and egg deposition from rod catch data (the process on the majority of rivers). The model utilises exploitation rates obtained from our national fish counter network and index rivers in E&W alongside rod catch, fishing effort and flow data collected on all river systems. A draft paper, describing this modelling procedure has been circulated for initial comment from select external experts before wider circulation and submission to a peer-reviewed journal (mid-2023). This work has been supported by the SAMARCH project (see Action H2c). (ii) In the review and modification of statistical procedures used to assess compliance with Conservation Limits (CL), a key consideration has been to take account of NASCO's salmon management guidance and principles. It includes proposed changes to make the assessment process more transparent and to make a clearer link to the decision-making processes. The new methodology proposes to utilise a lower stock reference point (LRP) (the Conservation Limit) and an upper stock reference point (URP) (Management Target), which is derived from a proportion of catchment maximum smolt output. When each target is considered in combination, this will enable each principal salmon river's stock to be placed within a 3-tier stock classification system (replacing the current four-tier 'at risk' categories). Other proposed modifications include assessment based on the most recent years' performance (i.e. egg deposition in the latest 5-year period) alongside assessment based on the trend in egg deposition over the latest 10-year period and extrapolated 5-years into the future (i.e. akin to the current trend-based procedure) based upon standard regression rather than a 20 percentile regression. Work is close to completion and, as with the exploitation rate model, the aim is to submit the revised model and methodology to a peer-reviewed publication. Other aspects of the assessment process have been progressed e.g. relating to a review of the derivation of CLs; application of

		biological parameters (e.g. size, sex, fecundity) in the production of egg deposition estimates; and refinement of the Decision Structure - including the incorporation of fishery-independent measures of stock performance (e.g. better utilisation of juvenile salmonid survey data) and links to management - including efforts to develop a more timely regulatory response within the existing legal framework. The aim is to collate and report all aspects of this work in late summer 2023 and to follow this with an informal external consultation with a view to implementation in 2024. To keep stakeholders informed the England Fisheries Group, England Salmon Advisory Group and the Wales Fisheries Forum have been briefed on this work in 2022.
	Current status of action:	Ongoing
	If 'Completed', has the action achieved its objective?	
Action F3:	Description of action (*as submitted in the IP*):	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 requiring mandatory C&R of salmon were introduced in 2019 in England and 2021 in Wales). • Introduce mandatory C&R 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 with compulsory C&R. (Introduced 2019).
	Expected outcome (*as submitted in the IP*):	Reduction in the exploitation of stocks to facilitate conservation of wild salmon stocks and to aid stock recovery.
	Progress on action to date *(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):*	To 2022, 13 of the 15 Net Limitation Orders (NLOs) listed for review within the IP have been completed (Camel, Fowey, Lune, Severn, Teign, Exe, Taw/Torridge, Christchurch Harbour, Anglian Coast, NE Coast, Tamar, Tavy and Lynher) and the remainder (Kent, Leven,) are in hand. In 2022, the following NLOs were reviewed/are under consultation: **North East coast:** the NLO is awaiting Ministerial approval (Sea trout only). **River Kent:** out for consultation, includes byelaw proposal for rod fishery method restrictions and compulsory C&R. **River Leven:** out for consultation, includes byelaw proposal for rod fishery method restrictions and compulsory C&R. In 2022, in England, new salmon protection byelaws were progressed on the River Derwent and the tidal reaches of the Yorkshire Esk. On the England/Wales cross-border rivers Severn and Wye new (renewed) byelaws were introduced for salmon rod fisheries, which require 100% mandatory catch-and-release (C&R) and method restrictions to promote the survival of released fish. In Wales and on the river Usk, rod byelaws were renewed for 7 years which require 100% mandatory catch-and-release (C&R) and method restrictions to promote the survival of released fish. All byelaws came into force on 1st March 2022, before the start to the 2022 seasons For E&W in 2022, based on the provisional rod catch data, the overall C&R rate (mandatory and voluntary) was 96%.

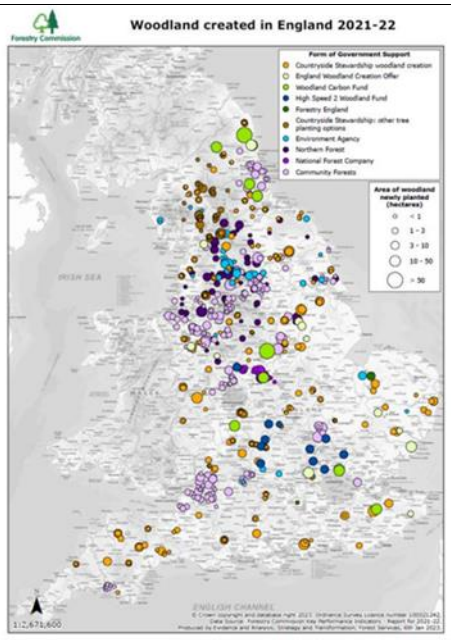
		 *Figure 2. The number and percentage of the declared salmon catch released by rod and line anglers, 1993-2022.*
	Current status of action:	Ongoing
	If 'Completed', has the action achieved its objective?	
Action F4:	Description of action (*as submitted in the IP*):	In order to ensure that mixed stock 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.
	Expected outcome (*as submitted in the IP*):	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.
	Progress on action to date	a. Completed.

	(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):	b. Completed. c. Completed. d. North East coast NLO review was completed in 2022 and is awaiting Ministerial approval (Sea trout fishery only).
	Current status of action:	Completed
	If 'Completed', has the action achieved its objective?	
Action F5:	Description of action (*as submitted in the IP*):	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).
	Expected outcome (*as submitted in the IP*):	Higher uptake of C&R in rod fisheries resulting in increased numbers of salmon surviving to spawn to facilitate stock recovery.
	Progress on action to date *(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):*	In 2022, based on provisional rod catch data, the overall C&R rate across E&W was 96% (2021 95%), with England C&R being 95% (2021 94%) and Wales 99.5% (2021 100%). C&R is compulsory in Wales and encouraged in England through a combination of mandatory and voluntary measures.  In 2022/23, WildFish UK produced new guidance on practicing successful rod C&R, which emphasises that fishing should be avoided when river temperatures exceed 19°C, keeping your fish in the water at all times, using smaller barbless hooks, always wet your hands, using a suitable sized knotless mesh net, having the right tools to unhook a fish safely and carefully supporting the fish while it recovers. In Wales, guidance has been issued to all netsmen on C&R. For rod and line anglers, a web-based guide: *Look after your salmon - an angler's guide to catch and release*, has been developed in partnership with the Wye and Usk Foundation, Angling Trust and Environment Agency.
	Current status of action:	Ongoing

	If 'Completed', has the action achieved its objective?	
Action F6:	Description of action (*as submitted in the IP*):	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
	Expected outcome (*as submitted in the IP*):	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.
	Progress on action to date *(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):*	(a) In 2022, in NE England, notable prosecutions for unlicensed illegal fixed nets included one offender being ordered to complete 200 hours of unpaid work, pay £500 costs and a £95 victim surcharge. Two further offenders received suspended sentence orders together totalling 7 months imprisonment, 400 hours unpaid work, £2,000 costs and £256 victim surcharge. For the use of a lamp and gaff (prohibited instruments), an offender was fined £495 and ordered to pay £500 costs.   

		<table><tr><th>**NE England salmonid fisheries enforcement 2022**</th><th>2022</th><th>2021</th></tr><tr><td>Section 1 & 2 offences (Gaff/Snatch/stripping eggs))</td><td>1</td><td>1</td></tr><tr><td>Section 27 unlicenced net offences</td><td>1</td><td></td></tr><tr><td>Illegal nets seized - salmon</td><td>3</td><td>5</td></tr><tr><td>Obstructions to migrating fish (Section 12 offences)</td><td>5</td><td>2</td></tr><tr><td>Section 2 (gravel removal/disturbing spawn of fish)</td><td>0</td><td>1</td></tr><tr><td>Local Enforcement Positions (LEPS)</td><td>1</td><td>1</td></tr><tr><td>Estuary and coastal boat patrols (8 commercial T netsmen checked and several other fishing boats checked)</td><td>14</td><td>14</td></tr><tr><td>Dealer inspections</td><td>16</td><td>15</td></tr><tr><td>Joint Boat patrols (IFCAs)</td><td>3</td><td>3</td></tr><tr><td>Joint Operations (Police/ external agencies)</td><td>6</td><td>4</td></tr><tr><td>Joint Operations (Yorkshire Area)</td><td>4</td><td>2</td></tr></table> In Wales, the most up-to-date figures are for 2021, which were published in 2022 in NRW's Annual Regulation Report. In 2021, 331 fisheries incidents were reported, many of which were salmon related. These comprised 245 incidents of illegal fishing and 55 incidents of fish kills. A total of 112 charges of illegal fishing were prosecuted and 40 rod and line charges. Two charges were prosecuted under the Theft Act 1968 for rod and line offences and a further four Theft Act charges were still in progress at the year-end. In addition, Advice and Guidance was issued in 41 cases and warning letters issued in 18 cases. At the end of the year there were a total of 80 enforcement cases in progress. b) In 2022, in England, under the Enforcement Review, to support enforcement operations, a national fisheries enforcement team has been established, Areas are required to produce fisheries enforcement plans and increased licence fee income will be used to support additional enforcement officers. c) In 2022, an Environment Agency / Inshore Fisheries Conservation Authorities (IFCA) working group met regularly to coordinate engagement with England's 10 IFCAs. Discussions remain ongoing concerning revised IFCA byelaws to protect salmon and sea trout from sea fisheries bycatch in Cornwall, Southern and Sussex IFCA areas. Environment Agency officers attended the National Inshore Marine Enforcement Group (NIMEG) with officers of both agencies operating with cross-warrants in some districts. Under SAMARCH a GIS layer of IFCA measures to protect salmon and sea trout has been developed. In Wales, Natural Resources Wales continue to seek ways of working with Welsh Government marine fisheries to better protect salmon in inshore waters
	Current status of action:	Ongoing

	If 'Completed', has the action achieved its objective?	

3.2 Provide an update on progress on actions relating to Habitat Protection and Restoration *(section 3.5 of the Implementation Plan).* ***Note:*** *the reports under 'Progress on action to date' should provide a* ***brief overview*** *of each action. For all actions, provide* ***clear and concise*** *quantitative information to demonstrate progress. In circumstances where quantitative information cannot be provided for a particular action because of its nature, a clear rationale must be given for not providing quantitative information and other information should be provided to enable progress with that action to be evaluated. While referring to additional material (e.g. via links to websites) may assist those seeking more detailed information, this will not be evaluated by the Review Group.*		
Action H1:	Description of action (*as submitted in the IP*):	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.
	Expected outcome (*as submitted in the IP*):	Improved salmon survival as a result of actions to moderate the impact of climate change.
	Progress on action to date *(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):*	a) In 2022, 5.5km of riparian tree planting on England's principal salmon rivers took place on the Ellen, Foye (St Neot), Camel (De Lank River and Allen) and the Wear (Smallhope Burn) and 68Ha of trees were associated with the Keeping Rivers Cool initiative (Forestry Commission data). In 2019, Welsh Government declared a climate emergency and outlined targets for woodland creation in 

		Wales of around 43K hectares by 2030 and 180K hectares by 2050 to help Wales meet carbon emission reduction targets. This work is ongoing. Some tree-planting initiatives are associated with river corridors; for example, in 2022 the LIFEDeeRiver project reported the planting of 10,590 trees within fenced areas of riverbank. These bring a mix of benefits including keeping rivers cool through shading; improved bank stability and carbon sequestration. b) In 2022, due to the high temperatures the three voluntary schemes to cease fishing when temperatures exceed 19^{o}C continued on the rivers Test, Itchen and Hampshire Avon and additional voluntary schemes were brought in by fisheries on rivers including the Wye and Usk during July and August. c) Further work is required to determine the application of thermal standards in the permitting of discharges. d) During 2022, temperature monitoring continued on the rivers Tamar, Wye, Usk, Tywi, Conwy, Clwyd and Dee (the latter via Natural Resources Wales and partner organisations including Welsh Water, Afonydd Cymru and Wye Salmon Association). Options for developing a telemetered network of river temperature sensors are being examined. e) In 2022, the UK Government's *Climate Change Risk Assessment* (CCRA3) was published, which sits alongside the UK's National Adaptation Programme (2018-23) and Environment Agency's plan *Living Better with a Changing Climate* (2021) under which measures to safeguard salmon were detailed in 2022. In 2022, *Chalk streams of the future: The effects of climate change on biodiversity in England's iconic river ecosystems*, was published. In 2022, an NRW project began using juvenile salmon and trout survey data, along with associated life-stage measures (e.g. spawner and egg abundance), to explore the influences of environmental change – including water quality parameters - on freshwater survival. This will seek to identify negative effects at various spatial scales (e.g. sub-catchment to national) in order to inform possible mitigating measures.
	Current status of action:	Ongoing
	If 'Completed', has the action achieved its objective?	
Action H2:	Description of action (*as submitted in the IP*):	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.
	Expected outcome (*as submitted in the IP*):	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.
	Progress on action to date *(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):*	a) Completed. The paper: *A review of marine stressors impacting Atlantic salmon Salmo salar, with an assessment of major threats to English stocks*, Gilson et al. (2021), has been published. b) Completed. In October 2022, the concluding IYS symposium for Atlantic and Pacific salmon took place in Vancouver, Canada. c) The SAlmonid MAnagement Round the CHannel project (SAMARCH) by 2022, has collected extensive information on the timings, movements and survival of salmon and sea trout in transitional and marine waters. It has tracked 900 salmon and sea trout smolts through the lower river and estuary of four rivers; tagged 314 adult sea trout in three rivers and collected data from 84 of them on their marine movements, swimming depths, survival and reasons for mortality at sea; tagged nearly 100,000 juvenile salmon and trout on two rivers to assess marine survival rates; used molecular genetics to sex 9,500 juvenile salmon and trout; read 10,000 sets of salmon scales for changes in the ages and growth of fish at sea since 1971; developed a genetic database for salmon and trout from all rivers flowing into the Channel and assigned sea trout caught at sea back to their rivers of origin. 17 scientific papers have been published so far and the project has supported two PhD projects and 12 MSc projects. To strengthen the protection of salmon and sea trout at sea a series of GIS layers have been produced summarising the project's findings and marine policy recommendations include restricting/conditioning activities such as dredging to avoid key migration periods (e.g. smolt run), strengthening measures to reduce the risk of by-catch and securing enhanced recognition for salmon and sea trout within marine protection areas and marine spatial planning. In 2022, in Wales, a telemetry study to examine the migratory behaviour of salmon and sea trout smolts in riverine (Tawe) and

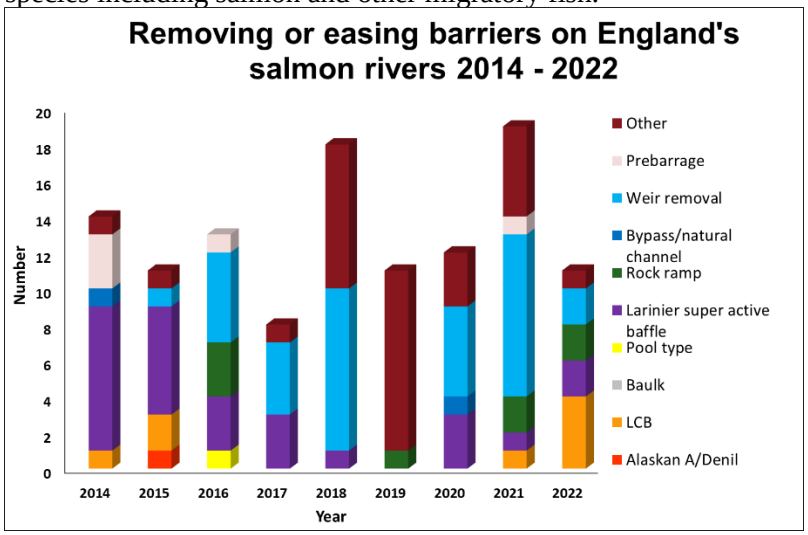
<table>
<tr><td></td><td></td><td>coastal areas (Swansea Bay) was continued by the University of Swansea.

d) In 2022, in England, the Environment Agency established an EA IFCA representatives' group to share best practice and coordinate its approach. Measures to reduce the risk of by-catch remain in progress through the review of Southern, Sussex and Cornwall IFCA byelaws. All Net Limitation Orders (NLOs) in Wales are in place.

e) In 2022, in England and Wales, WFD Cycle 3 ecological classification is the latest available data, which for transitional and coastal (TraC) waters show the following:

<table><tr><th></th><th>High</th><th>Good</th><th>Moderate</th><th>Poor</th><th>Bad</th></tr><tr><td>England Transitional</td><td>0%</td><td>19%</td><td>71.4%</td><td>4.8%</td><td>4.8%</td></tr><tr><td>England Coastal</td><td>0%</td><td>45.9%</td><td>54.1%</td><td>0%</td><td>0%</td></tr><tr><td>Wales Transitional</td><td>0%</td><td>12.5%</td><td>84.4%</td><td>3.1%</td><td>0%</td></tr><tr><td>Wales Coastal</td><td>4.3%</td><td>30.4%</td><td>61%</td><td>4.3%</td><td>0%</td></tr></table>
f) In 2022, a public inquiry was unable to conclude 'no adverse effect on site integrity' if Hinkley Point C nuclear power station were to operate its cooling water system without acoustic fish deterrents (AFD). The company are proposing to apply for a Development Consent Order material change to remove the requirement for an AFD and it is likely that this will require compensation under the Habitats Regulations. In 2022, Natural Resources Wales continued discussions with several tidal power developers concerning environmental impact assessments, including impacts to diadromous fish.</td></tr>
<tr><td></td><td>Current status of action:</td><td>Ongoing</td></tr>
<tr><td></td><td>If 'Completed', has the action achieved its objective?</td><td></td></tr>
<tr><td>Action H3:</td><td>Description of action (as submitted in the IP):</td><td>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) seek to ensure in-river hydropower and tidal power schemes meet defined standards and do not cause deterioration in salmon populations.</td></tr>
<tr><td></td><td>Expected outcome (as submitted in the IP):</td><td>Improved fish passage allowing greater access to spawning areas and improved smolt survival combined with enhanced habitat improving spawning success and juvenile survival.</td></tr>
<tr><td></td><td>Progress on action to date</td><td>a) In 2022, fish passage was improved on 11 weirs/barriers across England's principal salmon rivers, improving access on the Severn,</td></tr>
</table>

	(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):	Kent, Ribble, Dart, Exe and Camel (data from the Environment Agency's fish passage panel and 'kilometres of river enhanced' database). In addition, what will be the largest fish pass in England, is under construction at Holme Sluices on the River Trent, which is a recovering salmon river. In Wales, fish passage projects are largely delivered by NRW, Afonydd Cymru and the Rivers Trust. In 2021/22 £42k was spent by the Sustainable Fisheries Programme on 13 fish passage schemes. Planning (feasibility/design) has also been progressed on a similar number of larger fish pass schemes as part of the in-house 'Salmon4Tommorrow' Programme (~£1m). The multi-year LIFEDeeRiver (~£6.8m) and Four Rivers for LIFE projects (~9.0m) are also addressing a number fish passage issues alongside other environmental improvements which will benefit various SAC species including salmon and other migratory fish.  *Figure 4. Removing or easing barriers on England's salmon rivers 2014-2022 (Data source: EA National Fish Pass Panel and Kms River Enhanced database).*  *£8.5m Holme Sluices deep vertical slot fish pass under construction on the River Trent a recovering salmon river*

		b) In 2022, 76km of habitat was enhanced across England's 42 principal salmon rivers (data from the Environment Agency's 'kilometres of river enhanced' database). Afonydd Cymru and the Rivers Trusts continue to deliver habitat restoration and river habitat works across Wales – funded through the Inland Fisheries Habitat Restoration and Alternative Mitigation grants (~£2.2m 2022-2024). These include liming and gravel introductions in the upper Wye (Wye and Usk Foundation) and various fencing and in-river habitat improvement works (e.g. 3km of works undertaken by the Welsh Dee and North Wales Rivers Trusts in 2022) Similar works are being carried out as part of the LIFE projects (see above). For example, in 2022 the LIFEDeeRiver project reported the introduction 5,500 tonnes of gravel, boulders and woody material to denuded rivers and fenced-off 29km of river to improve riparian habitats. c) In 2022, no new hydropower schemes were licenced on England's principal salmon rivers. There were 7 recorded occurrences of non-compliance associated with water resource hydropower licences: five were linked to inaccurate meter readings, one was associated with a partial blockage of a weir and one was caused by a broken fish screen. In Wales, NRW continues to apply its hydropower guidance when licensing HEP schemes - ensuring residual flows are protective of salmon habitat and flow requirements, and new impoundments are sited and designed to protect upstream and downstream passage. There has been limited further development of new hydro schemes in Wales following changes in financial support for renewable energy schemes.
	Current status of action:	Ongoing
	If 'Completed', has the action achieved its objective?	
Action H4:	Description of action (*as submitted in the IP*):	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.
	Expected outcome (*as submitted in the IP*):	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.
	Progress on action to date *(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):*	a) In 2022, in England, no abstraction licences on principal salmon rivers were reviewed under the RSA programme. In Wales, NRW are progressing discussions with holders of abstraction and impoundment licences within the RSA programme. For example, in 2022, Associated British Ports were issued with a licence for their abstraction at Greenpark Weir under the New Authorisations/Transitional arrangements. Licence conditions reflected agreed operating rules derived from investigations undertaken by the Afan Water Management Group (consisting of industry, environmental, planning authority and regulatory stakeholders). A series of specific licence conditions e.g. linked to water level and seasonal factors, seek to ensure residual flows and screening arrangements facilitate fish passage at all times. b) In 2022, 9 time-limited licences on England's principal salmon rivers were reviewed. Two of these were varied to reduce abstraction. In Wales, NRW continues to review all time-limited licences in accordance with the review schedule.

		c) In 2022, in England, no licence, that has been shown to be seriously damaging to salmon was modified. There are no licences in this category in Wales. d) In 2022, in England, one unused/underused licence was revoked under phase four of this programme. This action is not applicable to Wales. e) By the end of 2022, in England, 99% of the 1,632 significant abstractions to be brought into regulation have been determined and the programme is due to be completed by 30th June 2023. In Wales, all117 applications were determined by the 31st December 2022 statutory determination deadline. This process has involved a light touch and risk-based approach which recognises the reliance on these lawful abstractions. Generally, activities have been licensed in line with evidenced historical abstraction. Decisions to curtail or refuse have been made where there is risk of serious damage to the environment. f) In 2022, Water Companies, as part of the Water Industry National Environment Programme (WINEP), did not complete any schemes that will bring benefits to salmon. In 2023, there are 4 investigation and improvement schemes scheduled on Principal Salmon Rivers. Drivers for salmon are included in PR24 (2024-2029) including fish passage, screening and environmental improvements. In Wales, NRW is progressing discussions with water companies on water resources schemes within the National Environment Programme. Nine sites have been identified for either improvement to flow or sediment management to meet Water Framework Directive requirements for Heavily Modified Water Bodies by 2025. g**)** In 2022, in England, the Environment Agency has continued to develop its hydroecology toolkit. Version 2 has now been released, which is focussed on macro-invertebrates though its underlying approach can equally be applied to fish. Workshops are now underway with the water industry to familiarise them with the approach and to use this in future water resource planning. This action is not applicable to Wales. h) In 2022, in England, given the extremely hot dry summer, reservoir releases were made to facilitate both the smolt run and provide for returning adult fish. In Wales, Natural Resources Wales applies its hydropower guidance when licensing HEP schemes (see H3 d). Work to improve understanding of the effects of reservoir operation and flow regulation on salmon migration in the rivers Dee, Wye, Usk and Severn is ongoing. For example, on the River Dee, a multi-year investigation involving tracking and other techniques is being undertaken, including in 2022, to examine any adverse impacts of the Bala sluices on the migratory behaviour of salmon smolts and adults at this site. These investigations have already resulted in adaptive management responses to benefit fish passage and will inform potential future modifications to this structure and/or its operation.

		In 2022, as a consequence of 'drought' conditions, drought permits were developed for salmon rivers in the south and southwest of England, which highlights the impact of climate change and the fragility of water availability and water demand.
	Current status of action:	Ongoing
	If 'Completed', has the action achieved its objective?	
Action H5:	Description of action (*as submitted in the IP*):	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).
	Expected outcome (*as submitted in the IP*):	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.
	Progress on action to date *(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):*	a) In 2022, in England, WFD Cycle 3 ecological classification (2021) is the latest available data, which for principal salmon rivers shows the following: High Good Moderate Poor Bad River 0.2% 25.5% 54.9% 16.5% 3.0% In Wales, the latest WFD (cycle 3) classifications were undertaken in 2021. In total, 933 surface and ground waterbodies were classified to set the baseline for cycle 3. Across all these waterbodies, 40% were classified as having Good or better overall status in 2021 (i.e. combining ecological and chemical metrics). This represented a 3% improvement from that reported in 2015 at the start of the second cycle and an 8% improvement since 2009. These assessments will be used to help deliver environmental improvements though the River Basin Management Planning cycle. Cycle 3 River Basin Management Plans (2021-2027) were published by Natural

		Resources Wales for the Western Wales and Dee River Basins in 2022. WildFish continues its SmartRivers project across all of the UK, specifically looking at the ecological impact of various pollutions on UK rivers and the availability of invert food for juvenile salmon. b) In 2022, Water Companies, as part of the Water Industry National Environment Programme (WINEP), completed 137 schemes that will bring benefits to salmon. 73 of these were on our Principal Salmon Rivers and 64 on recovering salmon rivers. The schemes were predominantly to investigate the impact of water quality, flow and physical modification pressures. In 2023, there are 21 investigation and improvement schemes scheduled on Principal Salmon Rivers (18) and recovering salmon rivers (3). The National Environment Programme (NEP) PR19 for Wales identifies a number of actions by the lead water company – Dŵr Cymru/Welsh Water (DCWW) – to improve environmental quality over the lifetime of the plan (2020-2025). This includes targeting improvements to 418km of rivers over the course of the AMP7 period (to 2025) and a further 128km during AMP8 – to 2030. These figures have been agreed with NRW and the Environment Agency as part of the NEP process, and as such have the status of formal legal obligations. NRW's latest annual performance report for DCWW in 2021 (published in 2022) awarded a '3 star' rating overall – dropping back from the (highest possible) '4 star' rating achieved for the first time in 2022. The rating for delivery of the Asset Management Programme (AMP) remained 'green' (100%) as did the 'Total number of sewerage related pollution incidents' (23 per unit sewer length). However, 'amber' ratings were assigned for the 'Total number of serious pollution incidents' (3) and for the 'Self-reporting of pollution incidents' (98%). c) To the end of 2022, to improve conditions for salmon through targeted agri-environment schemes, uptake by farms within England's 42 principal salmon catchments Catchment Sensitive Farming encompassed 9,681 farms covering 1,604,733 hectares. In 2022, the nature-based farming Environmental Land Management scheme was given the green light and comprises payments for the Sustainable Farming Incentive, an evolved Countryside Stewardship scheme and Landscape Recovery (LR). Under LR, which comprises large-scale, long-term projects, under Round 1, 9 LR projects align with principal salmon water bodies (totalling 19,682 Ha), and 5 of these projects mention targeting salmon as part of their project proposal. The Wales Land Management Forum (WLMF) and a sub-group on agricultural pollution met regularly during 2022 with the broad aims of developing mutual understanding of the root causes of pollution and identifying a range of approaches for driving improvements. The focus is on slurry and nutrient management alongside water quality issues relating to soil runoff and use of agri-chemicals. A River Pollution Summit was convened by Welsh Government (WG) in 2022 – in particular to address concerns around phosphate pollution

		in SAC rivers and potential remedial measures. To this end, eight areas of intervention were identified and new funding provided by WG (£415K in 2022-2023) to support the work of Nutrient Management Boards. This is in addition to existing WG funding over the next 3 years e.g. £40m to address water quality problems across Wales and £337m to farmers, foresters and associated businesses to foster resilience in the rural economy, including supporting actions to tackle agricultural pollution. Other initiatives to tackle concerns around environmental quality in 2022 include the identification of ten Opportunity Catchments by Natural Resources Wales where there will be enhanced focus on addressing objectives relating to Water Framework Directive (WFD) Regulations and wider outcomes linked to Sustainable Management of Natural Resources and well-being. Opportunity Catchments include parts of the Dee, Usk, Wye, Teifi and Cleddau SAC rivers. d) In England, the most recent published information on serious pollution incidents is for 2021, when there were 561 (2020: 563). Of these 17% were attributed to illegal waste activities, 16% to waste management activities, 11% to water and sewerage companies and 10% to farming activities. In 2021, serious pollution incidents caused by water and sewerage companies increased by 41% on 2020, the worst rate in the time series. Water companies with 4 or more reported separate serious pollution incidents in 2021 were: Anglian (14), Thames (12), Southern (12) South West (8) Yorkshire (5), Wessex (5) and Severn Trent (4).  *Serious pollution incidents caused by water and sewerage companies 205 to 2021* In Wales, the frequency of agricultural pollution incidents is a source of concern. The agricultural industry has been responsible for between 120 to 170 substantiated pollution incidents in recent years. Over 60% of these incidents took place within South West Wales, peaking in January to May. Some 50% of substantiated agricultural pollution incidents have been traced back to dairy farming (incidents involving less than 4% of dairy farms and ~1% of all farms). On 1 April 2021 new regulations for agricultural pollution came into force. These address areas such as when to spread fertiliser and make or store silage. The new regulations are being introduced over the course of 3 years, providing time for farmers to plan for any changes.
	Current status of action:	Ongoing
	If 'Completed', has the action achieved its objective?	
Action H6:	Description of action (*as submitted in the IP*):	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).
	Expected outcome (*as submitted in the IP*):	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'.
	Progress on action to date *(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):*	a) In 2022, in England, there were 459 licences granted to control piscivorous birds for the 2022/2023 season. This comprised 383 cormorant-only individual licences and 17 cormorant-only Area licences; 6 cormorant and goosander Area licences; 29 goosander-only licences (there were no goosander-only Area licences); and 24 grey heron licences (there were no Area grey heron licences). In Wales, 10 catchment-based licences were issued in 2021/22 for control of cormorants (46) and goosanders (42). b) A 'Fish-Eating Birds external Advisory Group' was commissioned by Natural Resources Wales in 2020 to examine the extent to which fish-eating birds were implicated in (i) the decline or the suppressed recovery of wild fish populations and (ii) damage to still water fisheries. Depending on the findings of the above (iii) options would be explored to manage the impact of predation by fish-eating birds. The key outputs of the Advisory Group were ten evidence reports that informed the development of a Final Report and a set of recommendations, submitted to NRW (May 2022). Based on the recommendations from the Advisory Group, NRW proposed a set of 39 actions. This framework was approved by NRW Board (July 2022). Funding options to support implementation are currently being explored. c) In 2022, a review of barriers on England's principal salmon rivers produced initial maps to identify outstanding priority barriers that need addressing. Natural Resources Wales and partners on the River Usk, continued a 3-year salmon smolt tracking (2020-23) study that aims to examine losses during in-river migration – including the effects of barriers to migration (and their alleviation) on predation losses. Prolonged dry weather and low flows throughout the migration period in 2022 resulted in just 24% of the 100 tagged smolts passing the final receiver array with the last fish leaving the river on the 17th June.

		d) The most recent abundance estimates of grey and harbour seals are for 2020 ("Scientific Advice on Matters Related to the Management of Seal Populations: 2021", SCOS-2021.pdf st-andrews.ac.uk), which indicate that populations at the start of the breeding season were 30,700 (2019 28,400) in England and 5,200 (2019 5,000) in Wales. Grey seal pup production in 2019 was estimated at 11,300 in England and 2,250 in Wales, with an increasing trend from 2016 to 2019 in England (+9.7 % per annum). No trend was reported for Wales, due to a lack of data. Population estimates for harbour seals were 5,000 in England and <15 in Wales, with 2020-2021 surveys showing a population decline in England (2019-2021 counts in Southeast England were 38% lower than in 2014-2018). Numbers are too low in Wales to report a trend. For otters, the most up to date information is for 2018. Across Britain otter numbers were estimated at 11,000, which is a 49% increase since the previous estimate in 1995 (Mathews et al., 2018: MAMMALS-Technical-Summary-FINALNE-Verision-FM2.pdf). In Wales, the sixth national otter survey reported a 22% decline in number of sites with otter signs in 2015-2018 compared with the previous survey in 2009-2010, the first time that a decline has been observed since these surveys began in 1977 (Kean & Chadwick, 2021). For fish eating birds, using the most up-to-date information, the British Trust for Ornithology's 2021 Breeding Bird Survey report did not indicate any significant trends in the distribution of cormorants in England (Harris et al., 2022). Natural Resources Wales reported estimated wintering populations of 2,894 cormorants and 1460 goosanders within the catchments of the ten principal Welsh salmonid rivers surveyed in winter 2020-2021 (Taylor et al., 2022).
	Current status of action:	Ongoing
	If 'Completed', has the action achieved its objective?	

3.3 Provide an update on progress on actions relating to Aquaculture, Introductions and Transfers and Transgenics *(section 4.11 of the Implementation Plan).* ***Note**: the reports under 'Progress on action to date' should provide a **brief overview** of each action. For all actions, provide **clear and concise** quantitative information to demonstrate progress. In circumstances where quantitative information cannot be provided for a particular action because of its nature, a clear rationale must be given for not providing quantitative information and other information should be provided to enable progress with that action to be evaluated. While referring to additional material (e.g. via links to websites) may assist those seeking more detailed information, this will not be evaluated by the Review Group.*		
Action A1:	Description of action (*as submitted in the IP*):	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.*
	Expected outcome (*as submitted in the IP*):	All authorised stocking operations ensure the protection of genetic integrity and fitness of wild salmon populations.
	Progress on action to date *(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):*	a) Five salmon hatcheries operate across England for mitigation and restoration purposes and they are all required to adhere to the Environment Agency's stocking policy. In 2022, 18,463 0+ fry were stocked to the North Tyne in mitigation for the impact of Kielder Reservoir. b) In 2022, the Environment Agency continued to highlight the impacts of salmon stocking. c) In Line with NRW policy, no enhancement or restoration salmon stocking was undertaken in Wales in 2022.
	Current status of action:	Ongoing
	If 'Completed', has the action achieved its objective?	
Action A2:	Description of action (*as submitted in the IP*):	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.
	Expected outcome (*as submitted in the IP*):	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.
	Progress on action to date *(Provide a brief overview with a quantitative measure, or other justified*	a) Since the implementation of the Keeping and Introduction of Fish Regulations in 2015, the total number of live/active permits issued by the Environment Agency is 6,488 (up 479 from 2021) Live Fish Movements Site Permits and 431 (down

	evaluation, of progress. Other material (e.g. website links) will not be evaluated):	10 on 2021) Live Fish Supplier Permits (for introductions of non-native fish) up to 8 March 2023. b) In 2022, there have been no applications to culture non-native or locally absent fish species in natural waters in E&W. Defra's policy remains to prohibit the culture of any non-native species in sites connected to natural waters. c) In 2022, in England, more seizures of Prussian carp (*Carassius gibelio*) were made under the Import of Live Fish Act (IFLA), though numbers are not available at present due to ongoing investigations. d) In 2022, the FHI carried out 86 investigations relating to suspicions of notifiable disease, the majority in fishery waters, 10 investigations at ornamental retailers and 2 on shellfish sites. In addition, 36 fish samples were screened for notifiable diseases on imports. In 2022, the only listed disease detected was Koi Herpesvirus Disease (KHV) with 19 (20 in 2021) fishery sites being subject to formal controls for this disease by the FHI. e**)** In 2022, two topmouth gudgeon (TMG) sites were identified for action. One site in Kent dried out and no evidence of TMG was found. A further site in Hampshire was successfully treated with rotenone. Both sites will be subject to 4 years of surveys to confirm that the TMG population was eradicated. Six outstanding sites with TMG have been identified in England and plans are being drawn up to progress eradication. The use of eDNA is being actively explored to verify the presence of non-native fish species. Prussian carp are an increasing concern. Natural Resources Wales monitored 27 sites for the presence of TMG between January 2021 and February 2022. Most recently, 5 sites have been identified with active populations of TMG in Wales. It is intended that these sites will be further assessed and targeted for future eradication efforts and/or biocontrol methods (dependent upon funding/budgetary approval). Eradication operations at one site in January 2023 was halted due to technical issues and the risk of piscicide (rotenone) being released into nearby watercourses.
	Current status of action:	Ongoing
	If 'Completed', has the action achieved its objective?	
Action A3:	Description of action (*as submitted in the IP*):	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)
	Expected outcome (*as submitted in the IP*):	Protection of salmon from impact of *G. salaris*.
	Progress on action to date *(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):*	a) *G. salaris* contingency plans continue to be developed and tested in line with the Defra contingency plan. In 2022, outcomes from Operation Russian Doll continued to improve our operational preparedness and emergency response. Further testing of communications between Cefas, Defra, the Environment Agency, Natural Resources Wales and Welsh Government in the event of an outbreak of Spring Viremia of Carp was done under Operation Electra. b) 11 wild salmonid samples were taken from 11 river catchments in 2022 and all were negative for the presence of *G. salaris*. There was no suspicion of the presence of the parasite during routine inspections of salmonid farms, and no reports of unusually low levels of natural salmon parr populations that would have triggered specific investigation.
	Current status of action:	Ongoing
	If 'Completed', has the action achieved its objective?	
Action A4:	Description of action (*as submitted in the IP*):	To prevent an adverse impact of aquaculture on water quality (A4), fish farm discharge controls and restrictions on prohibited substances will be applied and any breaches in consents reported.
	Expected outcome (*as submitted in the IP*):	Avoidance of deleterious impacts on water quality to ensure waters achieve compliance with WFD GES/GEP status and requirements of protected sites.
	Progress on action to date *(Provide a brief overview with a quantitative measure, or other justified evaluation, of progress. Other material (e.g. website links) will not be evaluated):*	In 2022, the latest figures available relate to 2021 with 44 completed breach records (CCS-NCAD Report). Breaches included: oxygen, ammonia and suspended solids with action required to ensure compliance.
	Current status of action:	Ongoing
	If 'Completed', has the action achieved its objective?	

4: Additional information required under the Convention

4.1 Details of any laws, regulations and programmes that have been adopted or repealed since the last notification.

4.2 Details of any new commitments concerning the adoption or maintenance in force for specified periods of time of conservation, restoration, and other management measures.
4.3 Details of any new actions to prohibit fishing for salmon beyond 12 nautical miles.
4.4 Details of any new actions to invite the attention of States not party to the Convention to matters relating to the activities of its vessels which could adversely affect salmon stocks subject to the Convention.
4.5 Details of any actions taken to implement regulatory measures under Article 13 of the Convention including imposition of adequate penalties for violations.
North American Commission Members only:
4.6 Details of any new measures to minimise bycatches of salmon originating in the rivers of the other member.
4.7 Details of any alteration to fishing patterns that result in the initiation of fishing or increase in catches of salmon originating in the rivers of another Party except with the consent of the latter.