



Southern Inshore Fisheries and Conservation Authority

Conservation Assessment Package for Plan/Project:

Net Fishing Byelaw

Document Control

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Revision History

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This document has been distributed for information and comment to:

Title	Name	Date sent	Comments received
Marine Lead Advisor	Dr Richard Morgan	07/01/20	<p>*Note these comments relate to the fourth draft of this HRA, further amendments to the HRA have been required since this advice was received and therefore the finalised version of the HRA will be sent to NE for comment.</p> <p>21/01/20: Natural England provided recommendations including regarding the active monitoring of salmonid bycatch and, on the basis of the use of monitoring as a key tool for ensuring compliance with Habitats Regulations, NE have a view that it is possible for the introduction of the Net Fishing Byelaw, and associated issuing of permits for the Southampton Water Permit Area, to avoid having an adverse effect on the integrity of the River Itchen SAC.</p>
Marine Lead Advisor	Dr Richard Morgan	01/10/21	<p>Final Draft sent to NE. Formal Advice received 22/10/21. NE supports introduction of Net Fishing Byelaw in principle and the approach taken by Southern IFCA in drafting the Conservation Advice Package and accompanying Literature Review and Monitoring and Control Plan. NE welcomes the commitment by Southern IFCA to manage netting within Functionally Linked Areas and finds the risk-based approach to management provides a transparent and robust method of assessing the risk of netting impacts within FLAs. NE agree with the risk categories that have been applied to each area. NE Agrees with the conclusion that the Southern IFCA Net Fishing Byelaw and associated Net Permits will not have an adverse effect, alone, or in combination on migratory salmonids upon the sites assessed. It is acknowledged that some uncertainty remains regarding actual levels of salmonid interaction with nets, together with the possibility of fishing effort increasing in the future. On this basis, NE regards the active monitoring of salmonid interaction, especially in the first year, as a key tool for ensuring that Southern IFCA's management of fishing within estuaries and harbours remains compliant with relevant legislation.</p>

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SECTION A: Introduction

1.0 Proposed Plan/Project: The Net Fishing Byelaw

In August 2017, Southern Inshore Fisheries and Conservation Authority (IFCA) resolved to review and, if necessary, develop netting regulations for The District's harbours and estuarine waters.

The Policy Objectives underpinning the Netting Review are:

- A. To support the use of estuaries and harbours in the District as essential fish habitats.
- B. To provide protection to migratory salmonids as they transit through the District's estuaries and harbours.
- C. To balance the social and economic benefits of net fisheries
- D. To further the conservation objectives of Designated Sites.

In order for Southern IFCA to deliver these Policy Objectives with direct consideration of the legislative responsibilities upon Southern IFCA, a Net Fishing Byelaw (NFB) is proposed for implementation.

It is this Net Fishing Byelaw which is to be considered as a 'proposed plan or project', and therefore subject to relevant Conservation Assessments.

2.0 Scope of Conservation Assessment Package

This Conservation Assessment Package considers the Net Fishing Byelaw in the context of Policy Objective D: 'To further the conservation objectives of Designated Sites', where:

- Atlantic salmon (*Salmo salar*) are a feature of a Special Area of Conservation (SAC).
- Atlantic salmon or sea trout (*Salmo trutta*) are a faunal component or notified feature of a Site of Special Scientific Interest (SSSI).
- Atlantic salmon or sea trout have a functional linkage to a SAC (areas of sea beyond the boundary of an SAC where Atlantic salmon are a feature) or SSSI (areas beyond the boundary of a SSSI where Atlantic salmon or sea trout are a faunal component or notified feature) and may provide a role in maintaining or restoring a salmonid population at favourable conservation status.

Accordingly, the following relevant Conservation Assessments have been undertaken as part of this package:

- Habitats Regulation Assessments
- SSSI Assessments
- Functionally Linked Area Assessments

3.0 Supporting Documentation

This Conservation Assessment is to be read in conjunction with the NFB Literature Review and the NFB Monitoring and Control Plan.

SECTION B: Habitats Regulations Assessments

1.0 Overview

1.1 Legislative Underpinning

The National Site Network¹ consists of protected sites which are designated for rare and threatened species and rare natural habitat types. These sites include SAC and Special Protection Areas (SPA), designated under the EC Habitats Directive 1992 and EC Birds Directive 2009 (amended), respectively. The Conservation of Habitats and Species Regulations 2017², as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019³, ('2019 Regs') transposes the land and marine aspects of the Habitats Directive and the Wild Birds Directive into domestic law and outlines how the National Site Network will be managed and reflect any changes required by EU Exit.

Under Article 6 of the 2019 Regs, as a named competent authority, Southern IFCA must ensure that fishing activity within or adjacent to an SAC or SPA does not damage, disturb or lead to a deterioration of a species which receives protection under the relevant designation, so as to ensure compliance with the Habitats Directive and Birds Directives.

Article 6(3) of the Habitats Directive requires any plan or project likely to have a significant effect on an SPA or SAC within the National Site Network, either individually or in combination with other plans or projects, to undergo an appropriate assessment, namely a Habitats Regulation Assessment (HRA). The plan or project must be assessed in view of the site's conservation objectives.

The HRA is a stepwise process and is first subject to a coarse test of whether the plan or project will cause a likely significant effect on a National Site Network Site⁴ known as the Test of Likely Significant Effect (TLSE). All the features/sub-features and supporting habitats for a site are subject to the TLSE assessment.

Where the potential for a likely significant effect cannot be excluded, the competent authority (Southern IFCA) must make an Appropriate Assessment of the implications of a plan or project for a site in view of the site's conservation objectives. This must consider the potential effects of both the plan/project itself and in combination with other plans or projects.

1.2 Relevance to the Net Fishing Byelaw

Following completion of a TLSE (Annex 5), it has been determined that the NFB is likely to have a significant effect on Atlantic salmon, a feature of both the River Itchen SAC and the River Avon SAC. As such, an HRA is required to determine whether net fishing within, or adjacent to the **River Itchen SAC** and the **River Avon SAC** does not damage, disturb or lead to a deterioration of Atlantic salmon, so as to secure compliance with the Habitats Directive.

For the purposes of the Inshore Netting Review 'adjacent' is defined as 'next to or adjoining', as consistent with the Oxford English Dictionary definition.

¹ The National Site Network is the network of sites in the United Kingdom's territory consisting of such sites as immediately before EU Exit day formed part of the Natura 2000 site network.

² [The Conservation of Habitats and Species Regulations 2017 \(legislation.gov.uk\)](#)

³ [The Conservation of Habitats and Species \(Amendment\) \(EU Exit\) Regulations 2019 \(legislation.gov.uk\)](#)

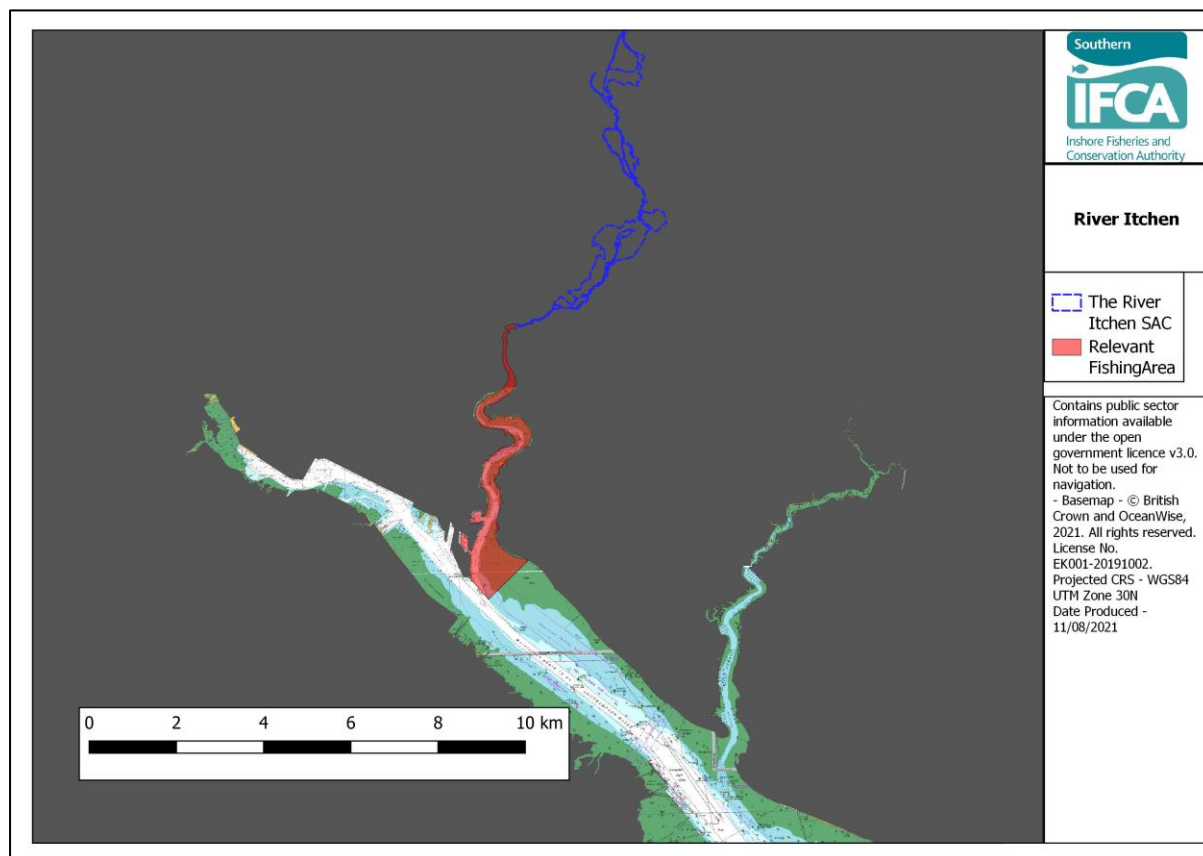
2.0 Fishing Areas Subject to a Habitats Regulations Assessment

2.1 The River Itchen

2.1.1 Proximity to River Itchen SAC

As demonstrated in Map 1, The River Itchen falls within and is adjacent to the River Itchen SAC. The boundary of the River Itchen SAC is Woodmill. All areas of the river upstream of Woodmill fall within the SAC.

The high-level conservation objectives for the River Itchen SAC are available online at: <http://publications.naturalengland.org.uk/publication/5130124110331904>. Of direct relevance to this Plan/Project, *Salmo salar*, Atlantic Salmon are a Qualifying Feature of the SAC.



Map 1: Proximity of River Itchen Fishing Area to River Itchen SAC

2.1.2 Fishing effort

It has been established that commercial netting does not take place in the River Itchen above Woodmill in the area which falls within the River Itchen SAC. Commercial netting does take place in the area of the River Itchen, which is adjacent to the SAC downstream of Woodmill.

One vessel is known to net fish in the intertidal area adjacent to the main river channel within the River Itchen, using drift nets to target grey mullet. Approximately 30 trips per year are undertaken across both the River Itchen and the River Test.

- This vessel is a 20-foot dory vessel
- The drift net used is 300 yards in length although most of the areas fished require 100 or 250 yards of net, the full 300 yards is required only in one area.
- The drift net is set with the tide and in the direction of the tide in order to avoid creating a barrier across the river.
- The netting occurs outside of the main channel in approximately 4-6ft of water.

- One end of the net is tied to the vessel and the net soak time is a commonly 10-15 minutes, with a maximum soak time of 20 minutes.
- A fishing trip will run from the bottom to the top of the tide; therefore, the maximum duration of a trip is 6 hours.
- The fishing method is tidally dependent, and fishing does not take place on large spring tides.
- The net is attended at all times and is hauled manually to ensure minimal to no damage to the fish caught in the net and also to ensure safe operation in a small vessel.
- This activity is carried out to target grey mullet species commonly between June and September although in some years activity may continue until early November.
- Fishing occurs approximately 5-6 times per month, depending on the run of grey mullet, the presence of weed and the presence of smooth hound.

2.1.3 Existing net fishing restrictions on net fishing relevant to Atlantic salmon

The placing and use of fixed engines, other than Fyke nets, for the taking of seafood is prohibited during the period from 1 April to 30 September (both days inclusive) in any year in all parts of the Rivers Test and Itchen upstream of a line drawn due East and West from the Southern end of the Port of Southampton Dockhead and within the Southern Sea Fisheries District under the Southern IFCA Fixed Engines Byelaw.

2.1.4 Evidence of Atlantic salmon using the River Itchen

- Atlantic Salmon are a feature of the River Itchen SAC, as listed under Annex II of the Habitats Directive.
- The River Itchen is listed as a 'Principal Salmon River' by the Environment Agency:
 - In 2019, the Atlantic salmon fishery assessment data⁴ showed that the River Itchen attained 55% of the Conservation Limit of 1.63×10^6 eggs deposited. This gives the river a Compliance Level of 'At Risk'. The classification of 'At Risk' indicates there is a <5% probability of the river meeting the Management Objective.
 - The Compliance Level for 2024 is predicted to be downgraded to 'Probably at Risk'.
- Atlantic salmon are a faunal component of the River Itchen SSSI 'Rivers and Streams' feature
 - There are four units under the River Itchen SSSI which show an '*unfavourable-no change*' status condition for the Atlantic salmon⁵. Three of these units are highlighted as '*at risk*' as egg production and returning stock targets have not been met. The causes for this risk status are unknown but are likely to be due to habitat degradation (including siltation of spawning gravels), fish passage impediment and impacts in the wider marine environment.
- Atlantic Salmon stock data⁶:
 - Annex 1, Figure 1 shows the exploitation rate and percentage of adult run retained by the licenced rod and line fishery for Atlantic salmon on the River Itchen from 1988 to 2019.
 - Annex 1, Figure 2 shows data from the Environment Agency on the count of Atlantic salmon smolt and adults are available for years 1988 to 2019:
 - the returning stock estimate for the River Itchen (blue) for 1988 to 2020
 - rod catch data (orange), available for 1990-2018 and the spawning escapement (grey) for the same period.

⁴ this status condition relates to the habitat as a whole, rather than the Atlantic salmon population status
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/907284/SalmonReport-2019-summary.pdf

⁵

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S2000227&SiteName=itchen&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=>

⁶ Stock data taken from: Salmon Stocks and Fisheries in England and Wales Annual Report by Environment Agency, Cefas and Natural Resources Wales Solent and South Downs Annual Fish Monitoring Report by Environment Agency

- A preliminary count is available for 2020 (719), this is the sixth highest record and deemed 'exceptional' by the EA (yellow marker). The 2020 value is 130% of the five-year average (2015-2019).
 - Annex 1, Figure 3 shows that for the year 2020 the attainment of both the Compliance Limit and Management Targets were below 100%.
- The Environment Agency report 'Review of protection measures for Atlantic salmon and sea trout in inshore waters⁷' provides timings of the smolt and adult run of Atlantic salmon in the River Itchen as April to mid-May for smolt and April to December for the adult run.
- The Environment Agency have documented fish not entering the River Itchen at flows less than 6 cumecs, resulting in increased residency in the estuary.

2.1.5 Known interactions between nets and Atlantic salmon in the River Itchen

None recorded.

2.1.6 Incidental evidence of interactions between nets and Atlantic salmon in the River Itchen

None recorded.

2.1.7 In Combination Assessments relevant to the River Itchen

2.1.7.1 Other Plans/Projects

Specific to the River Itchen, 16 in-combination assessments have been undertaken for 'other plans/projects', these can be located in Annex 6a.

The plans/projects have been assessed based on the potential for likely significant effect and in most cases (14), the individual projects have screened out the potential impact of creating a barrier to species movement resulting from either increased suspended sediment or noise. This is either due to the project being very localised or on a small scale resulting in minimal suspended sediment.

For the Plans/Projects where a potential effect has been identified based on spatial location (16), the mitigation provided has resulted in a conclusion of no adverse effect on Atlantic salmon. This is due to a combination of restriction of works during non-sensitive periods, specified dredging methods to reduce overspill of sediment and a determination that noise disturbance is only likely within 50m of the source which is identified as considerably less than 50% of the available channel width at any given time and location. In addition, many of the plans/projects (5) stipulate that dredging works are not to be carried out north of the area of Dock Head for a period of three days following information from the Environment Agency that the autumn salmon run has commenced.

2.1.7.2 Fishing Activity

Annex 6b details the in-combination assessments undertaken to assess the potential for an in-combination effect between other commercial fishing activities and net fishing in the River Itchen. It is concluded that the clam dredge and oyster dredge fisheries do not interact with the feature. Coastal net fishing (outside of harbours and estuaries) identifies Atlantic salmon bycatch as low, as detailed in Section 2.1.1 of The NFB Literature Review, therefore it is deemed that there is no in-combination effect.

The in-combination assessment for rod and line angling within the River Itchen, as managed by the Environment Agency Regional Rod Fishing Byelaws and National Salmon and Sea

⁷ <https://secure.toolkitfiles.co.uk/clients/25364/sitedata/files/Net-Environment-Agency-Paper.pdf>

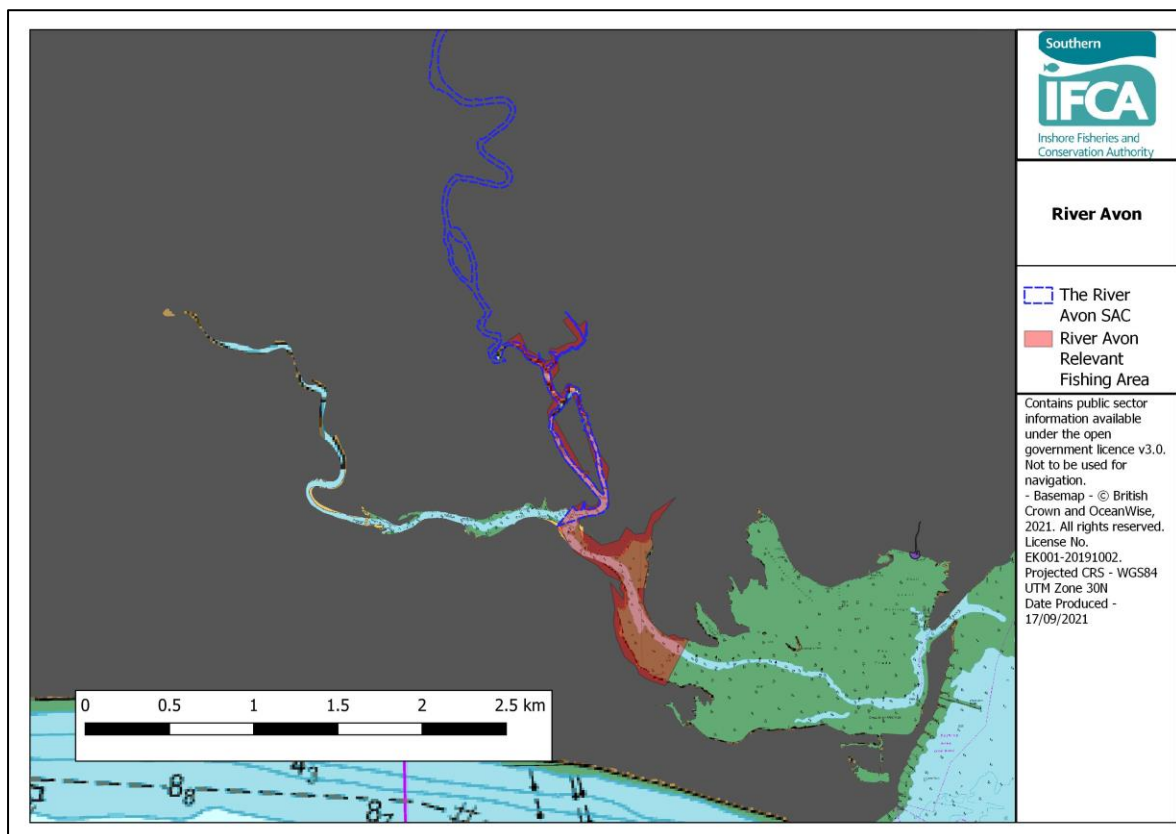
Trout Protection Byelaws has identified a potential for overlap between the two fisheries as both activities occur within the migratory routes known to be utilised by Atlantic salmon. The net fishery has the potential to impact salmon stocks through a removal of non-target species, creating a barrier to species movement and increasing a risk of collision below water with static or moving objects not naturally found in the marine environment; and the rod and line fishery is expected to have potential impacts through the removal of target species and by creating a barrier to species movement. Both activities have the potential to affect migrating salmon by delaying or preventing migration through altered behaviour and physical barriers or through direct and indirect mortality as a result of illegal fishing, non-compliance with voluntary measures or delayed mortality from physical injury, stress and increased susceptibility to predation. The combination of both of these projects has the potential to result in an additive effect on the adult run of Atlantic salmon. Taking into account the mitigation provided by both the Southern IFCA Net Fishing Byelaw and the Environment Agency management of the rod and line fishery, it is concluded that there will be no in-combination adverse effect on the River Itchen SAC.

2.2 The River Avon

2.2.1 Proximity to River Avon SAC

As demonstrated in Map 2, The River Avon falls within and is adjacent to the River Avon SAC. The boundary of the River Avon SAC is where the River Avon and River Stour divide opposite the Christchurch Sailing Club. All areas of the river upstream of this point fall within the SAC.

The high-level conservation objectives for the River Avon SAC are available online at: <http://publications.naturalengland.org.uk/publication/6048472272732160>. Of direct relevance to this Plan/Project, *Salmo salar*, Atlantic Salmon are a Qualifying Feature of the SAC.



Map 2: River Avon fishing area and proximity to River Avon SAC

2.2.2 Fishing effort

Commercial netting does not take place in the River Avon.

2.2.3 Existing net fishing restrictions on net fishing relevant to Atlantic salmon

Under the Southern IFCA legacy byelaw 'Environment Agency, Sea Fisheries Regulation Act 1966, Sea Fisheries Fixed Engine Prohibition':

- The placing and use of fixed engines for taking sea fish is prohibited in any water inland of the landward boundary of the Southern Sea Fisheries Committee district except:
 - a) Between 30th September and the following 15th February in any year in Christchurch Harbour to the west of a line drawn true southeast from the south-eastern-most corner of Haven House Inn at Mudeford Quay near Christchurch between the limits of ordinary high water on each side of the entrance channel being the area of the public fishery lying seaward of a line drawn from Ineravon to the Bunny (or the Canal) on Hengistbury Head and lying north of the main channel
 - b) The placing and use of bottom nets between 30th September in any year and the following 15th February in that part of the sea demarcated by a line at or near the mouth of the River Avon drawn true southeast from the south-eastern-most corner of Haven House Inn at Mudeford Quay near Christchurch to a point (50° 43.18' N, 01° 44.03' W) distant six hundred ten metres therefrom thence continued straight in a north easterly direction to a point (50° 43.92' N, 01° 42.75' W), true south of, an distant six hundred and ten metres from, the southwestern-most corner of the building known as Highcliffe Castle, and thence continued straight to such southwestern-most corner.

The western section of Christchurch Harbour is privately owned by Bournemouth Water. Within this area commercial fishing is not permitted.

2.2.4 Evidence of Atlantic salmon using the River Avon

- Atlantic Salmon are a feature of the River Avon SAC listed under Annex II of the Habitats Directive.
- The River Avon is listed as a 'Principal Salmon River' by the Environment Agency:
 - In 2019, the Atlantic salmon fishery assessment data⁸ showed that the River Avon attained 59% of the Conservation Limit of 6.48 x10⁶ eggs deposited. This gives the river a Compliance Level of 'Probably At Risk'. The classification of 'Probably At Risk' indicates there is a 5-50% probability of the river meeting the Management Objective.
 - The Compliance Level for 2024 is predicted to remain at 'Probably at Risk'.
- Atlantic salmon are a faunal component of the 'Rivers and Streams' reportable feature for three SSSIs that underpin the River Avon; Avon Valley (Bickton to Christchurch) SSSI, River Avon System SSSI and River Till SSSI.
 - There are four units under the three SSSI designations which refer to Atlantic salmon. These four units show an '*unfavourable-recovering*' status condition. For note, this status condition relates to the habitat as a whole, rather than the Atlantic salmon population status.
 - All four units are highlighted as '*at risk*' for Atlantic salmon as egg production and returning stock targets have not been met. However, it is highlighted that this may be a result of external factors such as survival at sea and climate change resulting in higher river temperatures.

⁸ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/907284/SalmonReport-2019-summary.pdf

- Atlantic Salmon stock data⁹
 - Annex 2: Figure 1 shows the exploitation rate and percentage of adult run retained by the licenced rod and line fishery for Atlantic salmon on the River Itchen from 2006 to 2019 (no data available for 2018).
 - Annex 2: Figure 2 shows data from the Environment Agency on the count of Atlantic salmon smolt and adults are available for years 2006 to 2020.
 - the returning stock estimate for the River Avon (blue) for 2006 to 2020
 - rod catch data (orange), available for 2006-2019 and the spawning escapement (grey) for the same period.
 - A preliminary count is available for 2020 (1495) from the count data from the Knapp Mill counter. The counter showed in total 2273 salmon and sea trout, this total number is over 1000 more fish than the long-term average and approximately 887 more fish than the second highest year on record in 2006.
- The Environment Agency report 'Review of protection measures for Atlantic salmon and sea trout in inshore waters' provides timings of the smolt and adult run of Atlantic salmon in the River Avon as April to mid-May for smolt and February to December for the adult run with a note that fish are known to be present in Christchurch Harbour throughout this period.
- A radio tagging study showed that when the river flow on the River Avon is in excess of 13 cumecs, salmon tend to pass through Christchurch Harbour within 12 hours. As the river flow falls below 10 cumecs, there is an increased tendency for salmon to remain in Christchurch Harbour for weeks or months until the flows increase again.

2.2.5 Known interactions between nets and Atlantic salmon in the River Avon

None recorded.

2.2.6 Incidental evidence of interactions between nets and Atlantic salmon in the River Avon

None recorded.

2.2.7 In Combination Assessments relevant to the River Avon

2.2.7.1 Other Plans/Projects

Specific to the River Avon, one plan/project has been identified as falling within the zone of influence, details of which can be located in Annex 7a. This project has been identified as having no potential effects for Atlantic salmon therefore has been screened out at stage 1. Maintenance dredging has been carried out in Christchurch Harbour sporadically in the past but there are no proposed dredging schemes currently in place.

2.2.7.2 Fishing Activity In-Combination Assessment

Annex 7b details the in-combination assessments for undertaken to assess the potential for an in-combination effect between the NFB and fishing activity which falls within the Zone of Influence relevant to the River Avon. It is concluded that coastal net fishing (outside of harbours and estuaries) identifies Atlantic salmon bycatch as low, as detailed in Section 2.1.1 of The NFB Literature Review, therefore it is deemed that there is no in-combination effect.

The in-combination assessment for rod and line angling within the River Avon, as managed by the Environment Agency Regional Rod Fishing Byelaws and National Salmon and Sea Trout Protection Byelaws has identified a potential for overlap between the two fisheries as

⁹ Taken From:

- Salmon Stocks and Fisheries in England and Wales Annual Report by Environment Agency, Cefas and Natural Resources Wales
- Hampshire Avon Fish Counter at Knapp Mill Report for Q4 2020

both activities occur within the migratory routes known to be utilised by Atlantic salmon. The net fishery has the potential to impact salmon stocks through a removal of non-target species, creating a barrier to species movement and increasing a risk of collision below water with static or moving objects not naturally found in the marine environment; and the rod and line fishery is expected to have potential impacts through the removal of target species and by creating a barrier to species movement. Both activities have the potential to affect migrating salmon by delaying or preventing migration through altered behaviour and physical barriers or through direct and indirect mortality as a result of illegal fishing, non-compliance with voluntary measures or delayed mortality from physical injury, stress and increased susceptibility to predation. The combination of both of these projects has the potential to result in an additive effect on the adult run of Atlantic salmon. Taking into account the mitigation provided by both the Southern IFCA Net Fishing Byelaw and the Environment Agency management of the rod and line fishery, it is concluded that there will be no in-combination adverse effect on the River Itchen SAC.

3.0 Management Intentions ‘within or adjacent to a SAC’

To prohibit net fishing in the following areas in order to ensure no adverse effect on Atlantic salmon (damage, disturb or lead to a deterioration of species) within or adjacent to an SAC, in order to fulfil our legislative duties under the 2019 Regs.

- **The River Itchen**
- **The River Avon**

SECTION C: SSSI Assessments

1.0 Overview

1.1 Legislative Underpinning

Under the Wildlife and Countryside Act, 1981 (WCA), Southern IFCA must take reasonable steps to further the conservation and enhancement of features for which a SSSI site has been designated.

1.2. Relevance to the Net Fishing Byelaw

A SSSI Assessment is required in the following areas to ensure that fishing activity occurring within these SSSI's is managed to ensure that there is no adverse effect on Atlantic salmon and/or sea trout if either are a faunal component or notified feature of the SSSI. This process will ensure that Southern IFCA fulfil its legislative duties under the WCA.

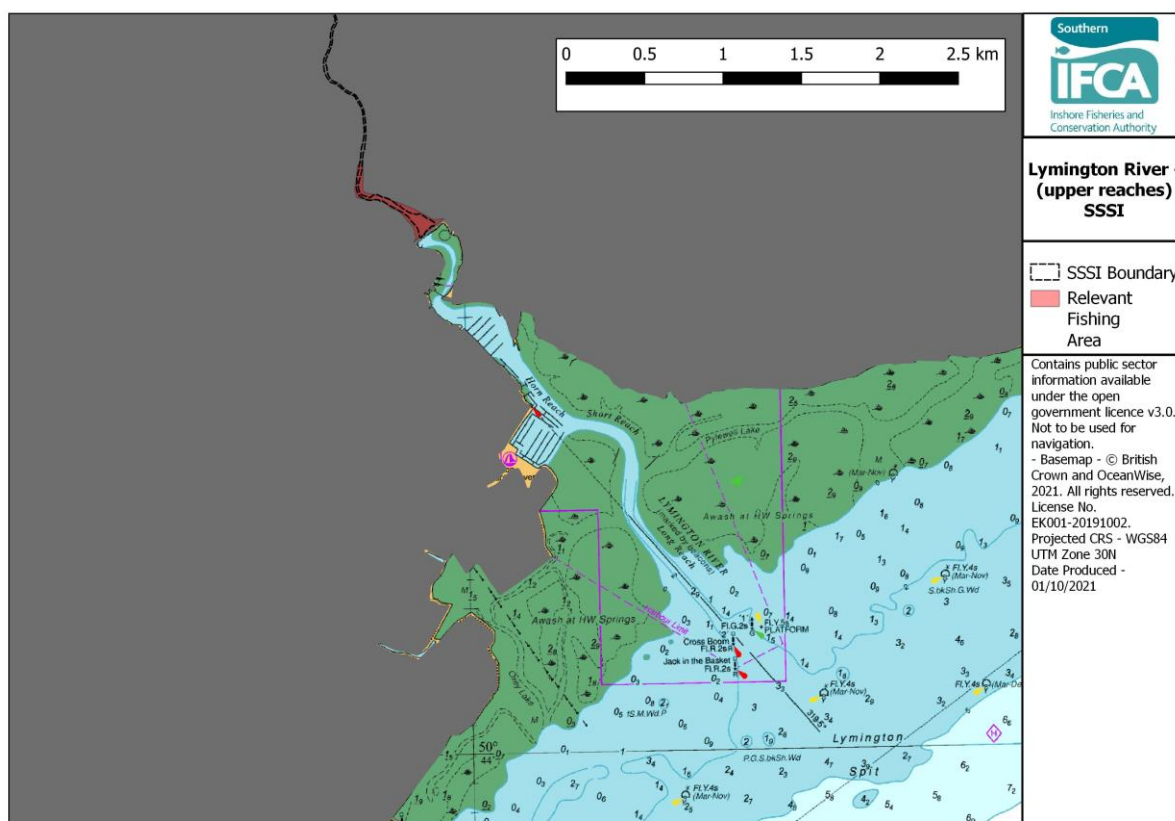
- **Lymington River (upper reaches)** (sea trout as a faunal component of the Lymington River SSSI).

2.0 Fishing Areas Subject to a SSSI Assessment

2.1 Lymington River (upper reaches)

2.1.1 Proximity to Lymington River SSSI

Map 3 demonstrates where relevant fishing area falls within the Lymington River SSSI. For accuracy, this is the section which lies north the road bridge of the B3054.



Map 3: Proximity of Lymington (upper reaches) to the Lymington River SSSI

2.1.2 SSSI feature under assessment

Sea trout are a faunal component of the 'Rivers and Streams' reportable feature for the Lymington River SSSI. Atlantic salmon are not directly referenced in the citation but the citation states that the river supports all species of international importance listed on Annex II to the EC Habitats Directive which encompasses Atlantic salmon. The Lymington River SSSI site details are available online¹⁰.

2.1.3 Fishing effort

Fishing effort within the area of the Lymington River (upper reaches), which falls within the SSSI designation is thought to be very low. Vessels would need to be able to pass under the road bridge in order to access this area. Fishing activity in this area cannot be quantified however, there is the potential to use similar methods as those given in section D 2.8.2.

2.1.4 Existing restrictions on fishing relevant to salmonids

The Southern IFCA 'Fixed Engines' byelaw prohibits the placing and use of fixed engines (nets), other than Fyke nets, for the taking of seafish during the period from 1st April to 30th September (both days inclusive) in any year in all parts of the Lymington River which lie to the Northwest of a line drawn true Southwest from the seaward end of the Rail Ferry Terminal Jetty and within the Southern Sea Fisheries District.

2.1.5 Evidence of sea trout using the River Lymington River

- Sea trout are a faunal component of the Lymington River SSSI 'Rivers and Streams' reportable feature.
- The Lymington River is listed as a 'Principal Sea Trout River' as determined by the Environment Agency.
- The sea trout fishery assessment data for 2020 shows a Compliance Level of 'Probably at Risk' which is the same status as in 2019.
- In 2020, the number of sea trout caught by rod and line in the River Lymington was 36 with 34 being released, giving a catch and release rate of 94%, this is a decrease of 3% from 2019.
- The Environment Agency report 'Review of protection measures for Atlantic salmon and sea trout in inshore waters' provides timings of the smolt and adult run of sea trout in the Lymington River as mid-March to early May for smolt and April to December for the adult run.
- Information from the Environment Agency states that Brown trout is the most dominant fish species in the Lymington River and the population has a significant migratory component.

2.1.6 Evidence of Atlantic salmon using the River Lymington River

Atlantic salmon are included in the citation for the Lymington River SSSI under the category 'under all species of international importance listed on Annex II to the EC Habitats Directive' which the river is noted to support.

2.1.7 Known interactions between nets and salmonids in the Lymington River

None recorded.

2.1.8 Incidental evidence of interactions between nets and salmonids in the Lymington River

None recorded.

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<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S2000203&SiteName=lymington&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=>

3.0 Management Intentions ‘within a SSSI’

To prohibit net fishing within SSSIs, where Atlantic salmon and/or sea trout are a notified feature or component of the SSSI, order to fulfil our legislative duties under the WCA 1981.

- **Lymington River (upper reaches)**

SECTION D: Functionally Linked Area Assessments

1.0 Overview

1.1 Definition

In the context of the Southern IFCA Netting Review, 'Functional Linkage' refers to the role that the sea beyond the boundary of an SAC or SSSI might fulfil in terms of supporting Atlantic salmon or sea trout populations. Such the area of sea is deemed to be 'linked' to the SAC or SSSI in question because it provides a role in maintaining or restoring a salmonid population at favourable conservation status.

In terms of practical application, if the boundaries of a SAC were drawn to include all sea which might serve some function for salmonids, then the strict protection afforded would be applied more extensively than would be necessary to meet the objectives of the EU Habitats Directives¹¹. This therefore enables Southern IFCA to consider proportionality in the context of functional linkage.

1.2 Case Law

'Functional Linkage' is a phrase coined in Case Law and there have been two cases¹² where the term has been applied to an SAC where Atlantic salmon are a qualifying species.

Case Law is a vital source of information regarding how legislation should be correctly interpreted and applied. In the context of the Netting Review, too strict an interpretation may subject fishers to unnecessary restrictions, or ultimately close fisheries under circumstances which were not intended to be incompatible with the Habitats Directive. Conversely, too lenient an interpretation carries different risks. Fishing may go ahead without sufficient consideration of the potential harm to salmonids, which may in turn lead to the deterioration of the protected species.

So, it is paramount that Southern IFCA use Case Law to reach a balance in determining a proportionate approach to net fishing management in Functionally Linked Areas (FLA).

1.3 Legislative underpinning

Areas which are deemed to be functionally linked to an SAC or SSSI fall outside the direct legislative remit of Southern IFCA's duties under the 2019 Regs, namely that Southern IFCA, as a competent Authority, must ensure that fishing activity does not damage, disturb or lead to a deterioration of species within or adjacent to an SAC. In addition, these areas also fall outside of the direct remit of Southern IFCA's duties under the WCA 1981, which stipulates that the Authority must, within an SSSI take reasonable steps to further the conservation and enhancement of features for which a SSSI site is designated. However, as Case Law dictates, Southern IFCA must consider of the role that functionally linked areas may play in supporting Atlantic salmon and sea trout populations in line with the intentions underpinning both the Habitats Directive and the WCA, alongside the delivery of Southern IFCA's duties under Section (153) of the Marine and Coastal Access Act, 2009 (MaCAA).

11 CHAPMAN, C. & TYLDESLEY, D. 2016. Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects - a review of authoritative decisions. Natural England Commissioned Reports, Number 207.

12 *The Sandale Case*: This case concerned the migration of Atlantic salmon upstream of an SAC. In the absence of a risk assessment upon which credible risks could have been excluded by obtaining relevant information and assessing the significance of the effects of the project upstream of an SAC on Atlantic salmon, the project was found not to satisfy the requirement of the Habitats Directive. Therefore, in summary, the lack of insufficient assessment of risk led to a precautionary management approach.

Burbo Bank: This case concerned the impact of noise from piling activity on Atlantic salmon migration. The risk was mitigated via the introduction of a timing restriction on the driving of piles.

1.4 Relevance to the Net Fishing Byelaw

A FLA Assessment is required to determine whether net fishing within a FLA will have an adverse impact on migratory salmonids in the following areas. The FLA Assessments consider (1) site specific information, as well as being informed by (2) a wider Net Fishing Byelaw Literature Review, which seeks to further support and inform understandings of likely salmonid and net interactions based on the best available evidence.

Southampton Water:

- **River Test** (functional linkage to River Itchen SAC & SSSI and the River Test SSSI)
- **Main Channel** (functional linkage to River Itchen SAC & SSSI and River Test SSSI)
- **Outside Main Channel** (functional linkage to River Itchen SAC & SSSI and River Test SSSI)
- **River Hamble, Main Channel** (functional linkage to River Itchen SAC & SSSI and River Test SSSI)
- **River Hamble, 5 specified areas** (functional linkage to River Itchen SAC & SSSI and River Test SSSI)

The Solent: (functional linkage to Lymington River SSSI)

- **Lymington River, Main Channel**
- **Lymington River, Outside Main Channel**

Christchurch Harbour and Surrounds: (functional linkage to River Avon SAC, Avon Valley SSSI, River Till SSSI and River Avon System SSSI)

- **Main Channel**
- **East of Harbour**
- **Mouth of River Mude**
- **Christchurch Box, outside Main Channel**

Poole Harbour: (functional linkage to River Frome SSSI)

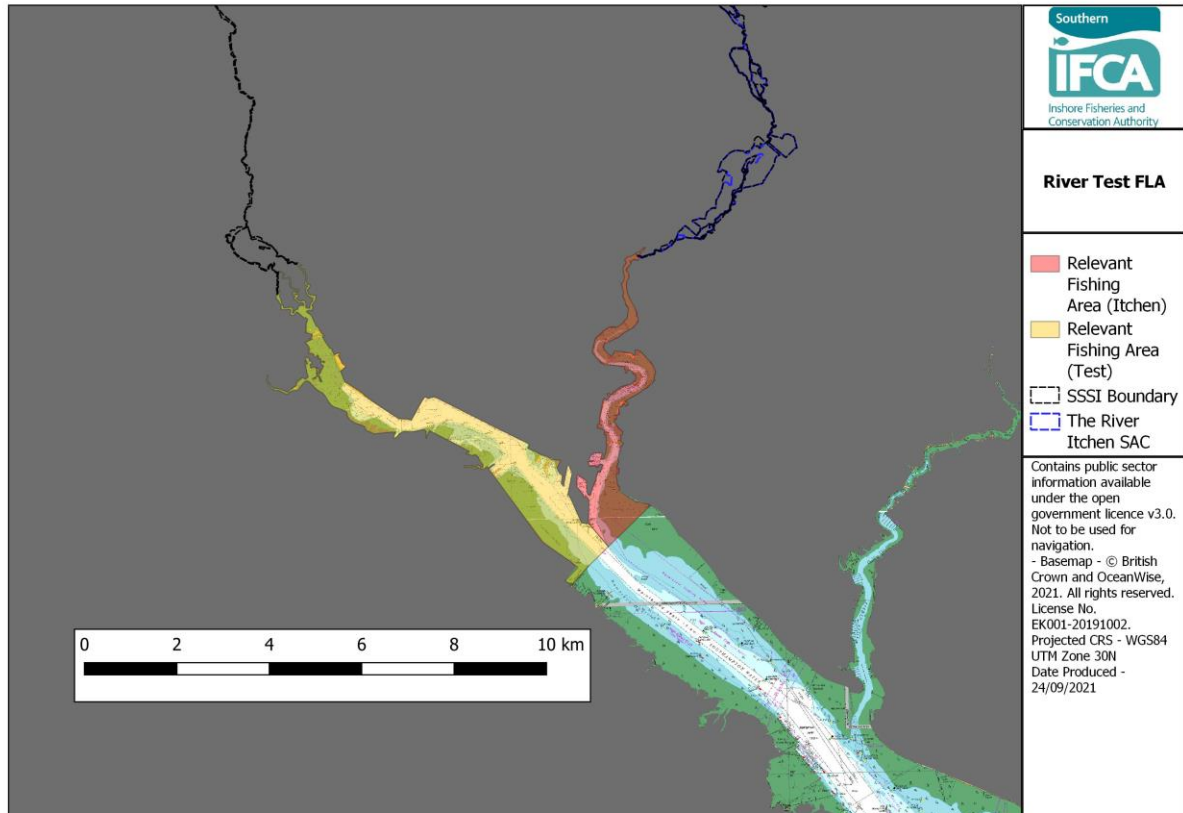
- **Wareham Channel**
- **Wareham Approaches**
- **Main Channel**

2.0 Fishing Areas Subject to FLA Assessment

2.1 The River Test

2.1.1 Proximity to SAC and SSSIs

As demonstrated in Map 4: The River Test is functionally linked to the River Itchen SAC, River Itchen SSSI and the River Test SSSI.



Map 4: Proximity of River Test fishing area with River Itchen Fishing Area, River Itchen SAC, River Itchen SSSI and the River Test SSSI

2.1.2 Current Fishing Practice

Commercial netting takes place in the River Test. Two individuals/vessels are known to net fish in the intertidal area adjacent to the main river channel within the River Test, using drift nets and ring nets to target grey mullet. Approximately 20 trips per year are undertaken in the River Test.

- Both vessels are no greater than 20-foot in length
- The net used is 300 yards in length although most of the areas fished require 100 or 250 yards of net.
- The drift net is set with the tide and in the direction of the tide in order to avoid creating a barrier across the river.
- The netting occurs outside of the main channel in approximately 4-6ft of water – key areas are the western shoreline at Marchwood and the Eling Basin, as far as Redbridge.
- The net soak time is a commonly 10-15 minutes, with a maximum soak time of 20 minutes.
- A fishing trip will run from the bottom to the top of the tide; therefore, the maximum duration of a trip is 6 hours.
- The fishing method is tidally dependent, and fishing does not take place on large spring tides.
- The net is attended at all times and is hauled manually to ensure minimal to no damage to the fish caught in the net and also to ensure safe operation in a small vessel.
- This activity is carried out to target grey mullet species commonly between June and September although in some years activity may continue until early November.
- Fishing occurs approximately 5-6 times per month, depending on the run of grey mullet, the presence of weed and the presence of smooth hound.
- Ring nets are deployed on recognition (by fishers) of the presence of target species.
- Once deployed, it is highly unlikely that any fish outside of the circle will be entangled.

- The set up and deployment of a ring net is very different to the salmonid seine nets which have been used historically from the shore to target salmonids. The recovery method for a salmonid seine net involves both ends of the net being pulled in at once by the float and lead lines creating a 'bag' in which fish are trapped even if they are not physically caught in the mesh of the net. In contrast, the recovery of a ring net set against the shore involves the recovery from only one end of the net, led by the float line. In this way no 'bag' is created and fish which are not physically caught in the net will not be removed as the net is recovered.

2.1.3 Socio-economic importance of Fishing Area

The estimated first sale value of fish caught through net fishing in the River Test and River Itchen combined is £5,000 per annum (data provided by fishers).

2.1.4 Existing restrictions on fishing relevant to migratory salmonids

Please refer to Section B 2.1.3.

2.1.5 Evidence of salmonids using the fishing area to access the SAC or SSSI

The River Test shares an estuary with the River Itchen and the mouths of both rivers are in close proximity. This is of significance, as Atlantic salmon are a feature of the River Itchen SAC, as listed under Annex II of the Habitats Directive and Atlantic salmon and sea trout are a faunal component of the 'Rivers and Streams' reportable feature for the River Itchen SSSI. The proximity of the River Test therefore suggests that the River Test plays a role in supporting salmonid populations. Further, Ikedashi *et al.*, 2018 suggests that the geographic distance between the mouths of these rivers does play a role in defining genetic distances between salmonid populations. Radio-tracking work of salmon carried out in the early 1990s has confirmed this is likely to be the case, with 9.6% of salmon caught and tagged on the River Itchen at Woodmill, were later recaptured in the River Test (Horsfield, 1994).

Please refer to Section B 2.1.4 for further details on evidence of Atlantic salmon accessing the River Itchen SAC.

Atlantic salmon and sea trout are faunal component of the 'Rivers and Streams' reportable feature for the River Itchen SSSI. The River Itchen SSSI underpins the River Itchen SAC where Atlantic salmon are a feature. The River Itchen SSSI site details are available online¹³.

Evidence of sea trout using the River Itchen

- The River Itchen is listed as a 'Principal Sea Trout' river by the Environment Agency. The sea trout fishery assessment data for 2019 shows a Compliance Level of 'Probably at Risk'.
 - 2019: the number of sea trout caught by rod and line was recorded as 384 with 367 being released, giving a catch and release rate of 96%. This is an increase of 6% on the rate for 2018.
- The Environment Agency report 'Review of protection measures for Atlantic salmon and sea trout in inshore waters' provides timings of the smolt and adult run of sea trout in the River Itchen as mid-March to early May and the adult run as April to December.

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<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S2000227&SiteName=itchen&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=>

Atlantic salmon and sea trout are also faunal components of the 'Rivers and Streams' reportable feature of the River Test SSSI. The River Test SSSI site details are available online¹⁴.

Evidence of Atlantic salmon using the River Test

- The River Test is listed as a 'Principal Salmon River' as determined by the Environment Agency
 - In 2019, the Atlantic salmon fishery assessment data¹⁵ showed that the River Test attained 69% of the Conservation Limit of 3.40×10^6 eggs deposited. This gives the river a Compliance Level of 'Probably at Risk'.
 - The Compliance Level for 2024 is predicted to be 'Probably at Risk'.
- Atlantic Salmon stock data¹⁶:
 - Annex 3: Figure 1 shows the exploitation rate and percentage of adult run retained by the licenced rod and line fishery for Atlantic salmon on the River Test from 1988 to 2019.
 - Annex 3: Figure 2 shows data from the Environment Agency on the count of Atlantic salmon smolt and adults are available for years 1988 to 2019:
 - the returning stock estimate for the River Itchen (blue) for 1988 to 2020
 - rod catch data (orange), available for 1990-2018 and the spawning escapement (grey) for the same period.
 - A preliminary count is available for 2020 (2947), which is greater than the previous largest value of 2007 in 2015 and deemed 'exceptional' by the EA (yellow marker). This is approximately 147% of the highest previous returning stock estimate and 211% of the five-year average (2015-2019).
 - Annex 3: Figure 3 shows that for the year 2020 the attainment of both the Compliance Limit and Management Targets were above 100%.
- The Environment Agency report 'Review of protection measures for Atlantic salmon and sea trout in inshore waters' provides timings of the smolt and adult run of Atlantic salmon in the River Test as April to mid-May for smolt and April to December for the adult run.

Evidence of sea trout using the River Test

- Sea trout are a faunal component of the 'Rivers and Streams' reportable feature of the River Test SSSI.
- The River Test is listed as a 'Principal Sea Trout' river by the Environment Agency. The sea trout fishery assessment data for 2019 shows a Compliance Level of 'Probably not at Risk'.
 - In 2019, the number of sea trout caught by rod and line in the River Test was 169 with 155 being released, giving a catch and release rate of 92%, this is an increase of 9% on the rate for 2018.
- The Environment Agency report 'Review of protection measures for Atlantic salmon and sea trout in inshore waters' provides timings of the smolt and adult run of sea trout in the River Test as mid-March to early May and the adult run as April to December.

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<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S2000170&SiteName=river%20test&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=>

15 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/907284/SalmonReport-2019-summary.pdf

16 Stock data taken from: Salmon Stocks and Fisheries in England and Wales Annual Report by Environment Agency, Cefas and Natural Resources Wales Solent and South Downs Annual Fish Monitoring Report by Environment Agency

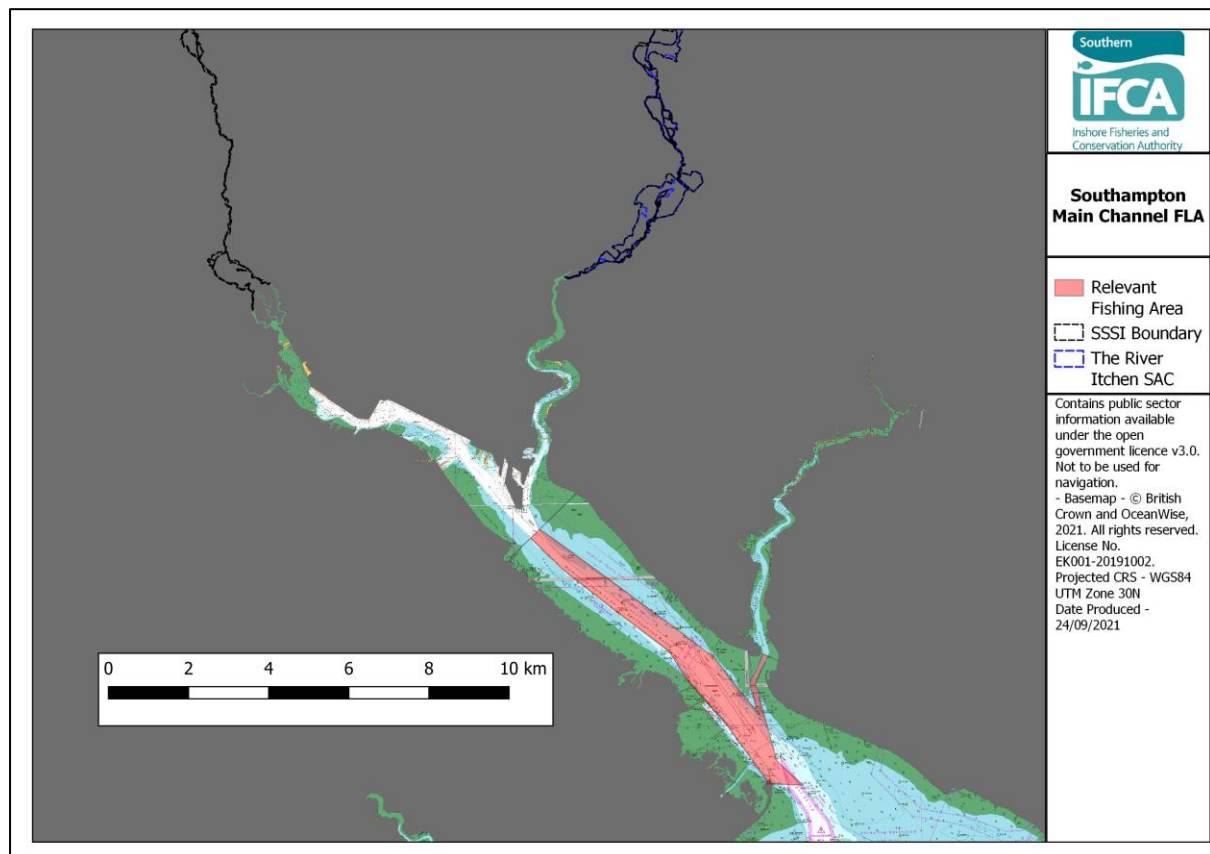
2.1.6 Evidence demonstrating a known interaction between nets and salmonids
None recorded.

2.1.7 Incidental evidence of interactions between nets and salmonids
None recorded.

2.2 Southampton Water Main Channel

2.2.1 Proximity to SAC and SSSIs

As demonstrated in Map 5, the Main Channel is functionally linked to the River Itchen SAC, River Itchen SSSI and the River Test SSSI.



Map 5: Proximity of Southampton Water Main Channel to River Itchen SAC, SSSI and River Test SSSI

2.2.2 Fishing effort

No commercial net fishing occurs within this fishing area.

2.2.3 Socio-economic importance of Fishing Area

No commercial net fishing occurs within this fishing area

2.2.4 Existing restrictions on fishing relevant to migratory salmonids

Regulations under the Associated British Ports Southampton Harbour Byelaws do not permit fishing activity to take place in areas where it may pose a danger to navigation.

2.2.5 Evidence of salmonids using the fishing areas to access the SAC or SSSI

The Main Channel of Southampton Water is a principal migration route leading to the River Itchen SAC, the River Itchen SSSI and the River Test SSSI. This is determined by the Evidence presented in Sections B 2.1.4 and D 2.1.5 of this document, as well as Section 1 of the Net Fishing Byelaw Literature Review.

2.2.6 Evidence demonstrating a known interaction between nets and salmonids

None recorded.

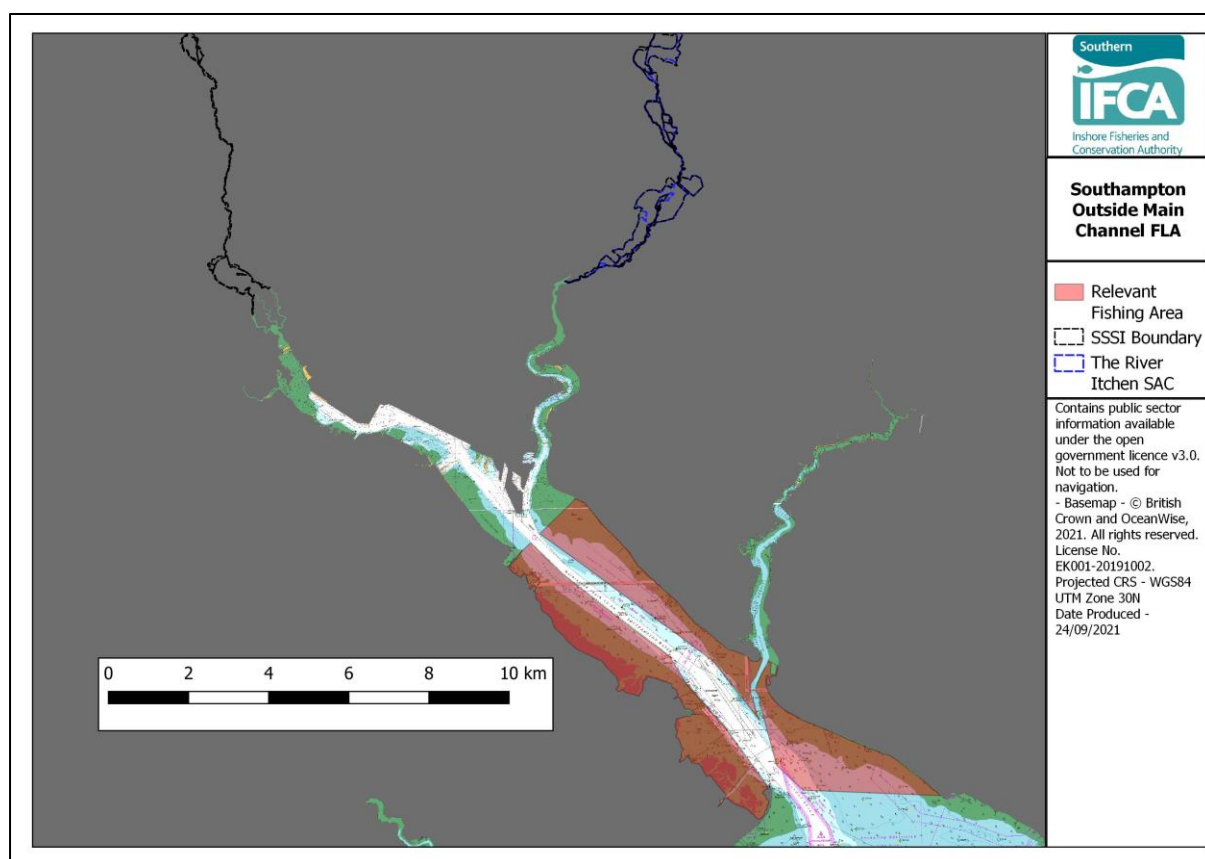
2.2.7 Incidental evidence of interactions between nets and salmonids

None recorded.

2.3 Southampton Water, Outside Main Channel

2.3.1 Proximity to SAC and SSSIs

As demonstrated in Map 6, the Main Channel is functionally linked to the River Itchen SAC, River Itchen SSSI and the River Test SSSI.



Map 6: Proximity of Southampton Water 'Outside Main Channel' fishing area to River Itchen SAC, SSSI and River Test SSSI

2.3.2 Fishing effort

Gill net (fixed)

- Two vessels deploy demersal sole fixed nets in this area to target sole from July to October (in combination with other net fishing methods)

- These nets are most commonly used down the east and west sides of Southampton Water (outside of the main channel).
- The nets sit no higher than approx. 3ft from the seabed, this helps prevent the net from being clogged with weed and focuses on the target species.
- These nets are left to soak overnight (12hrs) before being retrieved.
- In combination the 2 vessels undertake approximately 20 trips per year (MMO data).

Gill net (ring)

- Up to 7 vessels undertake approximately 64 combined trips per year (MMO data) (in combination with other net fishing methods)
- Ring nets are used May to October during daylight hours
- Trips last 4 hours with 2-3 nets set per trip
- Max. soak time is 30 minutes per net
- Mesh size range between 3 5/8 and 4 inches
- Targeted fishing method, from local fisher knowledge and observation by Southern IFCA officers during observer trips nets are only set when a shoal of fish is seen
- Once deployed, it is highly unlikely that any fish outside of the circle will be entangled.
- The set up and deployment of a ring net is very different to the salmonid seine nets which have been used historically from the shore to target salmonids. The recovery method for a salmonid seine net involves both ends of the net being pulled in at once by the float and lead lines creating a 'bag' in which fish are trapped even if they are not physically caught in the mesh of the net. In contrast, the recovery of a ring net set against the shore involves the recovery from only one end of the net, led by the float line. In this way no 'bag' is created and fish which are not physically caught in the net will not be removed as the net is recovered.

Gill net (drift)

- 6 vessels use drift nets (in combination with other net fishing methods)
- These drift nets are predominantly used to fish for grey mullet, whilst additional fisheries occur for skates and rays, herring, gilthead bream, red mullet, pout and other similar species that may be used as bait on bass longlines. Bass may be taken as a bycatch in certain areas and at certain times of the year.
- Fishing may take place during the day or at night
- Majority of vessels are approximately 7m in length
- Local fisher knowledge indicates, when targeting grey mullet, a drift of 1 hour max per trip with 3-4 trips per week (across all Southampton Water area) if conditions and tide are favourable
- Local fisher knowledge indicates that the length of net will be approximately 100m shorter in the water due to bunching of the headline, i.e., a 400m drift net would equate to 300m in the water

2.3.3 Socio-economic importance of Fishing Area

In total, across all net fisheries, the first sale value of netting activities in Southampton Water, outside the Main Channel, is estimated to be in excess of £100,000 per annum.

2.3.4 Existing restrictions on fishing relevant to migratory salmonids

The fishing area falls within a Bass Nursery Area¹⁷, Within this area fishing for bass (*Dicentrarchus labrax*), or fishing for any species of sea-fish using sand-eels (*Ammodytidae*) as bait, by any fishing boat is prohibited during the period 30th April to 1st November.

2.3.5 Evidence of salmonids using fishing area to access SAC or SSSI

As determined by the evidence presented in Sections B 2.1.4 and D 2.1.5, salmonids are known to be present in Southampton Water.

Sections 1.1 and 1.4 of the Net Fishing Byelaw Literature Review provide information on the migration behaviours of Atlantic salmon and sea trout. Of specific relevance to the likely presence of salmonids in the fishing area in question:

- This area does not fall within a principal or known migration route, refuge area or pinch point leading to the River Itchen SAC where Atlantic salmon are a qualifying feature of the SAC.
- This area does not fall within a principal or known migration route, refuge area or pinch point leading to the River Itchen SSSI where sea trout are a faunal component of the 'rivers and streams' feature
- This area does not fall within a principal or known migration route, refuge area or pinch point leading to the River Test SSSI where sea trout and Atlantic salmon are a faunal component of the 'rivers and streams' feature
- This area does not fall within a principal or known migration route, refuge area or pinch point leading to a Principal Salmon River.

2.3.6 Evidence demonstrating known interaction between nets and salmonids

There is no known evidence demonstrating interactions, however there is evidence to suggest that interactions are uncommon:

- Fishers have reported no bycatch of salmonids in this fishery. As a matter of practice, fishers do not net fish during periods when there is a higher risk of interception of salmonids, for example during periods of high flow.
- In 2019 Southern IFCA Officers undertook 5 net fishing observer trips in Southampton Water, as follows:
 - 3 net fishing trips in June 2019:
 - 1 covering the Hamble River and Fawley Bay using a 4-inch mesh, 300m long, 40 mesh deep net. 4 sets of the net during the trip – no salmonid interaction
 - 1 covering the Hamble estuary using a 3 5/8-inch mesh, 360m long, 30 mesh deep net for ring netting. 2 sets of the net during the trip – no salmonid interaction
 - 1 covering various locations in Southampton Water using a 300-yard net for drift netting. 3 sets of the net during the trip – no salmonid interaction
 - 1 net fishing trip in August 2019:
 - covering various locations in Southampton Water (outside of the main channel at the southwestern end of Southampton Water) using a 4-inch mesh, 360-yard, 30 mesh deep net for ring netting. 5 sets of the net during the trip – no salmonid interaction
 - 1 net fishing trip in September 2019:
 - covering various locations in Southampton Water (outside of the main channel in the area around and south of dock head) using a 100-150mm mesh demersal sole

¹⁷ as specified under The Bass (Specified Areas) (Prohibition of Fishing) Order 1990 and The Bass (Specified Areas) (Prohibition of Fishing) (Variation) Order 1999¹⁷.

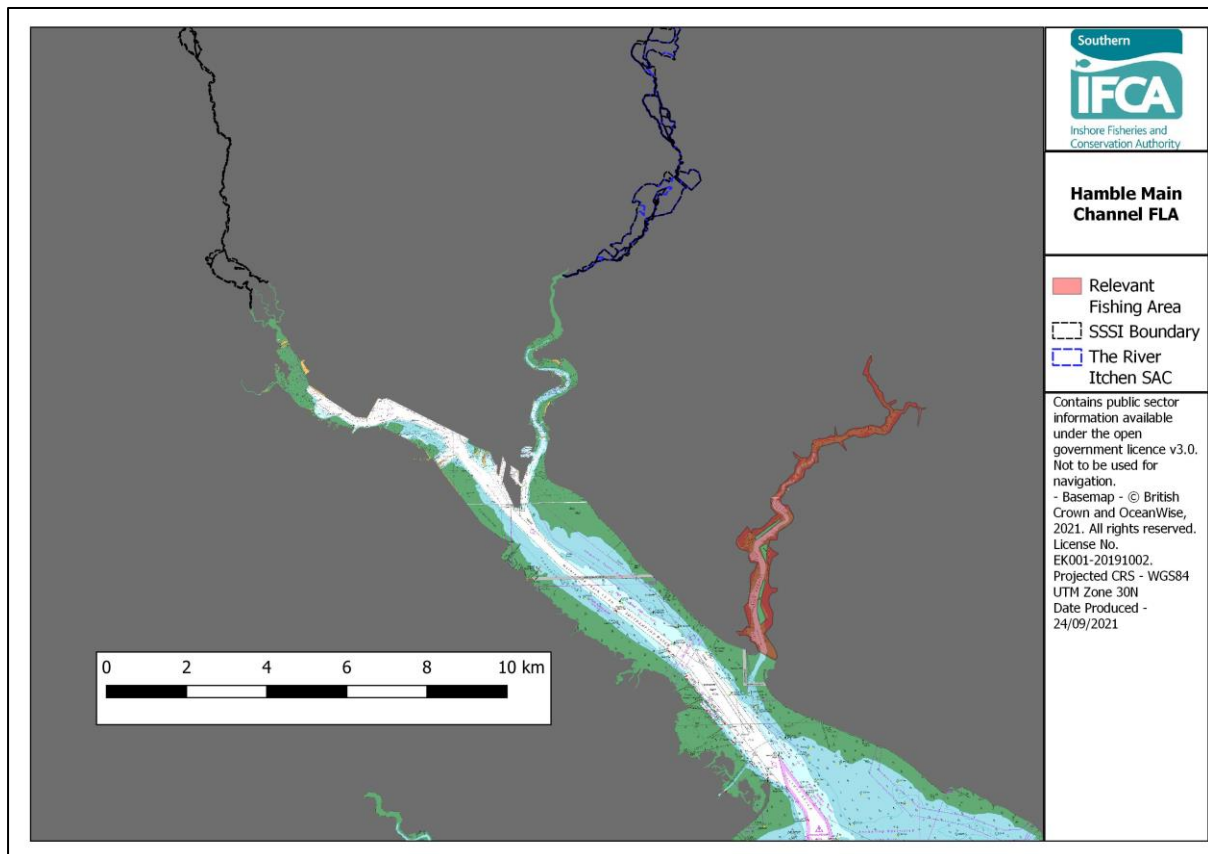
net set approximately 3ft off the bottom for an overnight soak. 5 nets were set for the fishing trip – no salmonid interaction

2.3.7 *Incidental evidence of interactions between nets and salmonids*
None recorded.

2.4 River Hamble Main Channel

2.4.1 Proximity to SAC and SSSI

As demonstrated in Map 7, the River Hamble Main Channel is functionally linked to the River Itchen SAC, River Itchen SSSI and the River Test SSSI.



Map 7: Proximity of The River Hamble Main Channel fishing area to River Itchen SAC, SSSI and River Test SSSI

2.4.2 Fishing effort

No commercial net fishing occurs within the fishing area

2.4.3 Socio-economic importance of Fishing Area

No commercial net fishing occurs within the fishing area

2.4.4 Existing restrictions on fishing relevant to migratory salmonids

No commercial net fishing occurs within the fishing area under order of the River Hamble Harbour Authority.

2.4.5 Evidence of salmonids using fishing area to access SAC or SSSI

The River Hamble (main channel) is a principal migration route leading to the River Itchen SAC, the River Itchen SSSI and the River Test SSSI. This is determined by the Evidence presented in Sections B 2.1.4 and D 2.1.5, as well as Sections 1.1 and 1.4 of the Net Fishing Byelaw Literature Review.

In addition, The Environment Agency carry out Fish Population Surveys on Principal Course Fishery Rivers, such as the River Hamble. The surveys focus on locations where coarse fishing takes place and are repeated every three years.

- Current available data is for 2018¹⁸:
 - Average of 2.4 brown/sea trout per 100m² across two surveyed sites#
 - Catch of brown/sea trout at the site Upstream of the Railway Viaduct was the highest recorded (2.3 per 100m²)
 - Size range 75-558mm
 - Water Framework Directive Classification, Fish Status for 2016 is Good.
 - Survey showed numbers of brown/sea trout showed strong positive correlation with the minimum summer flow

There is no salmonid migration timing data provided specifically for the River Hamble, therefore migration timings should be considered the same as for the Rivers Itchen and Test as detailed in Sections B 2.1.4 and D 2.1.5.

2.4.6 Evidence demonstrating a known interaction between nets and salmonids

None recorded.

2.4.7 Incidental evidence of interactions between nets and salmonids

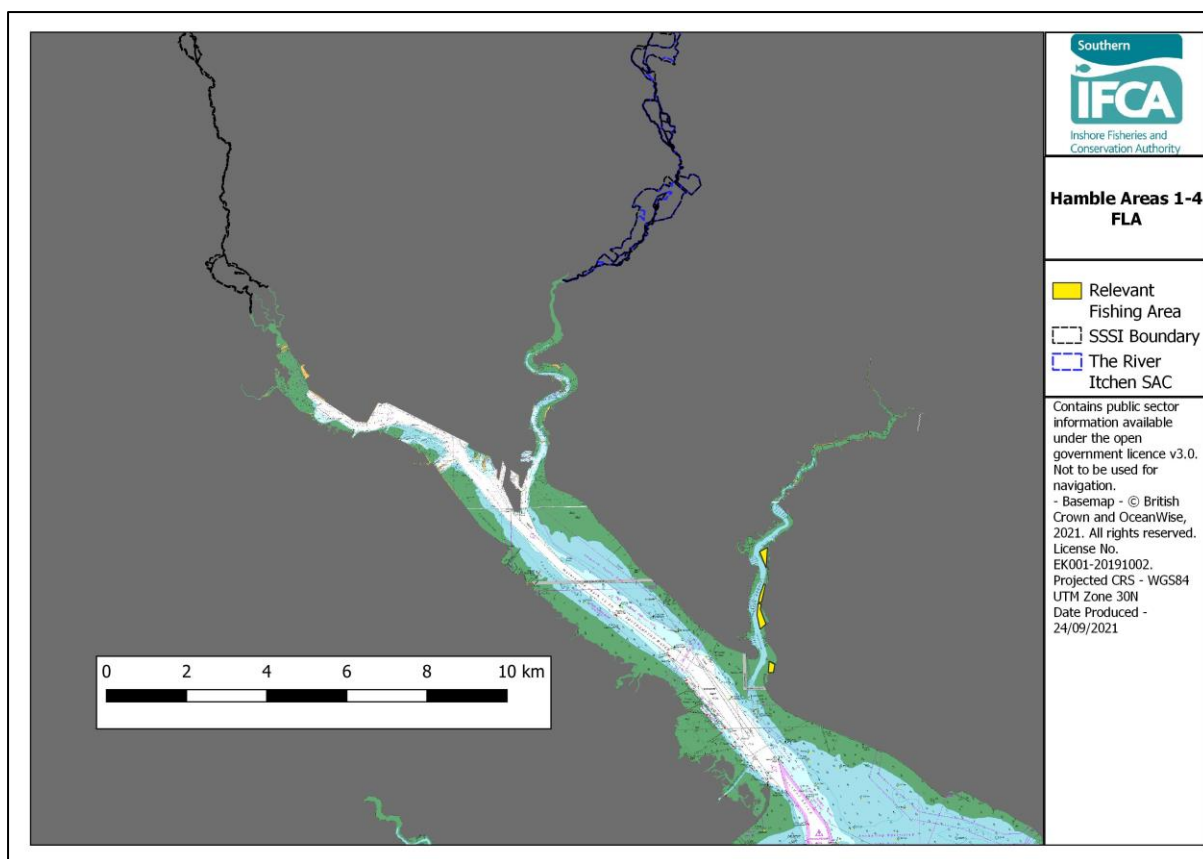
None recorded.

2.5 River Hamble Areas 1-4

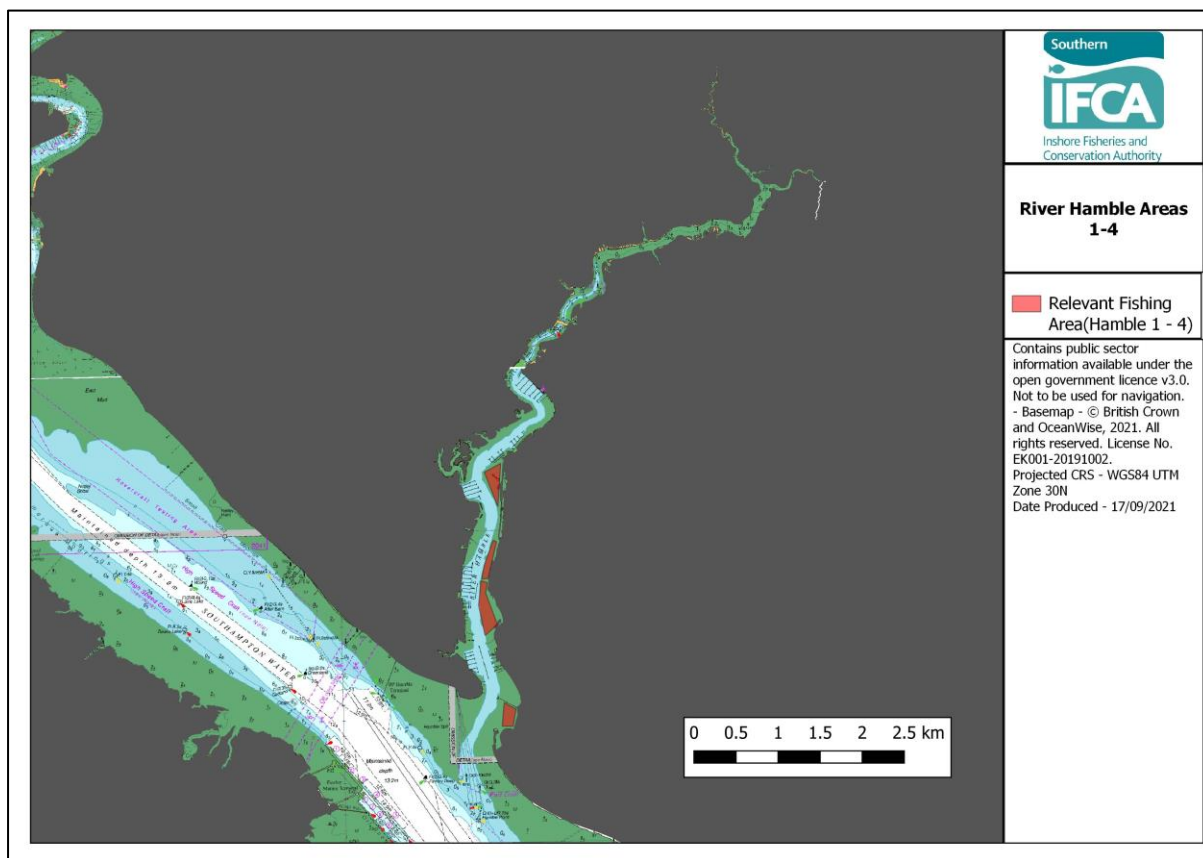
2.5.1 Proximity to SAC and SSSIs

As demonstrated in Map 8, the River Hamble (Areas 1-4) are functionally linked to the River Itchen SAC, River Itchen SSSI and the River Test SSSI. Map 8a shows a higher resolution of the fishing area in question.

¹⁸ Busst, G. 2019. Environment Agency Fish population survey report, Hamble and Wallington 2018, pp.7. Available on request from Environment Agency.



Map 8: Proximity of The River Hamble (Areas 1-4) fishing area to River Itchen SAC, SSSI and River Test SSSI



Map 8a: Higher resolution of River Hamble (Areas 1-4)

2.5.2 Fishing effort

Gill net (ring)

- Net fishing takes place under permit from the Warsash Harbour Master
- Fishers are required to report to Warsash HM planned fishing activity prior to commencing
- 4 vessels (in combination) undertake approximately 10-25 trips per year (MMO data)
- Ring nets are used April to September during daylight hours
- Target species are grey mullet with a potential bycatch of bass
- Trips last 4 hours with 2-3 nets set per trip
- Max. soak time is 30 minutes per net
- Mesh size range between 3 5/8 and 4 inches
- Targeted fishing method, from local fisher knowledge and observation by Southern IFCA officers during observer trips nets are only set when a shoal of fish is seen
- Once deployed, it is highly unlikely that any fish outside of the circle will be entangled.
- The set up and deployment of a ring net is very different to the salmonid seine nets which have been used historically from the shore to target salmonids. The recovery method for a salmonid seine net involves both ends of the net being pulled in at once by the float and lead lines creating a 'bag' in which fish are trapped even if they are not physically caught in the mesh of the net. In contrast, the recovery of a ring net set against the shore involves the recovery from only one end of the net, led by the float line. In this way no 'bag' is created and fish which are not physically caught in the net will not be removed as the net is recovered.

2.5.3 Socio-economic importance of Fishing Area

The estimated first-sale value of net fishing in the River Hamble (Areas 1-4 and Area 5 combined) is in the region of £5,000 per annum (data provided directly by fishers).

2.5.4 Existing restrictions on fishing relevant to migratory salmonids

Four vessels are licenced to fish in the River Hamble by the River Hamble Harbour Authority. This licence includes specified areas where ring net only fishing.

The fishing areas fall within a Bass Nursery Area¹⁹, Within these areas fishing for bass (*Dicentrarchus labrax*), or fishing for any species of sea-fish using sand-eels (*Ammodytidae*) as bait, by any fishing boat is prohibited during the period 30th April to 1st November.

2.5.5 Evidence of salmonids using fishing areas to access SAC or SSSI

As determined by the evidence presented in Sections B 2.1.4 and D 2.1.5 salmonids are known to be present in Southampton Water.

Sections 1.1 and 1.4 of the Net Fishing Byelaw Literature Review provide information on the migration behaviours of Atlantic salmon and sea trout. Of specific relevance to the likely presence of salmonids in the above-named specified fishing areas:

- The areas do not fall within a principal or known migration route, refuge area or pinch point leading to the River Itchen SAC where Atlantic salmon are a qualifying feature of the SAC.
- The areas do not fall within a principal or known migration route, refuge area or pinch point leading to the River Itchen SSSI where sea trout are a faunal component of the 'rivers and streams' feature

¹⁹ as specified under The Bass (Specified Areas) (Prohibition of Fishing) Order 1990 and The Bass (Specified Areas) (Prohibition of Fishing) (Variation) Order 1999¹⁹.

- The areas do not fall within a principal or known migration route, refuge area or pinch point leading to the River Test SSSI where sea trout and Atlantic salmon are a faunal component of the 'rivers and streams' feature
- The areas do not fall within a principal or known migration route, refuge area or pinch point leading to a Principal Salmon River.

2.5.6 Evidence demonstrating a known interaction between nets and salmonids

- There is no known evidence demonstrating interactions, however there is evidence provided by fishers that there is no bycatch of salmonids in this fishery. As a precaution, fishers do refrain from net fishing during periods when risk of interception of salmonids is increased (periods of high flow)
- In June 2019 Southern IFCA Officers undertook 2 observer trips on net fishing vessels in the River Hamble:
 - 1 covering the Hamble River and Fawley Bay using a 4-inch mesh, 300m long, 40 mesh deep net. 4 sets of the net during the trip – no salmonid interaction
 - 1 covering the Hamble estuary using a 3 5/8-inch mesh, 360m long, 30 mesh deep net for ring netting. 2 sets of the net during the trip – no salmonid interaction

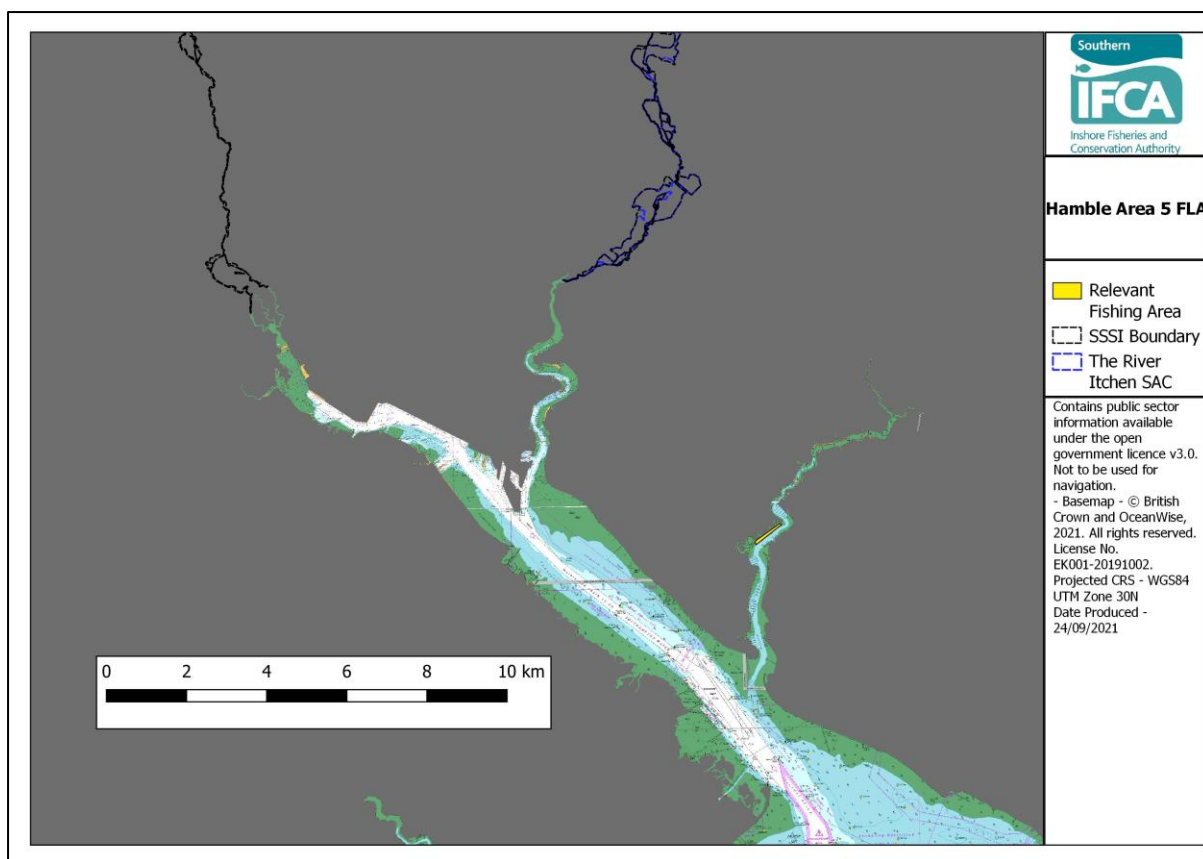
2.5.7 Incidental evidence of interactions between nets and salmonids

None recorded.

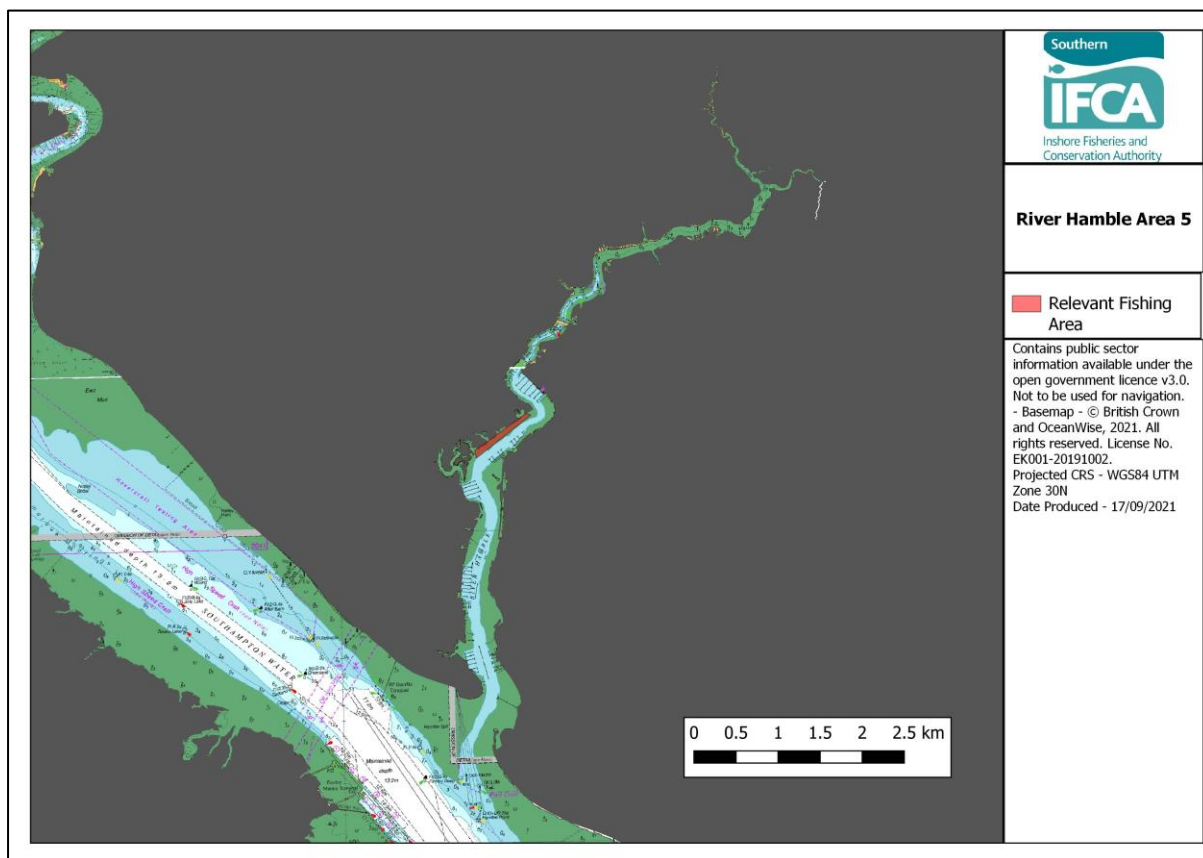
2.6 River Hamble Area 5

2.6.1 Proximity to SAC and SSSIs

As demonstrated in Map 9, the River Hamble (Area 5) is functionally linked to the River Itchen SAC, River Itchen SSSI and the River Test SSSI. Map 9a shows a higher resolution of the fishing area in question.



Map 9: Proximity of The River Hamble (Area 5) fishing area to River Itchen SAC, SSSI and River Test SSSI



Map 9a: Higher resolution of River Hamble (Area 5)

2.6.2 Fishing effort

Please refer to Section 2.5.2.

2.6.3 Socio-economic importance of Fishing Area

Please refer to Section 2.5.3.

2.6.4 Existing restrictions on fishing relevant to migratory salmonids

Please refer to Section 2.5.4.

2.6.5 Evidence of salmonids using fishing area to access SAC or SSSI

Please refer to Section 2.5.5.

2.6.6 Evidence demonstrating a known interaction between nets and salmonids

Please refer to Section 2.5.6.

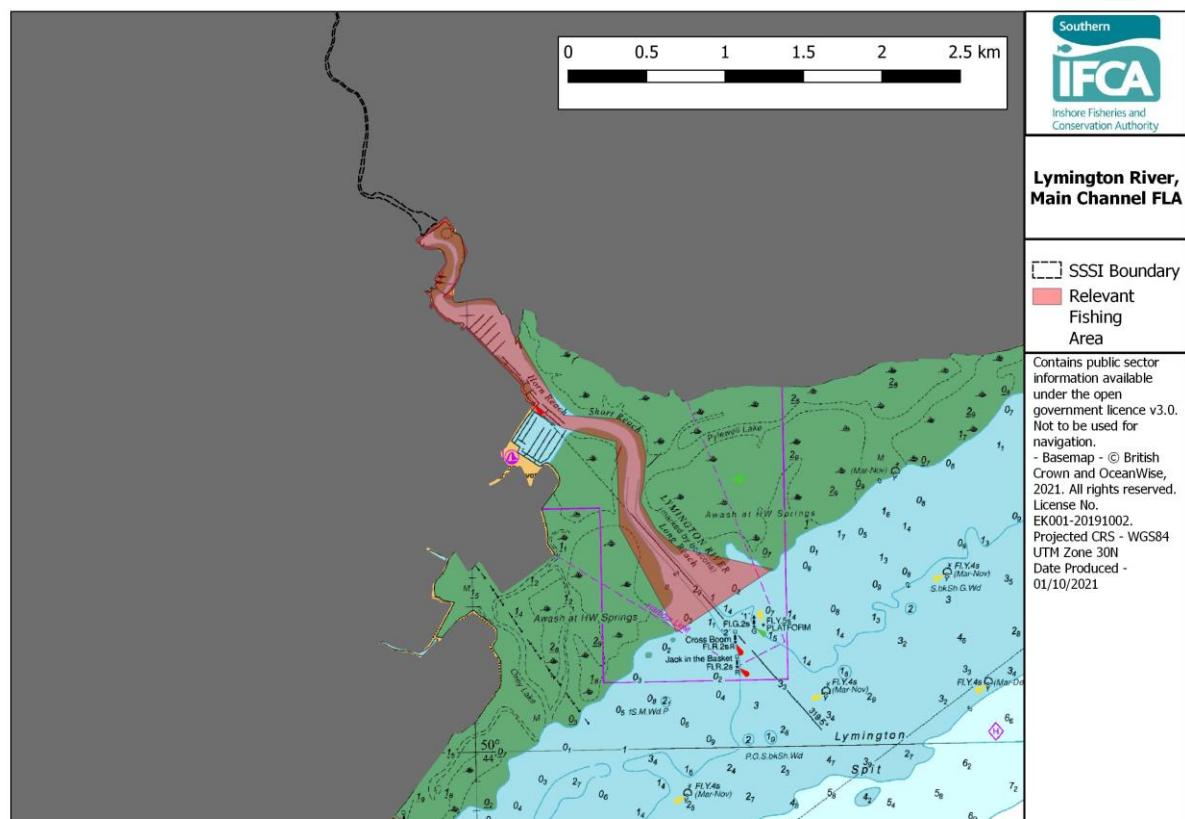
2.6.7 Incidental evidence of interactions between nets and salmonids

Please refer to Section 2.5.7.

2.7 The Lymington River, Main Channel

2.7.1 Proximity to SAC and SSSIs

As demonstrated in Map 10, the Lymington River, Main Channel is functionally linked to the Lymington River SSSI.



Map 10: Proximity of The Lymington River Main Channel fishing area to the Lymington River SSSI

2.7.2 Fishing effort

- Up to five vessels are known to fish with nets in the River Lymington area, including within the main channel and the associated saltmarsh channel network.
- Target species include grey mullet, dover sole, plaice, skates and rays and black bream, with a bycatch of bass.
- Vessels use fixed and drift nets with occasional ring netting

2.7.3 Socio-economic importance of Fishing Area

The first sale value of net fishing activity in the entrance to the Lymington River is estimated to be in the region of £15,000 per annum.

2.7.4 Existing restrictions on fishing relevant to migratory salmonids

Please refer to section C 2.1.4.

2.7.5 Evidence of salmonids using fishing area to access SAC or SSSI

Please refer to sections C 2.1.5 and C 2.1.6.

2.7.6 Evidence demonstrating a known interaction between nets and salmonids

The EA has provided the following evidence of detected interactions between fishing nets and migratory salmonids in the Lymington River area:

- In 1995: a prosecution of a fisher for the retention of sea trout caught in a net fished by the breakwater area
- In 1998: a prosecution of a fisher for the retention of sea trout caught in a net fished by the breakwater area

2.7.7 Incidental evidence of interactions between nets and salmonids

None recorded.

2.8 The Lymington River, Outside Main Channel

2.8.1 Proximity to SAC and SSSIs

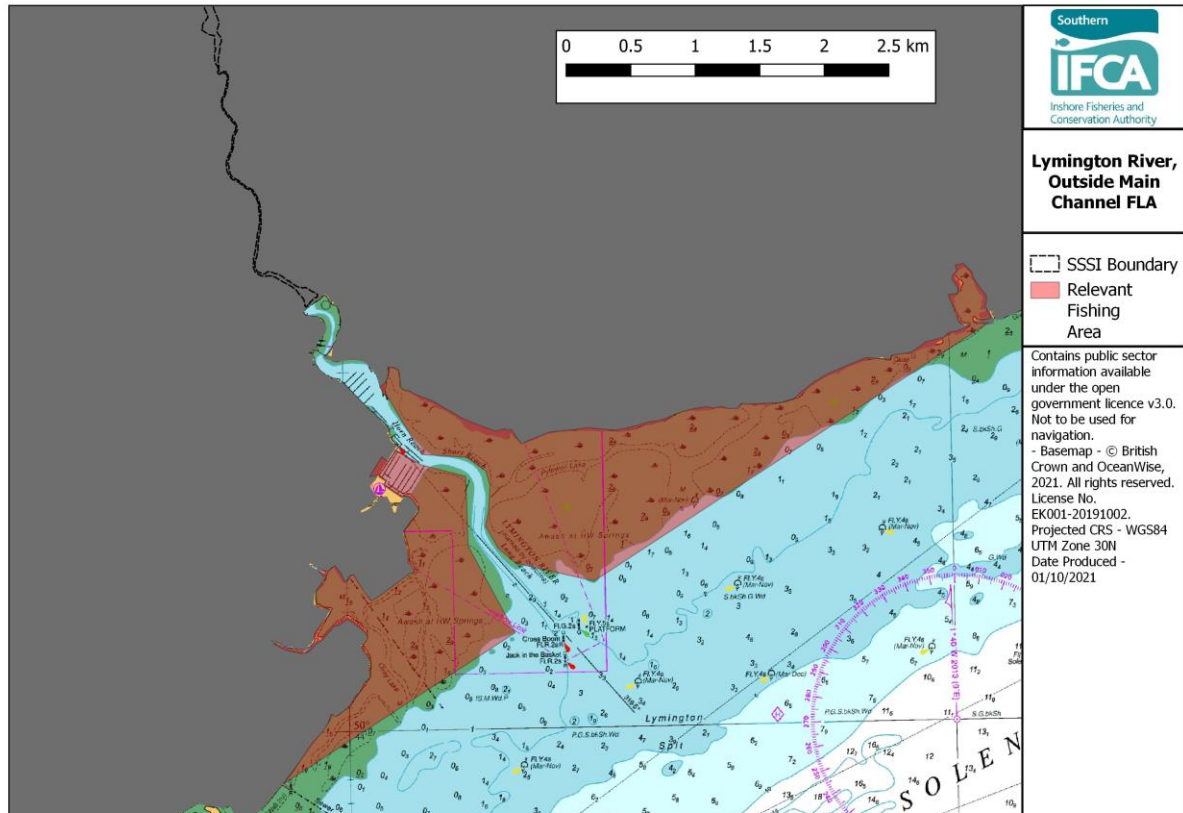
As demonstrated in Map 11, the Lymington River, Outside Main Channel is functionally linked to the Lymington River SSSI.

2.8.2 Fishing effort

See Section D 2.7.2

2.8.3 Socio-economic importance of Fishing Area

See Section D 2.7.3



Map 11: Proximity of The Lymington River Outside Main Channel fishing area to the Lymington River SSSI

2.8.4 Existing restrictions on fishing relevant to migratory salmonids

Please refer to section C 2.1.4.

2.8.5 Evidence of salmonids using fishing area to access SAC or SSSI

Please refer to sections C 2.1.5 and C 2.1.6.

2.8.6 Evidence demonstrating a known interaction between nets and salmonids

See Section D 2.7.6

2.8.7 Incidental evidence of interactions between nets and salmonids

None recorded

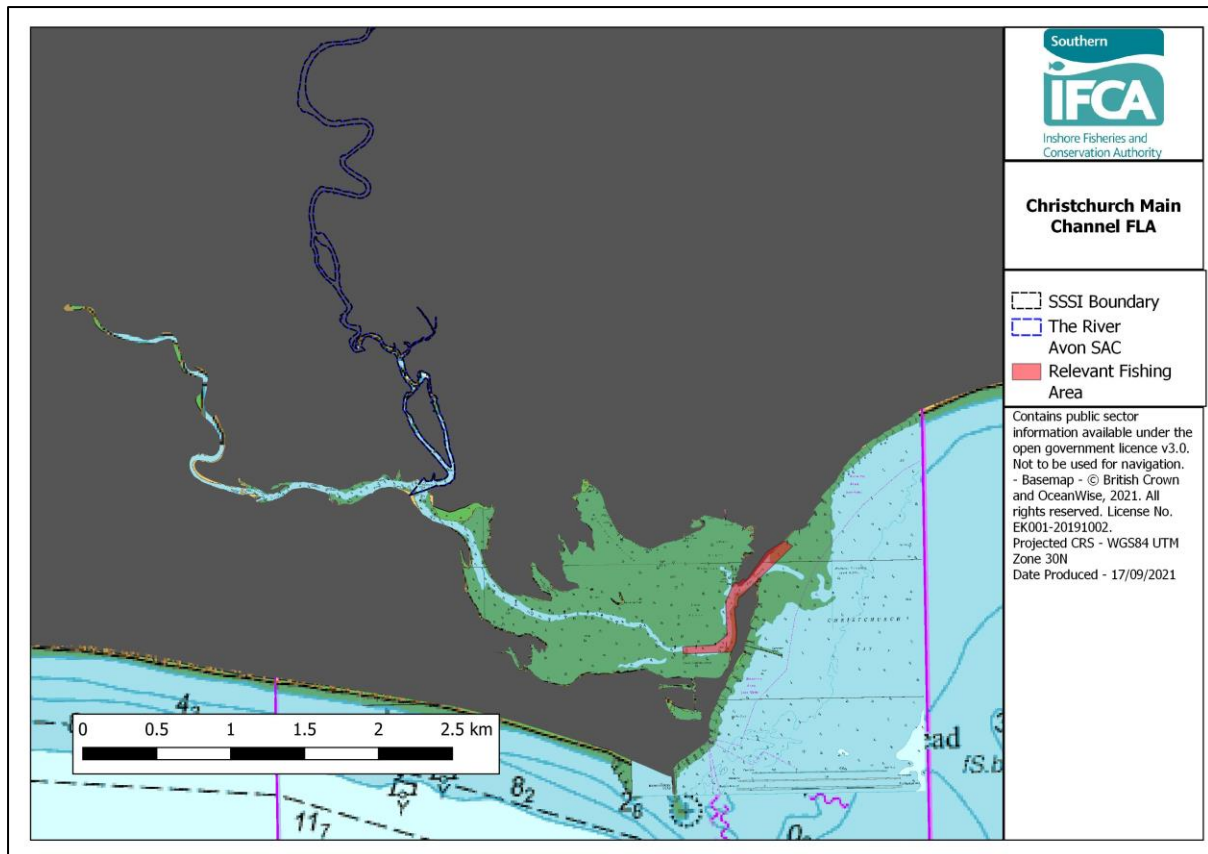
2.9 Christchurch Harbour, Main Channel

2.9.1 Proximity to SAC and SSSIs

As demonstrated in Map 12, the Christchurch Harbour, Main Channel is functionally linked to the River Avon SAC, the Avon Valley SSSI, the River Avon System SSSI and the River Till SSSI. The fishing area may also play a supporting role to The River Stour, reference its designations as a Principal Salmon River and a Principal Sea Trout River.

2.9.2 Fishing effort

- Up to four vessels fish with nets in and alongside the main channel, primarily using drift nets to target grey mullet.



Map 12: Proximity of Christchurch Harbour Main Channel fishing area to River Avon SAC, Avon Valley SSSI, the River Avon System SSSI and the River Till SSSI

- Ring nets are also used to target grey mullet with a bycatch of bass, plaice and flounder.
 - Ring nets are deployed on recognition (by fishers) of the presence of target species.
 - Once deployed, it is highly unlikely that any fish outside of the circle will be entangled.
 - The set up and deployment of a ring net is very different to the salmonid seine nets which have been used historically from the shore to target salmonids. The recovery method for a salmonid seine net involves both ends of the net being pulled in at once by the float and lead lines creating a 'bag' in which fish are trapped even if they are not physically caught in the mesh of the net. In contrast, the recovery of a ring net set against the shore involves the recovery from only one end of the net, led by the float line. In this way no 'bag' is created and fish which are not physically caught in the net will not be removed as the net is recovered.
- Historically seine nets have been used in the area to fish for flounder, primarily for use as pot bait.
- MMO data indicates that in the region of 60 net fishing trips per year are carried out across Christchurch Harbour. It is estimated that approximately 50% of net fishing effort in Christchurch Harbour takes place within the Main Channel area.

2.9.3 Socio-economic importance of Fishing Area

The first-sale value of net fishing in Christchurch Harbour is in the region of £15,000 per annum (data provided by fishers).

2.9.4 Existing restrictions on fishing relevant to migratory salmonids

Under the Southern IFCA legacy byelaw 'Environment Agency, Sea Fisheries Regulation Act 1966, Sea Fisheries Fixed Engine Prohibition':

- The placing and use of fixed engines for taking sea fish is prohibited in any water inland of the landward boundary of the Southern Sea Fisheries Committee district except:
 - a) Between 30th September and the following 15th February in any year in Christchurch Harbour to the west of a line drawn true southeast from the south-eastern-most corner of Haven House Inn at Mudeford Quay near Christchurch between the limits of ordinary high water on each side of the entrance channel being the area of the public fishery lying seaward of a line drawn from Ineravon to the Bunny (or the Canal) on Hengistbury Head and lying north of the main channel
 - b) The placing and use of bottom nets between 30th September in any year and the following 15th February in that part of the sea demarcated by a line at or near the mouth of the River Avon drawn true southeast from the south-eastern-most corner of Haven House Inn at Mudeford Quay near Christchurch to a point (50° 43.18' N, 01° 44.03' W) distant six hundred ten metres therefrom thence continued straight in a north easterly direction to a point (50° 43.92' N, 01° 42.75' W), true south of, an distant six hundred and ten metres from, the southwestern-most corner of the building known as Highcliffe Castle, and thence continued straight to such southwestern-most corner.

2.9.5 Evidence of salmonids using fishing area to access SAC or SSSI

- The main channel of Christchurch Harbour is a principal migration route leading to the River Avon SAC. The evidence of Atlantic salmon using the River Avon SAC is provided in Section B 2.2.4.
- The main channel of Christchurch Harbour is a principal migration route leading to the Avon Valley (Bickton to Christchurch) SSSI, River Avon System SSSI and River Till SSSI.
 - Sea trout are a faunal component of the 'Rivers and Streams' reportable feature of the Avon Valley (Bickton to Christchurch) SSSI
 - Sea trout are a faunal component of the 'Rivers and Streams' reportable feature of the River Avon System SSSI
 - Sea trout are a faunal component of the 'Rivers and Streams' reportable feature of the River Till SSSI
- The River Avon is listed as a 'Principal Sea Trout' river by the Environment Agency.
 - The sea trout fishery assessment data for 2020 shows a Compliance Level of 'Probably at Risk'.
- In 2020 the number of sea trout caught by rod and line was recorded as 188 with 170 being released, giving a catch and release rate of 90%. This is the same as the rate for 2019.
- The River Stour is a 'Principal Salmon River' as determined by the Environment Agency:
 - In 2019, the Atlantic salmon fishery assessment data²⁰ showed that the River Stour attained 12% of the Conservation Limit of 2.12 x10⁶ eggs deposited. This gives the river a Compliance Level of 'At Risk'.
 - The Compliance Level for 2024 is predicted to be 'At Risk'.
 - There is no validated count data for the River Stour, the Environment Agency have stated that the run count of the River Stour is approximately 6.5% of the run count in the River Avon:
 - For 2020, an estimated run count of 1495 for the River Avon would give an approximate run count of 97 for the River Stour

²⁰ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/907284/SalmonReport-2019-summary.pdf

- The Environment Agency report 'Review of protection measures for Atlantic salmon and sea trout in inshore waters²¹' provides timings of the smolt and adult run of Atlantic salmon in the River Stour as April to May for smolt and February to December for the adult run with a note that fish are known to be present in Christchurch Harbour throughout this period.
- The River Stour is listed as a 'Principal Sea Trout River' as determined by the Environment Agency:
- The sea trout fishery assessment data for 2020 shows a Compliance Level of 'Probably at Risk'.
- In 2020, the number of sea trout caught by rod and line in the River Stour was 8 with 7 being released, giving a catch and release rate of 87%, this is an increase of 20% on the rate for 2019.
- The Environment Agency report 'Review of protection measures for Atlantic salmon and sea trout in inshore waters' provides timings of the smolt and adult run of sea trout in the River Stour as April/May for smolt and May to December for the adult run with a peak period between June and July and then again with Autumn rains.

2.9.6 Evidence demonstrating a known interaction between nets and salmonids

None recorded

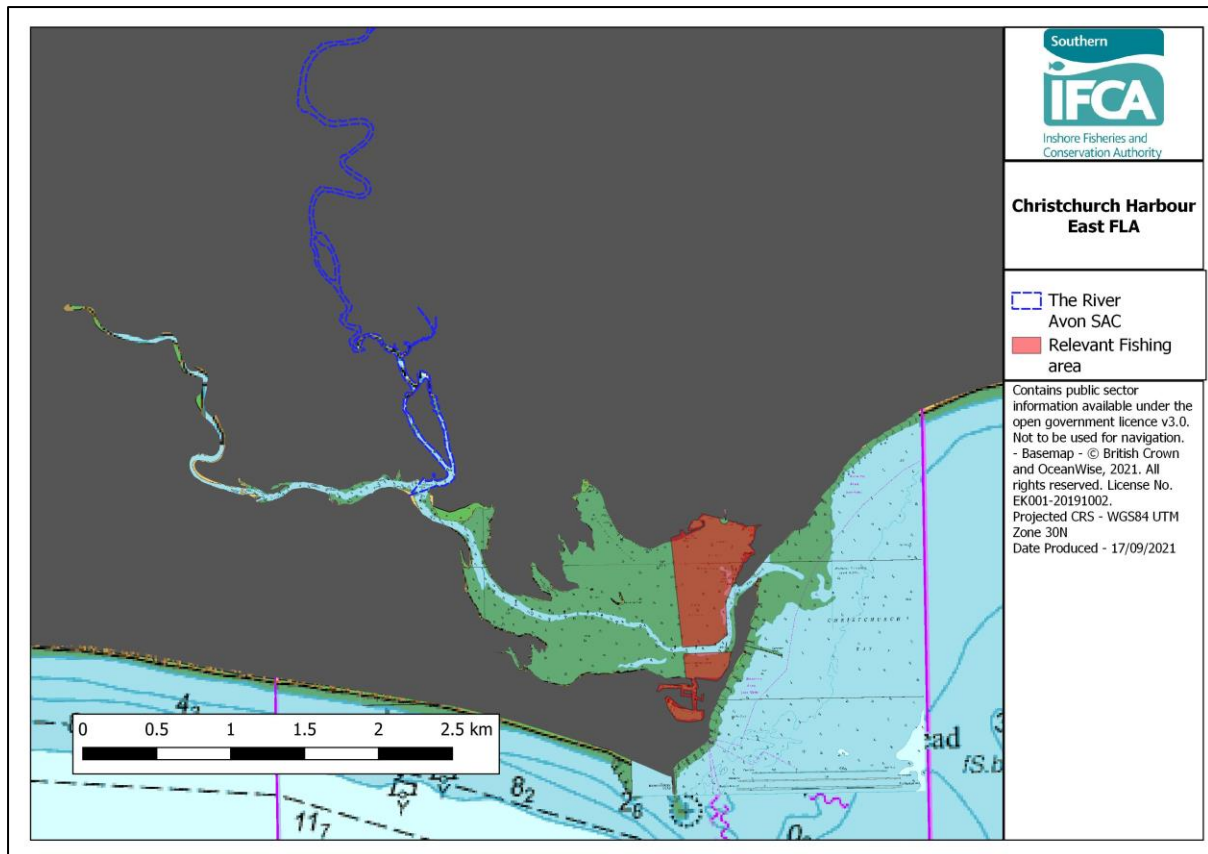
2.9.7 Incidental evidence of interactions between nets and salmonids

- There is evidence of an interaction between migratory salmonids and fishing nets in Christchurch Harbour resulting from an EA and Southern IFCA inspection – the net type and location is unconfirmed.
- Targeted net fishing for migratory salmonids previously took place in the 'Run' area under a Net Limitation Order (NLO) administered by the EA.

2.10 Christchurch Harbour, East

2.10.1 Proximity to SAC and SSSIs

As demonstrated in Map 13, Christchurch Harbour, East is functionally linked to the River Avon SAC, the Avon Valley SSSI, the River Avon System SSSI and the River Till SSSI. The fishing area may also play a supporting role to The River Stour, reference its designations as a Principal Salmon River and a Principal Sea Trout River.



Map 13: Proximity of Christchurch Harbour East fishing area to River Avon SAC, Avon Valley SSSI, the River Avon System SSSI and the River Till SSSI

2.10.2 Fishing effort

Two commercial fishing vessels fish with nets in the east of Christchurch Harbour, primarily by use of drift and ring nets to target grey mullet with a bycatch of bass. Fixed nets are used between 1st October and 14th February to target grey mullet, plaice, flounder and gilthead bream.

- Ring nets are deployed on recognition (by fishers) of the presence of target species.
- Once deployed, it is highly unlikely that any fish outside of the circle will be entangled.
- The set up and deployment of a ring net is very different to the salmonid seine nets which have been used historically from the shore to target salmonids. The recovery method for a salmonid seine net involves both ends of the net being pulled in at once by the float and lead lines creating a 'bag' in which fish are trapped even if they are not physically caught in the mesh of the net. In contrast, the recovery of a ring net set against the shore involves the recovery from only one end of the net, led by the float line. In this way no 'bag' is created and fish which are not physically caught in the net will not be removed as the net is recovered.

2.10.3 Socio-economic importance of Fishing Area

Please refer to Section D 2.9.3.

2.10.4 Existing restrictions on fishing relevant to migratory salmonids

Please refer to Section D 2.9.4

2.10.5 Evidence of salmonids using fishing area to access SAC or SSSI

As determined by the evidence presented in Sections B 2.2.4 and D 2.9.5 salmonids are known to be present in Christchurch Harbour. Sections 1.1 and 1.4 of the Literature Review document provide information on the migration behaviours of Atlantic salmon and sea trout. Of specific relevance to the likely presence of salmonids in the above-named specified fishing areas:

- The area does not fall within a principal or known migration route, refuge area or pinch point leading to the River Avon SAC where Atlantic salmon are a qualifying feature of the SAC.
- The areas do not fall within a principal or known migration route, refuge area or pinch point leading to the Avon Valley SSSI (Bickton to Christchurch) SSSI where sea trout are a faunal component of the 'rivers and streams' feature
- This area does not fall within a principal or known migration route, refuge area or pinch point leading to the River Avon System SSSI where sea trout and Atlantic salmon are a faunal component of the 'rivers and streams' feature
- This area does not fall within a principal or known migration route, refuge area or pinch point leading to the River Till SSSI where sea trout and Atlantic salmon are a faunal component of the 'rivers and streams' feature
- This area does not fall within a principal or known migration route, refuge area or pinch point leading to a Principal Salmon River

2.10.6 Evidence demonstrating a known interaction between nets and salmonids

In 2019 Southern IFCA Officers undertook observer trips on net fishing vessels across the District. Of relevance to Christchurch Harbour:

- 1 net fishing trip in June 2019 covering the area of Mundeford and Christchurch Harbour using a ring net. 1 set of the net during the trip – no salmonid interaction.
- 1 landing inspection was carried out in June 2019, as part of Southern IFCA survey work, for a vessel that had fished in the Mundeford and Christchurch Harbour area. The catch consisted of 98 grey mullet species; the fisher indicated there was no salmon interception during the fishing trip.

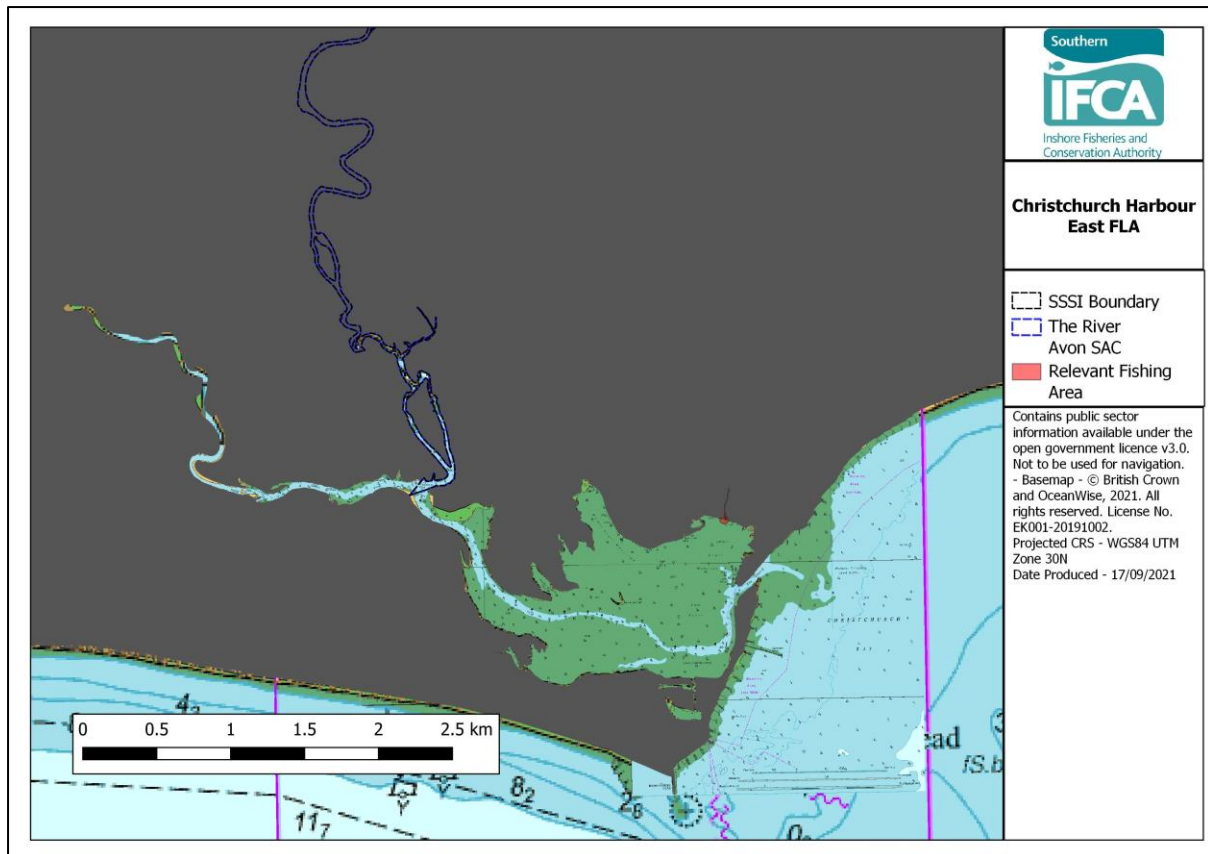
2.10.7 Incidental evidence of interactions between nets and salmonids

None recorded

2.11 Christchurch Harbour, Mouth of River Mude

2.11.1 Proximity to SAC and SSSIs

As demonstrated in Map 14, Christchurch Harbour, Mouth of River Mude is functionally linked to the River Avon SAC, the Avon Valley SSSI, the River Avon System SSSI and the River Till SSSI. The fishing area may also play a supporting role to The River Stour, reference its designations as a Principal Salmon River and a Principal Sea Trout River.



Map 14: Proximity of Christchurch Harbour Mouth of the River Mude fishing area to River Avon SAC, Avon Valley SSSI, the River Avon System SSSI and the River Till SSSI

2.11.2 Fishing effort

No fishing activity occurs within this area

2.11.3 Socio-economic importance of Fishing Area

No fishing activity occurs within this area

2.11.4 Existing restrictions on fishing relevant to migratory salmonids

Please refer to Section D 2.9.4.

2.11.5 Evidence of salmonids using fishing area to access SAC or SSSI

As determined by the evidence presented in Sections B 2.2.4 and D 2.9.5 salmonids are known to be present in Christchurch Harbour. Sections 1.1 and 1.4 of the Literature Review document provide information on the migration behaviours of Atlantic salmon and sea trout.

2.11.6 Evidence demonstrating a known interaction between nets and salmonids

None recorded

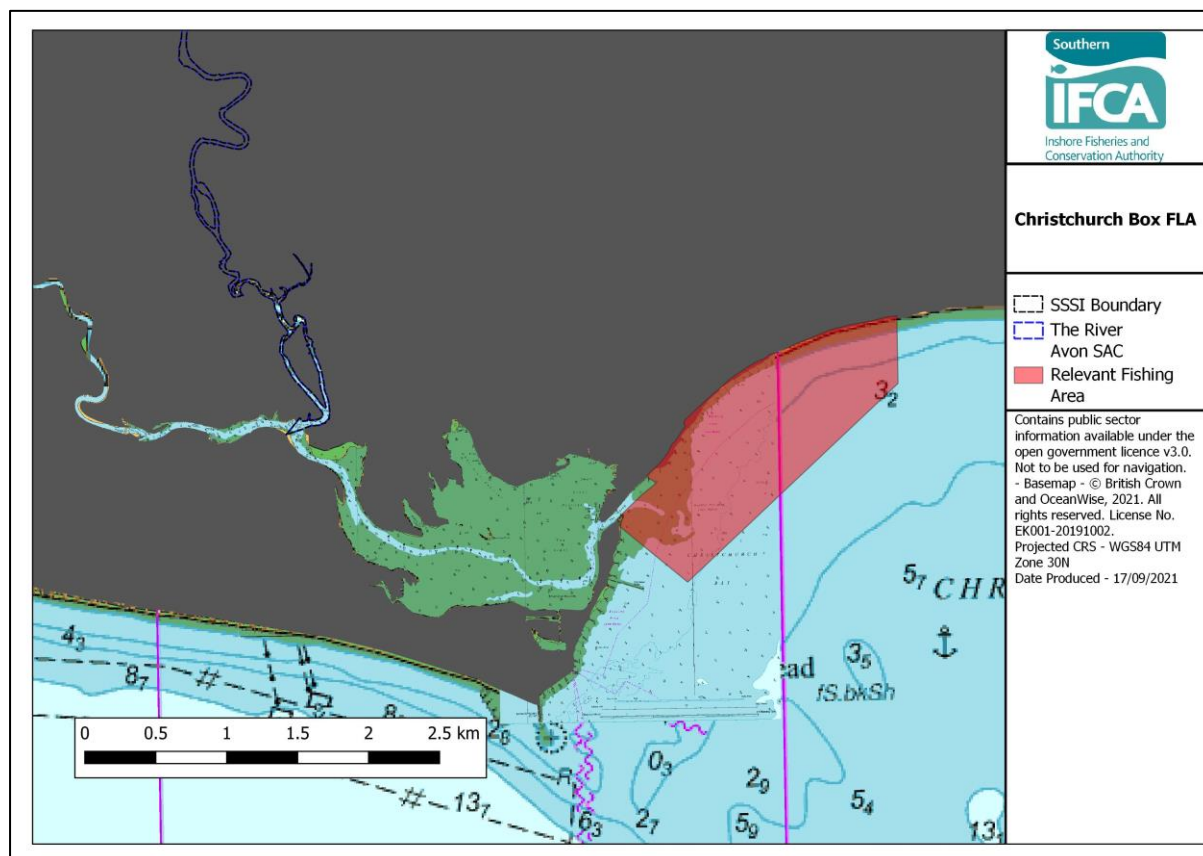
2.11.7 Incidental evidence of interactions between nets and salmonids

None Recorded

2.12 Christchurch Box

2.12.1 Proximity to SAC and SSSIs

As demonstrated in Map 15, the Christchurch Box is functionally linked to the River Avon SAC, the Avon Valley SSSI, the River Avon System SSSI and the River Till SSSI. The fishing area may also play a supporting role to The River Stour, reference its designations as a Principal Salmon River and a Principal Sea Trout River.



Map 15: Proximity of Christchurch Harbour Christchurch Box fishing area to River Avon SAC, Avon Valley SSSI, the River Avon System SSSI and the River Till SSSI

2.12.2 Fishing effort

- Up to five commercial fishing vessels fish with nets in the Christchurch Box area.
- Bottom set nets are used outside of the closed season to target a range of fish species including grey mullet, plaice, skates and rays, Dover sole and bream. Bass are also caught as a bycatch.
- Drift nets are used throughout the summer and autumn months, particularly during September, in the Christchurch Box to target grey mullet. Bass are also caught as a bycatch

2.12.3 Socio-economic importance of Fishing Area

The first-sale value of net fishing activity in the Christchurch Box area ranges up to £15,000 per annum.

2.12.4 Existing restrictions on fishing relevant to migratory salmonids

Please refer to Section D 2.9.4.

2.12.5 Evidence of salmonids using fishing area to access SAC or SSSI

- As determined by the evidence presented in Sections B 2.2.4 and D 2.9.5 salmonids are known to be present in Christchurch Harbour.
- In order to enter Christchurch Harbour the salmonids must move through the Christchurch Box in order to enter the Harbour.
- The Christchurch Box area was originally defined by the Environment Agency under a legacy byelaw (see Section 5.3) as it was identified as holding a high concentration of migratory fish as they moved close inshore to detect the run into the Harbour.
- Sections 1.1 and 1.4 of the Literature Review provide information on the migration behaviours of Atlantic salmon and sea trout.

2.12.6 Evidence demonstrating a known interaction between nets and salmonids

None recorded

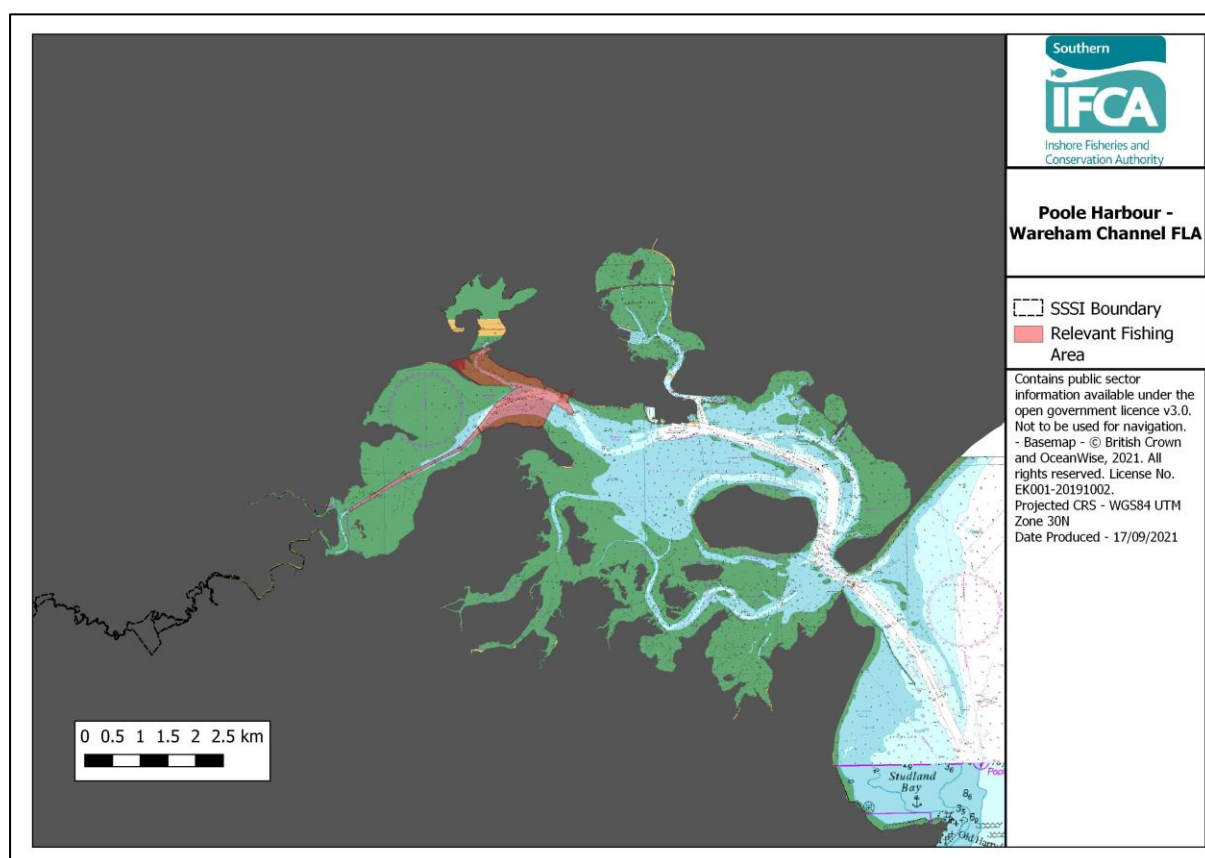
2.12.7 Incidental evidence of interactions between nets and salmonids

None recorded

2.13 Poole Harbour, Wareham Channel

2.13.1 Proximity to SAC and SSSIs

As demonstrated in Map 16, the Poole Harbour, Wareham Channel area is functionally linked to the River Frome SSSI. The area may also play a supporting role to the River Piddle, reference its designations as a Principal Salmon River and a Principle Sea Trout River.



Map 16: Proximity of Poole Harbour Wareham Channel to the River Frome SSSI

2.13.2 Fishing effort

Gill net (ring)

- Up to 13 vessels fish with nets using predominantly ring nets to target grey mullet. Bycatch species in the ring net fishery include bass and gilthead bream.
- Information from fishers that ring net vessels shoot nets at the very edges of the channel throughout the Harbour as fish tend to congregate in these areas
- Ring net fishing in this area only takes place during slack water
- The net is set for a short period of time, 10 minutes
- Nets are constantly attended
- Mesh size ranges from 3 5/8 to 4 inches
- Net length ranges from 250 to 360m
- Net is set from a vessel in a circular pattern to enclose target species or set from the shore in a 'D' shape with the shore providing the closing boundary
- Ring nets are deployed on recognition (by fishers) of the presence of target species.
- Once deployed, it is highly unlikely that any fish outside of the circle will be entangled.
- The set up and deployment of a ring net is very different to the salmonid seine nets which have been used historically from the shore to target salmonids. The recovery method for a salmonid seine net involves both ends of the net being pulled in at once by the float and lead lines creating a 'bag' in which fish are trapped even if they are not physically caught in the mesh of the net. In contrast, the recovery of a ring net set against the shore involves the recovery from only one end of the net, led by the float line. In this way no 'bag' is created and fish which are not physically caught in the net will not be removed as the net is recovered.

Gill net (drift)

- Up to 3 vessels engage in drift netting activity to target herring
- Fishers shoot nets at the very edges of the channel throughout the Harbour as fish tend to congregate in these areas

2.13.3 Socio-economic importance of Fishing Area

The first-sale value of net fishing activity in Poole Harbour is estimated to be in the region of £150,000. Up to 5% of this value may be derived from the Wareham Channel area.

2.13.4 Existing restrictions on fishing relevant to migratory salmonids

The Southern IFCA 'Fixed Engines' byelaw prohibits the placing and use of fixed engines (nets), other than Fyke nets, for the taking of sea-fish during the period from 1st April to 30th September (both days inclusive) in any year in all parts of Poole Harbour to the West of the line of the Chain Ferry between South Haven Point and Sandbanks and all parts of any river or stream flowing into Poole Harbour which fall within the Southern Sea Fisheries District.

The Bass (Specified Area) (Prohibition of Fishing) Order 1990 and The Bass (Specified Areas) (Prohibition of Fishing) (Variation) Order 1999 sets a prohibition on fishing for bass (*Dicentrarchus labrax*), or fishing for any species of sea-fish using sand-eels (*Ammodytidae*) as bait, by any fishing boat within Poole Harbour in the area of all tidal waters enclosed by a line drawn 011° true from Jerry's Point, through Branksea Castle to Salterns Pier between 30th April and 1st November.

2.13.5 Evidence of salmonids using fishing area to access SAC or SSSI

Wareham Channel is a principal migration route leading to the River Frome SSSI where Atlantic salmon and sea trout are faunal components of the 'River and Streams' reportable feature. Sections 1.1 and 1.4 of the Literature Review provide information on the migration behaviours of Atlantic salmon and sea trout.

Evidence of Atlantic Salmon using the River Frome

- Atlantic salmon are a faunal component of the River Frome SSSI 'Rivers and Streams' reportable feature:
 - There are seven units under the River Frome SSSI for the 'Rivers and Streams' reportable feature, one of the units directly references Atlantic salmon as being impacted by barriers to migration and that improvements are being sought to rectify the impact.
 - For all seven units for the 'Rivers and Streams' reportable feature, the condition is given as 'Unfavourable – no change', no assessment of the Condition Threat has been undertaken. For note, this status condition relates to the habitat as a whole, rather than the Atlantic salmon population status.
- The River Frome is listed as a 'Principal Salmon River' as determined by the Environment Agency
 - In 2019, the Atlantic salmon fishery assessment data²² showed that the River Frome attained 82% of the Conservation Limit of 1.50×10^6 eggs deposited. This gives the river a Compliance Level of 'Probably at Risk'.
 - The Compliance Level for 2024 is predicted to be 'Probably at Risk'
- Atlantic Salmon stock data²³:
 - Annex 4: Figure 1 shows the exploitation rate and percentage of adult run retained by the licenced rod and line fishery for Atlantic salmon on the River Frome for 1988 to 2019.
 - Annex 4: Figure 2 shows data from the Environment Agency on the count of Atlantic salmon smolt and adults are available for years 1988 to 2019
 - the returning stock estimate for the River Frome (blue) for 1988 to 2019
 - rod catch data (orange), available for 1988-2019 and the spawning escapement (grey) for the same period.
- The Environment Agency report 'Review of protection measures for Atlantic salmon and sea trout in inshore waters' provides timings of the smolt and adult run of Atlantic salmon in the River Frome as April to May for smolt and February to December for the adult run.

Evidence of sea trout using the River Frome

- Sea trout are a faunal component of the 'Rivers and Streams' reportable feature of the River Frome SSSI.
- The River Frome is listed as a 'Principal Sea Trout' river by the Environment Agency. The sea trout fishery assessment data for 2020 shows a Compliance Level of 'Probably at Risk'.
 - In 2020, the number of sea trout caught by rod and line in the River Frome was 275 with 251 being released, giving a catch and release rate of 91%, this is a decrease of 1% on the rate for 2019.
- The Environment Agency report 'Review of protection measures for Atlantic salmon and sea trout in inshore waters' provides timings of the smolt and adult run of sea trout in the River Frome as March to April and the adult run as May to December with a peak period between June to July and then again with the Autumn rains.

22 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/907284/SalmonReport-2019-summary.pdf

23 Stock data taken from: Salmon Stocks and Fisheries in England and Wales Annual Report by Environment Agency, Cefas and Natural Resources Wales Solent and South Downs Annual Fish Monitoring Report by Environment Agency

This area may also play a supporting role to the River Piddle as a designated Principal Salmon River and a Principal Sea Trout River.

Evidence of Atlantic salmon using the River Piddle

- The River Piddle is listed as a 'Principal Salmon River' as determined by the Environment Agency:
 - In 2019, the Atlantic salmon fishery assessment data²⁴ showed that the River Piddle attained 42% of the Conservation Limit of 0.31×10^6 eggs deposited. This gives the river a Compliance Level of 'At Risk'.
 - The Compliance Level for 2024 is predicted to be 'Probably at Risk'.
- The Environment Agency report 'Review of protection measures for Atlantic salmon and sea trout in inshore waters²⁵' provides timings of the smolt and adult run of Atlantic salmon in the River Piddle as April to May for smolt and February to December for the adult run.
- Given the proximity of the river mouths and shared estuaries of the Rivers Frome and River Piddle, higher levels of gene flow and migration between these sites might be expected and it appears that the geographic distance between the mouths of these rivers does play a role in defining genetic distances between populations²⁶.

Evidence of sea trout using the River Piddle

- The River Piddle is listed as a 'Principal Sea Trout River' as determined by the Environment Agency:
- The sea trout fishery assessment data for 2020 shows a Compliance Level of 'Probably at Risk', which is a downgrade from the 2019 classification of 'Probably not at risk'.
- In 2020, the number of sea trout caught by rod and line in the River Piddle was 3 with 3 being released, giving a catch and release rate of 100%, this is the same as the rate for 2019.
- The Environment Agency report 'Review of protection measures for Atlantic salmon and sea trout in inshore waters' provides timings of the smolt and adult run of sea trout in the River Piddle as April/May for smolt and May to December for the adult run with a peak period between June and July and then again with Autumn rains.

2.13.6 Evidence demonstrating a known interaction between nets and salmonids

The EA regulate a Net Limitation Order for Poole Harbour. Net fishing is carried out each year by use of drift net in the Wareham Channel and Wareham Approaches, targeting salmon and sea trout. One fisher is active in the fishery and fishes under a permit issued by the EA. The permit holder operates a catch and release fishery. Data is held by the EA on salmon and sea trout catches in this fishery.

The EA has recorded the following instances of salmonids observed being caught in nets in the Wareham Channel and Wareham Approaches area:

- 2004 15/11/04- Sea trout caught in net off Rockley.
- 2009 17/10/09- One Salmon in fixed net Wareham Channel.
- 2012 18/07/12- Two salmon in illegal fixed net at top of Wareham channel. Net seized.
- 2013 07/13- One sea trout caught at the top of the Wareham channel in the presence of

²⁴ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/907284/SalmonReport-2019-summary.pdf

²⁶ Ikediashi, C., Paris, J. R., King, R. A., Beaumont, W. R. C., Ibbotson, A. and Stevens, J. R. 2018. 'Atlantic salmon *Salmo salar* in the chalk streams of England are genetically unique'. *Journal of Fish Biology*, **92**(3), pp. 621-641

- SIFCA Officers by fisherman using drift net. Fish returned.
- 2013 One sea trout taken in Wareham Channel along with undersize bass. Prosecution.
- 2016 10/06/16- Two sea trout caught in drift net fished off Keyworth point both released in the presence of EA Officers.

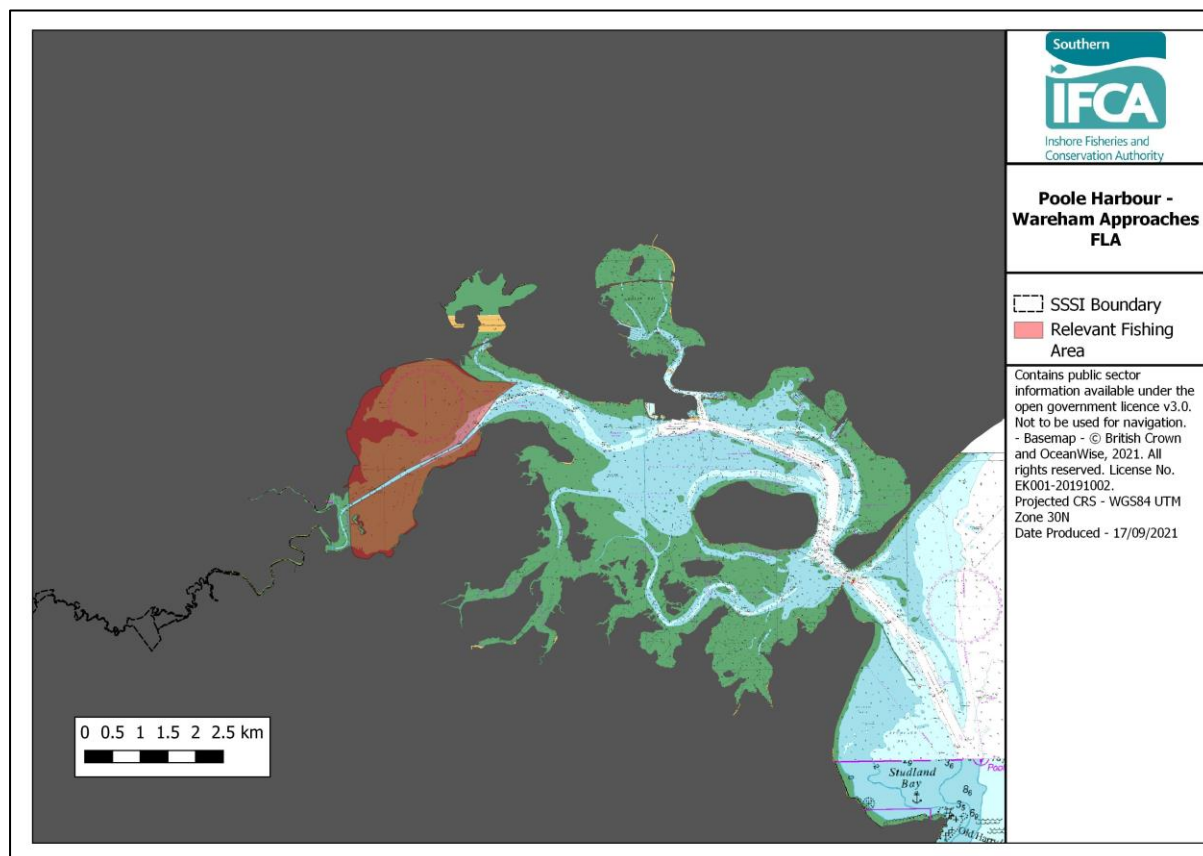
2.13.7 Incidental evidence of interactions between nets and salmonids

None recorded

2.14 Poole Harbour, Wareham Approaches

2.14.1 Proximity to SAC and SSSIs

As demonstrated in Map 17, the Poole Harbour, Wareham Approaches area is functionally linked to the River Frome SSSI. The fishing area may also play a supporting Role to the River Piddle, reference its designations as a Principal Salmon River and a Principal Sea Trout River.



Map 17: Proximity of Poole Harbour Wareham Channel Approaches to the River Frome SSSI

2.14.2 Fishing effort

Gill net (ring)

- Up to 13 vessels fish with ring nets in the Wareham Approaches.
- The net is set for a short period of time, 10 minutes
- Nets are constantly attended
- Mesh size ranges from 3 5/8 to 4 inches

- Net length ranges from 250 to 360m
- Net is set from a vessel in a circular pattern to enclose target species or set from the shore in a 'D' shape with the shore providing the closing boundary
- Used primarily to target grey mullet species. Bass are caught as bycatch.
- Ring nets are deployed on recognition (by fishers) of the presence of target species.
- Once deployed, it is highly unlikely that any fish outside of the circle will be entangled.
- The set up and deployment of a ring net is very different to the salmonid seine nets which have been used historically from the shore to target salmonids. The recovery method for a salmonid seine net involves both ends of the net being pulled in at once by the float and lead lines creating a 'bag' in which fish are trapped even if they are not physically caught in the mesh of the net. In contrast, the recovery of a ring net set against the shore involves the recovery from only one end of the net, led by the float line. In this way no 'bag' is created and fish which are not physically caught in the net will not be removed as the net is recovered.

Gill net (drift)

- Up to 3 vessels engage in drift netting activity in the Wareham Approaches area
- Species caught include grey mullet, bass, gilthead bream, plaice, flounder and herring.

Gill net (fixed)

- Up to 13 vessels engage in fixed netting activity in the Wareham Approaches area outside of the fixed engine closure period.
- Fishing for flounder and plaice as well as other species of flatfish

2.14.3 Socio-economic importance of Fishing Area

The first-sale value of net fishing activity in Poole Harbour is estimated to be in the region of £150,000. Up to 25% of this value may be derived from the Wareham Approaches area.

2.14.4 Existing restrictions on fishing relevant to migratory salmonids

Please refer to Section D 2.13.4.

2.14.5 Evidence of salmonids using fishing area to access SAC or SSSI

As determined by the evidence presented in Section D 2.13.5 salmonids are known to be present in Poole Harbour. Wareham Approaches is a known (but not principal) migration route leading to the River Frome SSSI where Atlantic salmon and sea trout are faunal components of the 'River and Streams' reportable feature and may also play a supporting role to the River Piddle as a Principal Salmon River and a Principal Sea Trout River. Sections 1.1 and 1.4 of the Literature Review provide information on the migration behaviours of Atlantic salmon and sea trout.

2.14.6 Evidence demonstrating a known interaction between nets and salmonids

- One record by the Environment Agency of a 6-8lb sea trout caught in a surface gill net used across a large area on the side of the Wareham Channel while an EA Fisheries Enforcement Officer was present²⁷.

²⁷ Information stated on p. 7 of the Environment Agency Report 'Risks posed to migratory salmonid fish species by sea fish netting in Poole and Christchurch Harbours', provided to the Southern IFCA in 2018.

- In 2019 Southern IFCA Officers undertook observer trips on net fishing vessels across the District. For the area of the Wareham Channel in Poole Harbour 3 observer trips were undertaken as follows:
- 1 net fishing trip in June 2019 using a 3 5/8 and 3 3/4 mesh, 340-yard-long net for ring netting. 2 sets of the net during the trip – no salmonid interaction
- 1 net fishing trip in August 2019 using a 3 5/8 and 3 3/4 mesh, 340-yard-long net for ring netting. 1 set of the net during the trip – no salmonid interaction
- 1 net fishing trip in September 2019, with the Wareham Channel fished in addition to the central Harbour area, using a 3 5/8 and 3 3/4 mesh, 340-yard-long net for ring netting. 5 sets of the net during the trip – no salmonid interaction

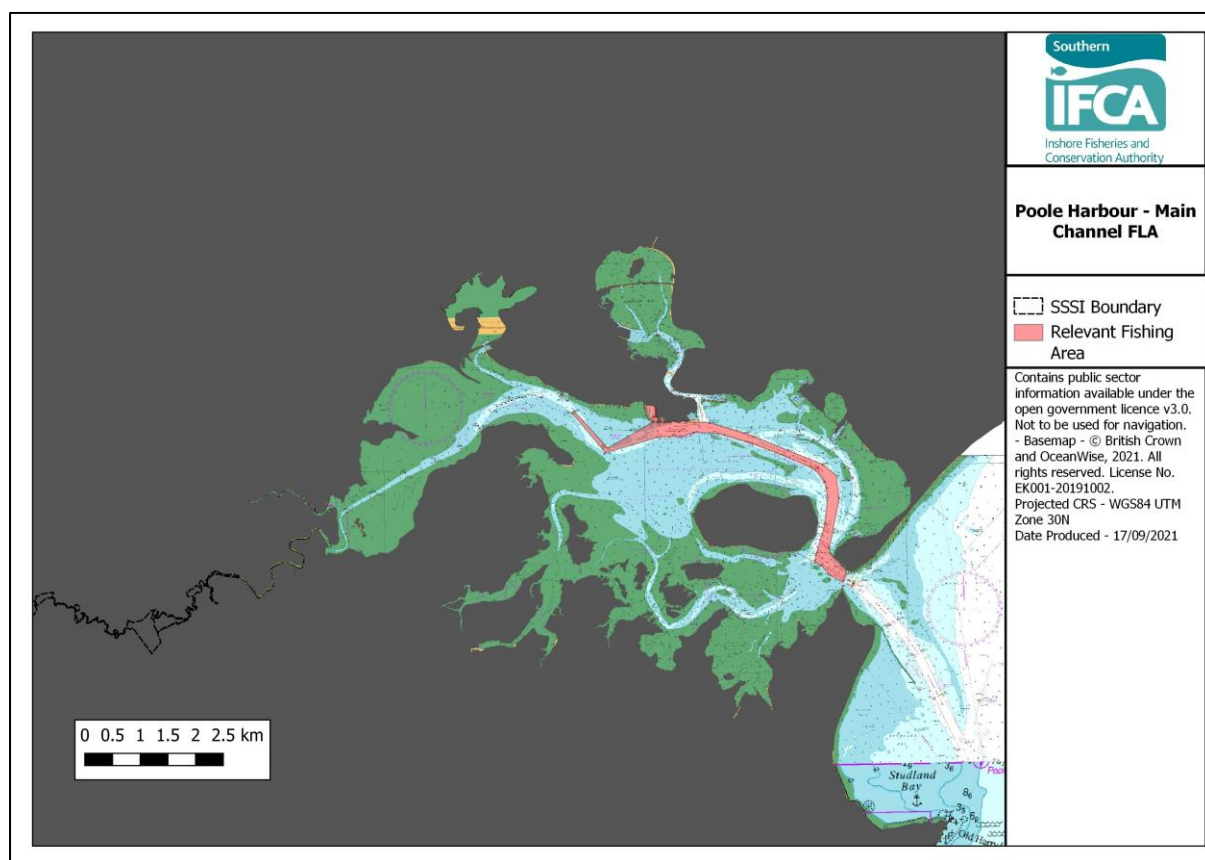
2.14.7 Incidental evidence of interactions between nets and salmonids

None recorded

2.15 Poole Harbour, Main Channel

2.15.1 Proximity to SAC and SSSIs

As demonstrated in Map 18, the Poole Harbour, Main Channel is functionally linked to the River Frome SSSI. The fishing area may also play a supporting role to the River Piddle, reference its designations as a Principal Salmon River and a Principal Sea Trout River.



Map 18: Proximity of Poole Harbour Main Channel to the River Frome SSSI

2.15.2 Fishing effort

Gill net (ring net)

- Up to 13 vessels fish with nets in the Main Channel using predominantly ring nets to target grey mullet. Bycatch species in the ring net fishery include bass and gilthead bream.
- Information from fishers that ring net vessels shoot nets at the very edges of the channel throughout the Harbour as fish tend to congregate in these areas
- Ring net fishing in this area only takes place during slack water
- The net is set for a short period of time, 10 minutes
- Nets are constantly attended
- Mesh size ranges from 3 5/8 to 4 inches
- Net length ranges from 250 to 360m
- Net is set from a vessel in a circular pattern to enclose target species or set from the shore in a 'D' shape with the shore providing the closing boundary
- Ring nets are deployed on recognition (by fishers) of the presence of target species.
- Once deployed, it is highly unlikely that any fish outside of the circle will be entangled.
- The set up and deployment of a ring net is very different to the salmonid seine nets which have been used historically from the shore to target salmonids. The recovery method for a salmonid seine net involves both ends of the net being pulled in at once by the float and lead lines creating a 'bag' in which fish are trapped even if they are not physically caught in the mesh of the net. In contrast, the recovery of a ring net set against the shore involves the recovery from only one end of the net, led by the float line. In this way no 'bag' is created and fish which are not physically caught in the net will not be removed as the net is recovered.

Gill net (drift net)

- Up to 3 vessels engage in drift netting activity to target herring
- Fishers shoot nets at the very edges of the channel throughout the Harbour as fish tend to congregate in these areas

2.15.3 Socio-economic importance of Fishing Area

The first-sale value of net fishing activity in Poole Harbour is estimated to be in the region of £150,000. Up to 10% of this value may be derived from the Main Channel area.

2.15.4 Existing restrictions on fishing relevant to migratory salmonids

Please refer to Sections D 2.13.4.

2.15.5 Evidence of salmonids using fishing area to access SAC or SSSI

As determined by the evidence presented in Section D 2.13.5 salmonids are known to be present in Poole Harbour. The Main Channel is a principal migration route leading to the River Frome SSSI where Atlantic salmon and sea trout are faunal components of the 'Rivers and Streams' reportable feature and may also play a supporting role to the River Piddle as a Principal Salmon River and a Principal Sea Trout River. Please refer to Sections 1.1 and 1.4 of the Literature Review which provides information on the migration and behaviours of Atlantic salmon and sea trout.

2.15.6 Evidence demonstrating a known interaction between nets and salmonids

None recorded

2.15.7 Incidental evidence of interactions between nets and salmonids

None recorded

3.0 Applying a Risk Based Approach to inform Management Interventions within FLAs

As there is a limited evidence base in wider literature regarding the relationship between salmonid interaction with nets specific to a non-targeted fishery, coupled with an absence of quantitative and scientifically robust site specific evidence from the FLAs regarding interactions between net fishing and migratory salmonids, the Authority have developed Functional Linkage Risk Components (Figure 1) in order to determine the likely level of risk net fishing activity may have on Atlantic salmon and sea trout within functionally linked areas.

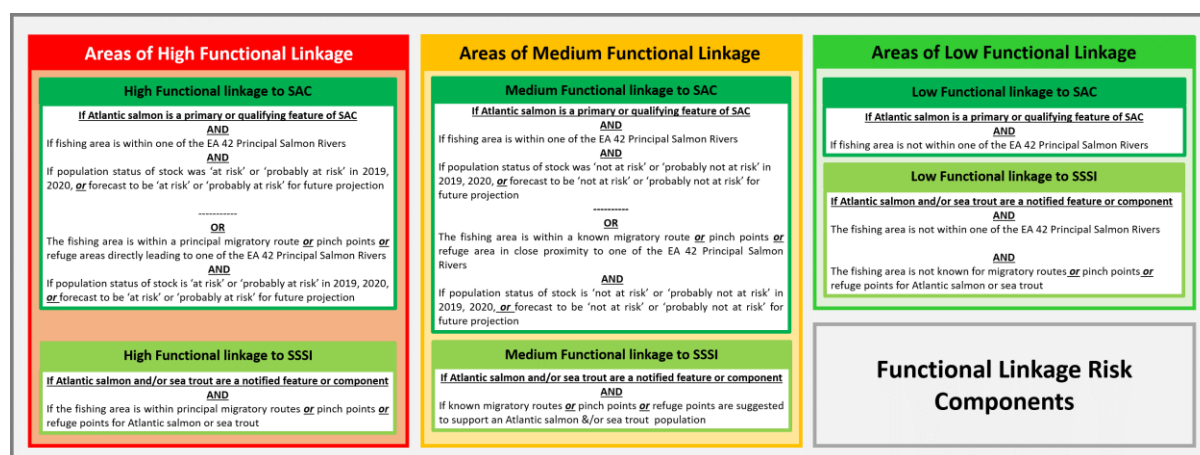


Figure 1: Functional Linkage Risk Components

The behavioural aspects of the FLA Risk Components have been directly informed by Section 1 of the Net Fishing Byelaw Literature Review (e.g., likely use of harbours and estuaries for salmonid migration, pinch points and refuge areas). The FLA Risk Components also consider site specific information regarding the status of a river (e.g., whether it is classified as an Environment Agency Principal Salmonid River) and the most recent population status of that stock.

In developing Functional Linkage Risk Components, the Authority are able to determine a proportionate management approach which is underpinned by precaution. In the absence of such a risk assessment the Authority would be guided by a precautionary approach alone. Therefore, in the absence of robust scientific information relating to interactions between net fishing and migratory salmonids in a non-targeted fishery, the Authority are applying the precautionary principle²⁸ in a proportionate manner (based on likely risk) in order to determine the management of net fisheries within FLAs.

For note, the Functional Linkage Risk Components form one element of a broader Net Fishing Management Intentions Model which will be used to inform site specific management outcomes for net fishing across the Southern IFCA District.

28 Explanatory notes for MaCAA Section 153: (435) '...IFCAs will be able to apply precautionary measures...in order to fulfil their main duty. Precautionary measures in this context means that the absence of adequate scientific information should not be used as a reason for postponing or failing to take management measures to conserve target species, associated or dependent species and non-target species and their environment...'

3.1 Areas of High Functional Linkage

The following areas will be prohibited to net fishing in order for Southern IFCA to align with the intentions of the Habitats Directive as guided by Case Law and the intentions of the WCA.

- **River Test** (high functional linkage to River Itchen SAC [within River Test Principal Salmon River with stock status: 'probably at risk' (2019) and forecast 'probably at risk' for 2024], high functional linkage to River Itchen SSSI & River Test SSSI)
- **Southampton Water, Main Channel** (high functional linkage to River Itchen SAC [principal migratory route leading directly to River Itchen Principal Salmon River with stock status: 'at risk' (2019) and forecast 'probably at risk' for 2024 and River Test Principal Salmon River with stock status: 'probably at risk' (2019) and forecast 'probably at risk' for 2024], high functional linkage to River Itchen SSSI and River Test SSSI)
- **River Hamble, Main Channel** (high functional linkage to River Itchen SAC [principal migratory route leading directly to the River Itchen Principal Salmon River with stock status: 'at risk' (2019) and forecast 'probably at risk' for 2024 and River Test Principal Salmon River with stock status: 'probably at risk' (2019) and forecast 'probably at risk' for 2024], high functional linkage to River Itchen SSSI and River Test SSSI)
- **Christchurch Harbour, Main Channel** (high functional linkage to River Avon SAC [principal migratory route leading directly to River Avon Principal Salmon River with stock status: 'probably at risk' (2019) and forecast 'probably at risk' for 2024], high functional linkage to Avon Valley SSSI and River Avon System SSSI)
- **Poole Harbour, Main Channel** (high functional linkage to River Frome SSSI)
- **Wareham Channel** (high functional linkage to River Frome SSSI)
- **Lymington River, Main Channel** (high functional linkage to Lymington River SSSI)

3.2 Areas of Medium Functional Linkage

The following areas will be subject to net fishing restrictions in order for Southern IFCA to align with the intentions of the Habitats Directive as guided by Case Law and the intentions of the WCA.

- **Wareham Approaches** (medium functional linkage to River Frome SSSI)
- **Lymington River, Outside Main Channel**²⁹ (medium functional linkage to River Frome SSSI)

3.3 Areas of Low Functional Linkage

The following areas will be managed under a Net Permit (unless otherwise specified in the footnotes). Management under a Net Permit in areas of low functional linkage will align with

²⁹ Lymington River, Outside Main Channel will be subject to a net prohibition due to its ecological importance as an Essential Fish Habitat, as such despite it being classified as an area of Medium Functional Linkage, it will be prohibited to net fishing under the proposed Net Fishing Byelaw.

the intentions of the Habitats Directive, as guided by Case Law, the WCA and the MaCAA via the application of a proportionate approach to net fishing management.

The Permit Conditions will be informed by and managed under a Monitoring and Control Plan (Please refer to Section 4.4 for further details).

- **Southampton Water, Outside Main Channel** (low functional linkage to River Itchen SAC & SSSI and River Test SSSI)
- **River Hamble, Areas 1-5³⁰** (low functional linkage to River Itchen SAC & SSSI and River Test SSSI).
- **Christchurch Harbour, East** (low functional linkage to River Avon SAC, Avon Valley SSSI and River Avon System SSSI)
- **Mouth of River Mude³¹** (low functional linkage to River Avon SAC, Avon Valley SSSI and River Avon System SSSI)
- **Christchurch Box, Outside Main Channel³²** (low functional linkage to River Avon SAC, Avon Valley SSSI and River Avon System SSSI)

³⁰ River Hamble Area 5 will be subject to a net prohibition due to its ecological importance as an Essential Fish Habitat, as such despite it being classified as an area of Low Functional Linkage, it will be prohibited to net fishing under the proposed Net Fishing Byelaw.

³¹ Mouth of River Mude will be subject to a net prohibition due to a high risk of interaction with migratory salmonids outside of designated areas

³² Christchurch Box, outside of main channel will be subject to net fishing restrictions due to a medium risk of interaction with migratory salmonids outside of Designated Areas.

4.0 Analysis of FLAs in Context of ‘potential impacts’ as identified by NE

Natural England have reviewed Conservation Advice packages for other sites with designated migratory species and identified three relevant pressures through which netting may affect Atlantic salmon. Natural England refer to these as ‘potential impacts’.

Potential Impact	Relevant Attribute	Description
Removal of non-target species	Population (of the feature, Atlantic salmon): Adult run size	Considers the pressure caused by the removal of Atlantic salmon as a non-target species by net fishing activity in harbour and estuarine areas. This considers both direct removal/mortality and indirect removal in the form of delayed mortality resulting from injury or stress caused to the fish as a result of an interaction with the fishing method.
Barrier to species movement	Population (of the feature, Atlantic salmon): Adult run size	Considers the obstruction of Atlantic salmon by the placing of nets. It is recognised that any potential obstruction caused may be exacerbated by factors such as water depth, tidal currents, river flows and the difference between activity occurring during the day versus at night. In addition to direct effects of the Atlantic salmon being obstructed in their migration, consideration is given to the fact that physical obstruction may result in entrapment and associated injury.
Collision below water with static or moving objects not naturally found in the marine environment	Population (of the feature, Atlantic salmon): Adult run size	The collision risk, for the purposes of this assessment, is deemed to be potential collision with nets below the surface of the water

These ‘potential impacts’ therefore require consideration when determining whether there may be an adverse impact on salmonids when net fishing under the proposed Net Fishing Byelaw. The tables below seek to highlight the compatibility between the proposed net fishing practice to be permitted under the NFB, in the context of site-specific activity and the findings of the Net Fishing Byelaw Literature Review.

Netting Activity in Southampton Water (permitted net fishing methods)		Relevant Sections of NFB Literature Review	Application of NFB Literature Review
Fishing Effort (all gear types)	A total of 13 fishers net fish across Southampton Water	Section 2: Nets and salmonid interaction Section 3: Nets and salmonid interaction: Mitigative measures	Risk of mortality, delayed mortality and injury or stress to Atlantic salmon and the creation of a barrier and/or collision risk is mitigated by: <ul style="list-style-type: none">• Small scale effort• Fishing methods do not target salmonids• Natural restrictions due to tide limit fishing effort• Operation by a limited number of experienced fishers
	Small dories used (average 20 foot)		
	3–4-hour window only utilised if presence of shoaling fish		
	Fishing is tidally dependant and does not take place on large spring tides		
Fishing Effort (ring net)	Fishers use ring nets for a maximum of 3-4 hours per day		
	Used May to October		

	Approx. 64 trips per year		<ul style="list-style-type: none"> Fishing effort does not result in any complete barriers to migration being created
	Daylight hours only		
Fishing Effort (bottom set net)	From July to October		
	Approx. 20 trips per year		
Gear Type, construction and application (all gear types)	The net fishery does not target salmonids. As such, gear construction and fishing processes are not designed to facilitate capture or retention of salmonids. In targeted salmon fisheries, the mesh size has been documented to range from over 4 to 6.5 inches with an optimum range of over 4.5 to 5.5 inches (Potter and Pawson, 1991). This optimal mesh size for targeting salmonids is larger than that used in the ring net fisheries in Southampton Water. and does not result in a risk to smolt capture.	Section 2: Nets and salmonid interaction Section 3: Nets and salmonid interaction: Mitigative measures	Risk of mortality, delayed mortality and injury or stress to Atlantic salmon and the creation of a barrier and/or collision risk is mitigated by: <ul style="list-style-type: none"> Gear construction and fishing processes not designed to facilitate capture or retention of Atlantic salmon <ul style="list-style-type: none"> The set up and deployment of a ring net is very different to the salmonid seine nets which have been used historically from the shore to target salmonids. The recovery method for a salmonid seine net involves both ends of the net being pulled in at once by the float and lead lines creating a 'bag' in which fish are trapped even if they are not physically caught in the mesh of the net. In contrast, the recovery of a ring net set against the shore involves the recovery from only one end of the net, led by the float line. In this way no 'bag' is created and fish which are not physically caught in the net will not be removed as the net is recovered Mesh sizes suited to target species and that do not risk capture of smolt Monofilament net construction Gill nets have low retention rate for non-target species
	The fishers who are undertake net fishing in Southampton Water are experienced and have developed good skills in relation to the setting of both ring nets and bottom set nets in order to maximise target species and minimise bycatch		
	Nets are types of gill net constructed from monofilament		
Gear Type, construction and application (ring net)	Ring nets are used to target grey mullet. The ring nets are not set speculatively - fishers will wait until there are signs that a shoal of fish is in the area before setting the net.		
	Nets are attended and commonly hauled within 10 minutes (max. 30 mins) of conclusion of net setting (soak time)		
	Net set in a circle or in a semi-circle against the shore		
Gear Type, construction and	Used outside of the main channel		

application (bottom set net)	Net sits no higher than 3ft from the seabed, focuses the catch on target species		<ul style="list-style-type: none"> • Bottom set net headline remains well below the surface • Fishing method does not cause impassable obstruction due to fishing locations • Short soak times • Highly specific and targeted ring net deployment • Constantly attended ring nets
	Nets left to soak overnight (12 hours)		
Sustainable Practices	Good handling practice is observed by fishers	Section 3.1: Good handling practice	Sustainable practices currently observed by fishers reduces the risk of mortality, delayed mortality and injury or stress to Atlantic salmon and the creation of a barrier and/or collision risk.
	Understanding timing of adult salmon run in specific sites – fishers refrain from setting nets during the adult run season in order to reduce the potential for interaction	Sections 1 and 2	

Netting Activity in Christchurch Harbour (permitted net fishing methods)		Relevant Sections of NFB Literature Review	Application of NFB Literature Review
Fishing Effort (all gear types)	A total of 5 fishers net fish across Christchurch Harbour	Section 2: Nets and salmonid interaction	Risk of mortality, delayed mortality and injury or stress to Atlantic salmon and the creation of a barrier and/or collision risk is mitigated by: <ul style="list-style-type: none"> • Small scale effort • Fishing methods do not target salmonids • Natural restrictions due to tide limit fishing effort • Operation by a limited number of experienced fishers • Fishing effort does not result in any complete barriers to migration being created
	Predominantly small vessels		
	Fishing is tidally dependant and does not take place on large spring tides		
Fishing Effort (ring net)	Fishers use ring nets for a maximum of 3-4 hours per day	Section 3: Nets and salmonid interaction: Mitigative measures	
	Daylight hours only		
Fishing Effort (bottom set net)	From July to October		
	Within the Christchurch Box area only		
Gear Type, construction and application (all gear types)	The net fishery does not target salmonids. As such, gear construction and fishing processes are not designed to facilitate capture or retention of salmonids. In targeted salmon fisheries, the mesh size has been documented to range from over 4 to 6.5 inches with an optimum range of over 4.5 to 5.5 inches (Potter and Pawson,	Section 2: Nets and salmonid interaction Section 3: Nets and salmonid	Risk of mortality, delayed mortality and injury or stress to Atlantic salmon and the creation of a barrier and/or collision risk is mitigated by:

	<p>1991). This optimal mesh size for targeting salmonids is larger than that used in the ring net fisheries in Southampton Water. and does not result in a risk to smolt capture.</p> <p>The fishers who are undertake net fishing in Christchurch Harbour are experienced and have developed good skills in relation to the setting of both ring nets and bottom set nets in order to maximise target species and minimise bycatch</p> <p>Nets are types of gill net constructed from monofilament</p>	interaction: Mitigative measures	<ul style="list-style-type: none"> • Gear construction and fishing processes not designed to facilitate capture or retention of Atlantic salmon <ul style="list-style-type: none"> ○ The set up and deployment of a ring net is very different to the salmonid seine nets which have been used historically from the shore to target salmonids. The recovery method for a salmonid seine net involves both ends of the net being pulled in at once by the float and lead lines creating a 'bag' in which fish are trapped even if they are not physically caught in the mesh of the net. In contrast, the recovery of a ring net set against the shore involves the recovery from only one end of the net, led by the float line. In this way no 'bag' is created and fish which are not physically caught in the net will not be removed as the net is recovered • Mesh sizes suited to target species and that do not risk capture of smolt • Monofilament net construction • Gill nets have low retention rate for non-target species • Bottom set net headline remains well below the surface • Fishing method does not cause impassable obstruction due to fishing locations • Short soak times • Highly specific and targeted ring net deployment • Constantly attended ring net • Overlap between use of bottom set nets and adult salmon run greatly reduced
Gear Type, construction and application (ring net)	Ring nets are used to target grey mullet. The ring nets are not set speculatively - fishers will wait until there are signs that a shoal of fish is in the area before setting the net.		
	Nets are attended and commonly hauled within 10 minutes (max. 30 mins) of conclusion of net setting (soak time)		
	Net set in a circle or in a semi-circle against the shore		
Gear Type, construction and application (bottom set net)	Net sits no higher than 3ft from the seabed, focuses the catch on target species		
	Restricted to 1 st October to 14 th February in the Christchurch Box only		
	Nets left to soak overnight (12 hours)		

Sustainable Practices	Good handling practice is observed by fishers	Section 3.1: Good handling practice	Sustainable practices currently observed by fishers reduces the risk of mortality, delayed mortality and injury or stress to Atlantic salmon and the creation of a barrier and/or collision risk.
	Understanding timing of adult salmon run in specific sites – fishers refrain from setting nets during the adult run season in order to reduce the potential for interaction	Sections 1 and 2	

SECTION E: MANAGEMENT TOOLS

1.0 Application of Literature Review

The following section provides a summary of the finding from the NFB Literature Review, which have been used to directly inform the gear specific management proposals. Please refer to the NFB for further details and wider context, signposts have been provided throughout this section for ease of the reader.

1.1 Gill Nets - General

(Section 3.2 of Literature Review)

- Gill nets have a lower retention rate for non-target species due to specific mesh ranges which limits the size range of fish that are able to become enmeshed, fish are more likely to be able to disentangle and while this does not mean that no injury will be sustained, injuries are likely to be minor and survival rates higher (Anglesen, 1981; Potter and Pawson, 1991; Makinen *et al.*, 2000; Backer and Schindler, 2009; Vander Haegen *et al.*, 2014).

1.2 Ring Netting

(Section 3.2, 3.3. and 3.4 of Literature Review)

- Ring nets are a type of gill net. Gill nets are seen to be more selective than other net methods (Anglesen, 1981; Potter and Pawson, 1991).
- Ring nets are a type of gill net. Gill nets have a low retention rate leading to non-target species (salmonids) having a greater ability to disentangle and escape (Baker and Schindler, 2009).
- The setting of a ring net (in a circle) ensures that large areas (where fishing is permitted) are not blocked off. Obstructions which are not impassable, i.e., do not cover the entirety of the water body available for migration are likely to result in reduced disruption to behaviour (Ritter *et al.*, 1979).

1.3 Bottom Set Nets

(Section 3.2 and 3.3 of Literature Review)

- Bottom set nets are a type of gill net. Gill nets are documented to be more selective than other net types (Anglesen, 1981; Potter and Pawson, 1991)³³.
- The setting of bottom set nets reduces the risk of salmonid bycatch; Atlantic salmon are shown to spend the majority of their time (up to 99%) in the top 5m of the water column (Holm, 2006; Hubley *et al.*, 2008; Halttuen *et al.*, 2009; Godfrey *et al.*, 2014) therefore there will be the ability for salmon to pass over the top of a bottom set net without incurring an interaction.

1.4 Soak Time and Attended Nets

(Section 3.3. and 3.4 of Literature Review)

- Soak time has been shown to be a key factor in minimising interaction, injury and subsequent mortality as well as reducing the amount of physical energy that the fish may

³³ Potter, E. C. E. and Pawson, M. G. 1991. 'Gill Netting'. *Ministry of Agriculture, Fisheries and Food, Directorate of Fisheries Research, Laboratory Leaflet Number 69*, pp. 34

exert in trying to escape a net (Ritter *et al.*, 1979; Buchanan *et al.*, 2002; Vander Haegen *et al.*, 2004; Veneranta *et al.*, 2018).

- It has been observed that mortality of Pacific salmon declined from 40.5% to 6.5% with a reduction in soak time from 10 hours to 2.5 hours (French and Dunn, 1973)³⁴. In addition, Fraser *et al.* (2002)³⁵ found that soak times of 40 minutes showed only a 2.5% mortality level versus 60.4% at 140 minutes. The soak time allowed for ring nets in the proposed regulation is 10 minutes. This is considerably shorter than the 40-minute soak time which resulted in 2.5% mortality.
- Shorter soak times have also been shown to correlate with fish being able to recover their swimming ability to a level comparable to pre-capture levels (Fraser *et al.*, 2002).
- It is noted that the combination of a short soak time with frequent patrolling of nets is one of the most important factors in lowering mortality rates (Ritter *et al.*, 1979). The risk of predation mortality is also reduced by the combination of these factors (Ritter *et al.*, 1979; Buchanan *et al.*, 2002; Vander Haegen *et al.*, 2004).

2.0 Proposed Conditions to be introduced under a Net Fishing

Byelaw

It is intended that the following provisions will be introduced under the conditions of the Net Fishing Byelaw.

The sites listed in Sections 2.1 and 2.3 below are of direct relevance to the outcomes of the Conservation Assessments only (namely the outcomes of the HRA, SSSI and FLA Assessments). A brief rationale demonstrating the key policy driver for management intervention is provided in italics alongside the sites for purposes of this document.

2.1 The introduction of Specified Areas

2.1.1 Net Prohibition Areas

- **The River Itchen** [*within or adjacent to the River Itchen SAC*]
- **The River Avon** [*within and adjacent to the River Avon SAC*]
- **Lymington River, Upper Reaches** [*within the Lymington River SSSI*].
- **River Test*** [(1) *high functional linkage to the River Itchen SAC*, (2) *high functional linkage to the River Itchen SSSI and the River Test SSSI*]
- **Southampton Water, Main Channel** [(1) *high functional linkage to River Itchen SAC*, (2) *high functional linkage to the River Itchen SSSI and River Test SSSI*]
- **River Hamble, Main Channel** [(1) *high functional linkage to River Itchen SAC*, (2) *high functional linkage to the River Itchen SSSI and River Test SSSI*]
- **Lymington River, Main Channel** [*high functional linkage to the Lymington River SSSI*]
- **Christchurch Harbour, Main Channel** [(1) *high functional linkage to River Avon SAC*, (2) *high functional linkage to Avon Valley SSSI and River Avon System SSSI*]
- **Poole Harbour, Main Channel** (*high functional linkage to River Frome SSSI*)
- **Wareham Channel** (*high functional linkage to River Frome SSSI*)

³⁴ French, R. R. and Dunn, J. R. 1973. 'Loss of salmon from high-seas gillnetting with reference to the Japanese salmon mothership fishery'. *Fisheries Bulletin*, 71, pp. 845-875

³⁵ Fraser, J., Gallagher, P, Routledge, R. J. and Routledge, R. 2002. 'Reducing gill-net mortality of incidentally caught coho salmon'. *North American Journal of Fisheries Management*, 22, pp. 1270-1275

2.1.2 Net Restriction Areas

- **Wareham Approaches** (*medium functional linkage to River Frome SSSI*)

2.1.3 Net Permit Areas

- **Southampton Water, Outside Main Channel** [*low functional linkage to River Itchen SAC & SSSI and River Test SSSI*]
- **River Hamble, Areas 1-4** [*(low functional linkage to River Itchen SAC & SSSI and River Test SSSI)*]
- **Christchurch Harbour, East** [(1) *low functional linkage to River Avon SAC, (2) low functional linkage to Avon Valley SSSI and River Avon System SSSI*].

2.2 The Introduction of the Following Definitions

2.2.1 Ring Net

Means a single panel of fishing net measuring no more than 350 metres in length and no more than 6 metres in height at any point, including all attachments. The user must:

- i) set the net from a vessel in a circular pattern to return to the starting point of the net or the same section of shore, without pause or delay, where the net will be closed except to allow the vessel to enter and exit the circle.
- ii) attend the net at all times whilst in use; and
- iii) begin the retrieval of the net within ten minutes of the conclusion of the net setting process, at which point the net must then be drawn back into the vessel without pause or delay, except to remove catch.

2.2.2 Bottom Set Net

Means a net that is set directly on the seabed and measures no more than 125 centimetres in overall height, including all attachments.

2.3 Site-Specific Conditions for Net Restriction Areas

- A person must not use a net other than a ring net:
 - within the **Wareham Approaches** Net Restriction Area.

2.4 Marking of Nets

By requiring all nets in the District to be marked with specific information, Southern IFCA will be able to determine that nets set within the Net Permit Areas are set by Permit Holder's. This will enable any nets which are unmarked or marked but not permitted to fish to be easily identifiable for removal if operating contrary to the Net Permit Byelaw. These measures will assist with ensuring that incidences of illegal net fishing within the District are reduced.

2.5 The Ability to Introduce Flexible Permit Conditions under a Net Permit

The facility to introduce flexible permit conditions under the scope of the Net Fishing Byelaw is primarily to enable Southern IFCA to fulfil its obligations under paragraph 153(2) of the Marine and Coastal Access Act 2009.

As directed by Section (156) of the Marine and Coastal Access Act 2009, the net permit conditions may relate to the following matters:

- prohibiting or restricting harvesting of sea fisheries resources.
- limiting the amount of sea fisheries resources harvested.
- limiting the amount of time a vessel may spend harvesting.
- prohibiting or restricting any method of harvesting.
- setting the requirements for the use of video recording equipment.
- setting the frequency of deadlines for and content of catch returns.

2.6 Reviewing Net Permit Conditions

The Net Permit Conditions will be subject to an Annual Review, following a process determined in the Net Fishing Byelaw. This process specifies a clear procedure for reviewing the suitability of flexible permit conditions, permit fees and limitations on numbers of permits in accordance with a set procedure based on consideration of evidence. The evidence may include, but is not limited to:

- any available scientific and survey data, which may include data gathered through a Net Permit Area Monitoring and Control Plan.
- any evidence received from consultation with permit holders.
- any statutory advice given by Natural England or other such bodies, organisations or persons as the Authority shall deem fit.
- any Habitats Regulations Assessments relating to any proposed changes.
- any Impact Assessment relating to any proposed changes.

During the Annual Review and in accordance with the Net Fishing Byelaw, the Authority, may, for the purposes of managing net fishing in Net Permit Areas, attach to a permit, remove from a permit or vary one or more flexible permit condition.

2.7 Access to Net Permit Fishery

Net Permits will be on a restricted entry basis and applicable for fishers who have historically engaged in net fishing within the Net Permit Areas. Entry into this fishery will not increase and will remain capped at historic levels.

3.0 Proposed Conditions To Be Introduced Under A Net Permit

Conditions under a Net Permit have been developed to ensure that the potential for interaction between net fishing and salmonids and the associated risk of mortality is reduced to the point where the measures adequately mitigate against potential impacts of the net fishery on salmonids. These conclusions have been informed by the best available evidence. Please refer to Section E 1.0 for further details.

Net Permit Areas are only applicable to areas which have been identified as having a low functional linkage to an SAC or SSSI.

It is the intention that the following conditions will be introduced in the first year following implementation of the Net Fishing Byelaw. The sites listed in this section which are in **colour** and marked with an asterisk are of direct relevance to the outcomes of the Conservation Assessments only (namely the outcomes of the HRA, SSSI and FLA Assessments).

3.1 Prohibiting or restricting methods of harvesting

- The use of ring nets only in The **River Hamble (4 specified areas)** and **Christchurch Harbour (East)**
- The use of either a bottom set net or a ring net, only in **Southampton Water, (Outside Main Channel)**

3.2 Setting the frequency of deadlines for and content of catch returns

A permit holder must comply with the following conditions specific to the reporting of dead or mortally wounded salmonids:

- make a report by phone to the Authority.
- make the report instantly following the conclusion of the net haul.
- leave an answer phone message if no answer is received.
- include the following information:
 - the permit holder's name and vessel used.
 - the date and time (in UTC) when the interaction took place.
 - the geographical position of the interaction to 3 decimal places (in WGS 84);
 - the number and species of salmonids affected.
 - the physical condition of all salmonids involved.
 - the net fishing method employed when the interaction took place.
 - the tide and weather conditions at the point of the interaction; and
 - where possible, submit by email (enquiries@southern-ifca.gov.uk) within 3 working days a photograph of the salmonid upon removal from the net.

A permit holder must comply with the following conditions in the event of an interaction between their net and a salmonid.

- make a report by phone to the Authority.
- make the report on the day of that interaction.
- leave an answer phone message if no answer is received; and
- include the following information:
 - the permit holder's name and vessel used.
 - the date and time (in UTC) when the interaction took place.
 - the geographical position of the interaction to 3 decimal places (in WGS 84);
 - the number and species of salmonids affected.
 - the physical condition of all salmonids involved.
 - the net fishing method employed when the interaction took place; and
 - the tide and weather conditions at the point of the interaction.

4.0 Monitoring and Control Plan

Areas which are to be managed under a Net Permit will be subject to a Monitoring and Control Plan as these areas have been deemed to have a low functional linkage to a SAC or SSSI.

The implementation of the Monitoring and Control Plan will allow the Authority to be confident that they are using the best available evidence when considering the ongoing management of net fisheries in harbours and estuaries under a Net Permit, ensuring that net fishing remains compatible with the conservation objectives of SACs (notably Atlantic salmon) and SSSIs (notably Atlantic salmon and /or sea trout as a component of a SSSI).

The Monitoring and Control Plan will facilitate specific and robust monitoring of the permitted net fishery. The M&C Plan considers an On-Site Monitoring Programme which captures five components of monitoring which will be conducted in each Net Permit Area. These layers of monitoring will work in parallel, for example, any salmonid interaction will be counted in accumulation across all monitoring components.

Threshold Trigger Levels have been determined in the M&C Plan for salmonids which are (a) dead in a ring net or (b) interacting with a ring net. These trigger levels will activate a 'control mechanism' which determine the actions to take when a Threshold Trigger Point is reached.

The M&C Plan also considers information sources which will be used in order to support understandings of salmonid health overtime, based on the best available evidence provided by partner organisations such as the Environment Agency and Natural England. It is the intention that this information will be reviewed alongside the data from the On-Site Monitoring Programme and used to collectively inform the Annual Review of the Net Permit Conditions.

5.0 Proposed Conditions to be introduced under a Code of Conduct

A Salmonid Code of Practice (CoP) which will be introduced in order to inform fishers operating in Net Restricted Areas and Net Permit Areas about handling and release practices which will help reduce injury and/or stress and increase the likelihood of more rapid resumption of upstream movement.

The Code of Practice will be directly informed by the Net Fishing Byelaw Literature Review, a summary of key points is provided below. For further information please refer to the mother document.

The following have been identified in the literature as good handling practice for salmonids:

- The reduction of air exposure time and handling time for salmonids, have been demonstrated to be big contributors to reducing negative effects of gill net capture (Makinen *et al.*, 2000; Jensen *et al.*, 2010; Gale *et al.*, 2011).
- To refrain from holding a salmonid by the tail (caudal peduncle) so as to avoid the risk of damaging the salmonids reproductive sacs (Vander Haegen *et al.*, 2002).
- To remove the fish from the net in the same direction as the scales lie, with the aim to reduce injury and scale removal (Potter and Pawson, 1991) and reduce the removal of the protective slime layer which in turn can decrease the likelihood of fungal infection (Vander Haegen *et al.*, 2004; Nguyen *et al.*, 2014).
- To release a fish post-capture ensuring that the fish has had the ability to reacclimatise before release and regain orientation (Veneranta *et al.*, 2018). This will assist with reducing any delays to migration or extended periods of downstream movement as a result of interaction with netting activity.

- To employ good handling practice more quickly during periods of increased temperature to increase survivability (Gale *et al.*, 2011).

SECTION F: CONCLUSIONS

This this Conservation Assessment Package considers the proposed introduction of a Net Fishing Byelaw (NFB) as a 'plan or project'.

The Conservation Assessment Package concludes that the proposed measures to be introduced under the Southern IFCA Net Fishing Byelaw and associated Permit Conditions (the Plan/or Project) which are subject to an annual review following the outcomes of the Monitoring and Control Plan are compatible with:

1. The conservation objectives for SACs (specific to Atlantic salmon),

In considering the evidence presented for the additional plans/projects as well as the mitigation provided via the introduction of the Net Fishing Byelaw, it is concluded that the NFB, in combination with other plans/projects within the defined zone of influence, will not hinder the River Itchen SAC or the River Avon SAC from achieving their conservation objectives and, as such, will not have an adverse effect on the integrity of the SACs.

2. The conservation objectives for SSSIs (specific to Atlantic salmon and/or sea trout)
3. For areas which are functionally linked to the above SACs or SSSIs.

As such, it is concluded that the Southern IFCA Net Byelaw and associated Net Permits will not have an adverse effect, alone, or in combination on salmonids in the context of the above listed areas.

SECTION G: Summary of consultation with Natural England

Date	Contact/persons	Sent	Comments Received
22.01.20	NE: Dr R Morgan Southern IFCA: S Birchenough	07.01.20	Natural England provided recommendations including regarding the active monitoring of salmonid bycatch and, on the basis of the use of monitoring as a key tool for ensuring compliance with Habitats Regulations, NE have a view that it is possible for the introduction of the Net Fishing Byelaw, and associated issuing of permits for the Southampton Water Permit Area, to avoid having an adverse effect on the integrity of the River Itchen SAC.
1 st July 21	NE: Dr R Morgan , G Black, Southern IFCA: I Jones, P Bateman , S. Pengelly	Virtual Meeting	Meeting to discuss and confirm Southern IFCAs intention to create an umbrella 'Conservation Assessment' document in order to encompass the relevant HRAs, SSSI Assessments and FLA Assessments under one document. Supporting documents to be made available to NE to include the NFB Literature Review and the NFB Monitoring and Control Plan.

SECTION H: Annexes

ANNEX 1: Figures 1 to 3 detailing information on salmon stock and rod & line fishery data from Environment Agency reports for the River Itchen

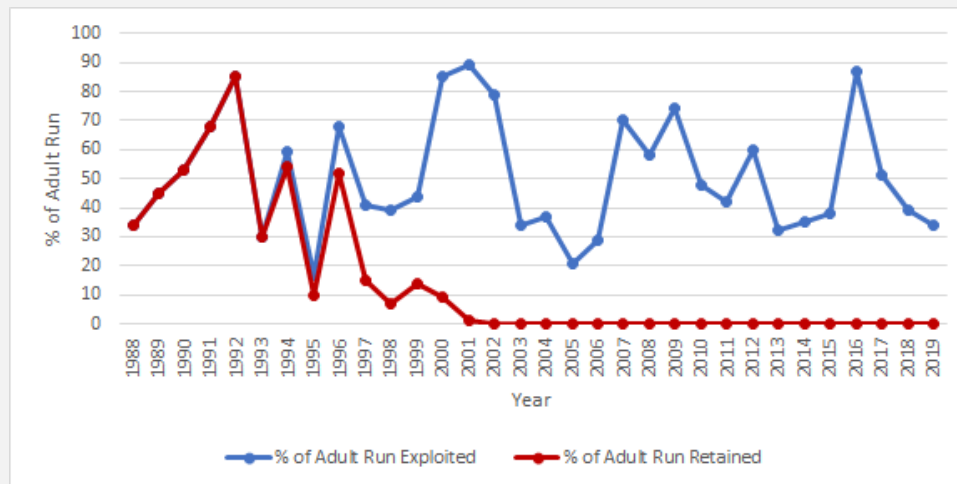


Figure 1: showing the exploitation rate (blue) and percentage of the adult Atlantic salmon run retained (red) by the licenced rod and line fishery on the River Itchen for 1988 to 2019

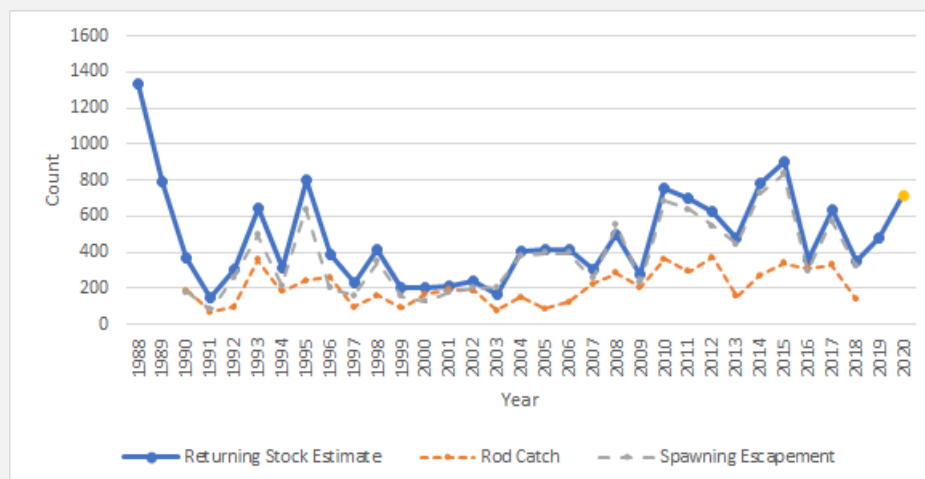


Figure 2: the validated count and run estimates of Atlantic salmon smolts and adults for the R. Itchen (blue), rod catch data (orange) and spawning escapement (grey) between 1988-2019. The yellow dot indicates preliminary data for 2020.

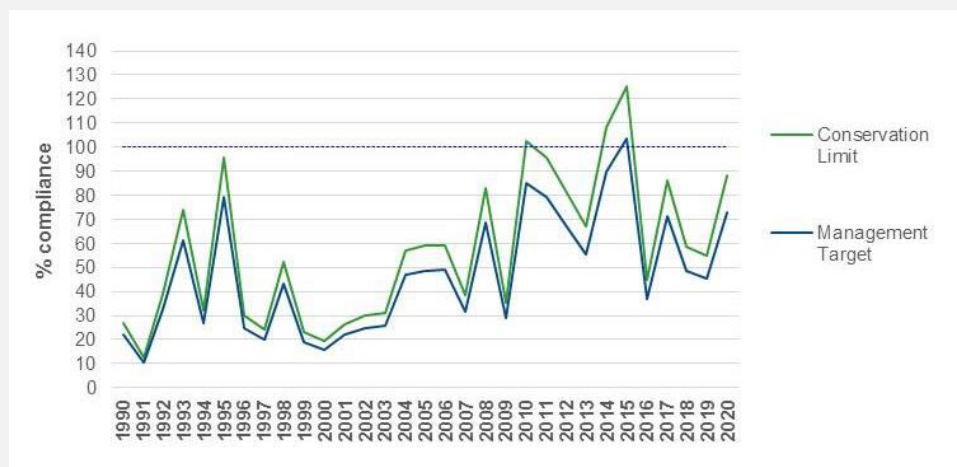


Figure 3: showing the Target Compliance of Atlantic salmon on the River Itchen for years 1990 to 2020, taken from the Environment Agency SDD Fish Monitoring Annual Report 2020

Annex 2: Figures 1 and 2 detailing information on salmon stock and rod & line fishery data from Environment Agency reports for the River Avon

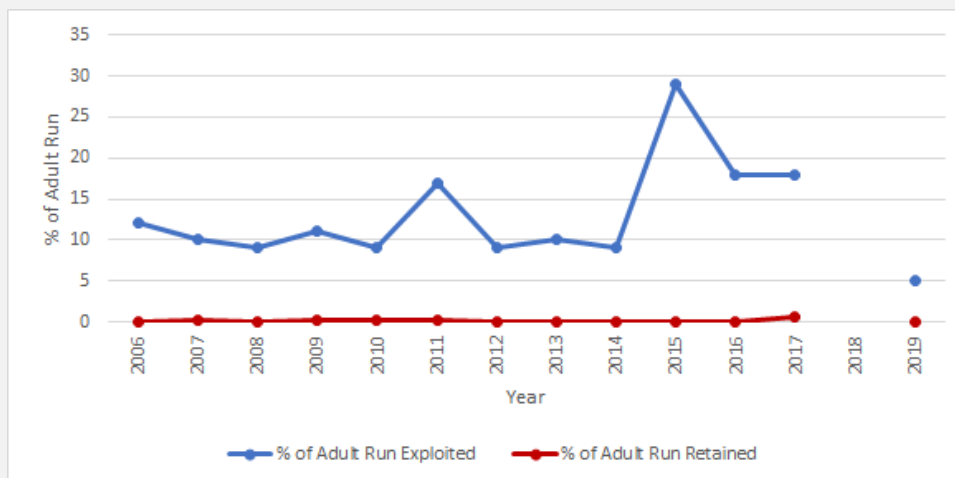


Figure 1: showing the exploitation rate (blue) and percentage of the adult Atlantic salmon run retained (red) by the licenced rod and line fishery on the River Avon for 2006 to 2019 (no data available for 2018).

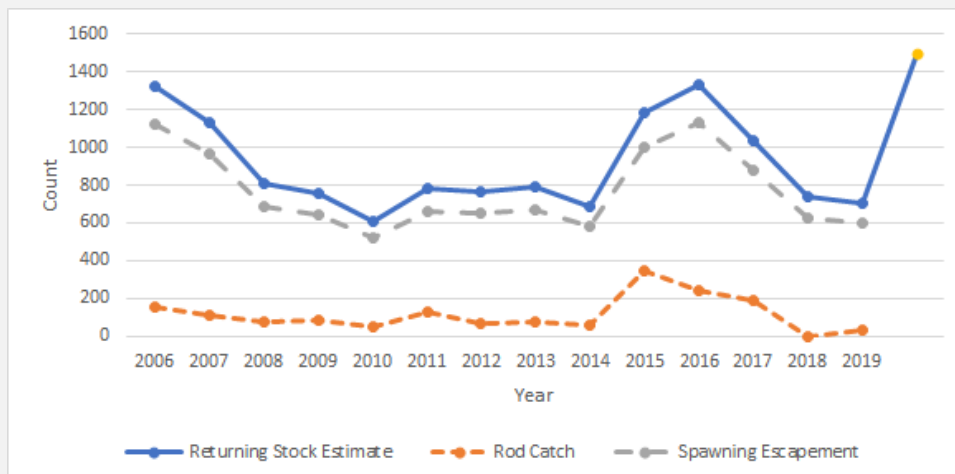


Figure 2: the validated count and run estimates of Atlantic salmon smolts and adults for the River Avon (blue), road catch data (orange) and spawning escapement (grey) between 2006-2019. The yellow dot indicates preliminary data for 2020.

Annex 3: Figures 1 to 3 detailing information on salmon stock and rod & line fishery data from Environment Agency reports for the River Test

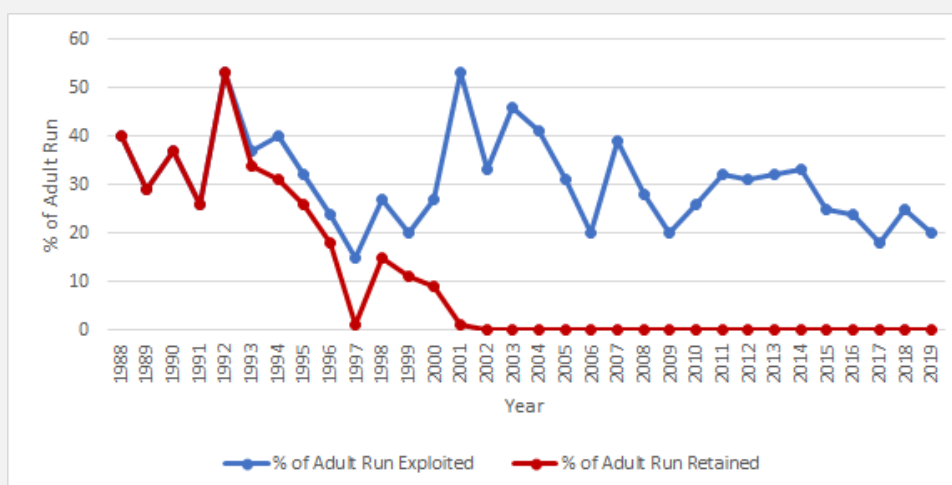


Figure 1: showing the exploitation rate (blue) and percentage of the adult Atlantic salmon run retained (red) by the licenced rod and line fishery on the River Test for 1988 to 2019

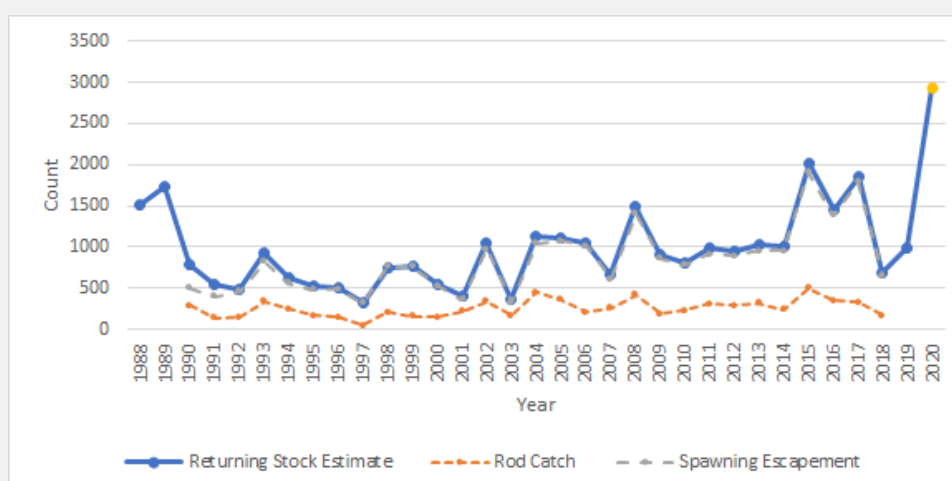


Figure 2: the validated count and run estimates of Atlantic salmon smolts and adults for the R. Test (blue), rod catch data (orange) and spawning escapement (grey) between 1988-2020. The yellow dot indicates preliminary data for 2020.

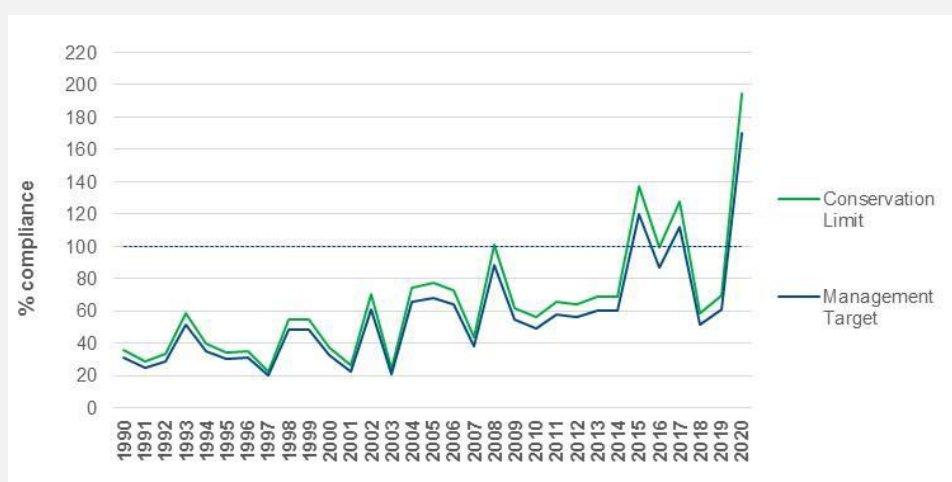


Figure 3: showing the Target Compliance of Atlantic salmon on the River Test for years 1990-2020, taken from the EA SDD Fish Monitoring Annual Report 2020

Annex 4: Figures 1 and 2 detailing information on salmon stock and rod & line fishery data from Environment Agency reports for the River Frome

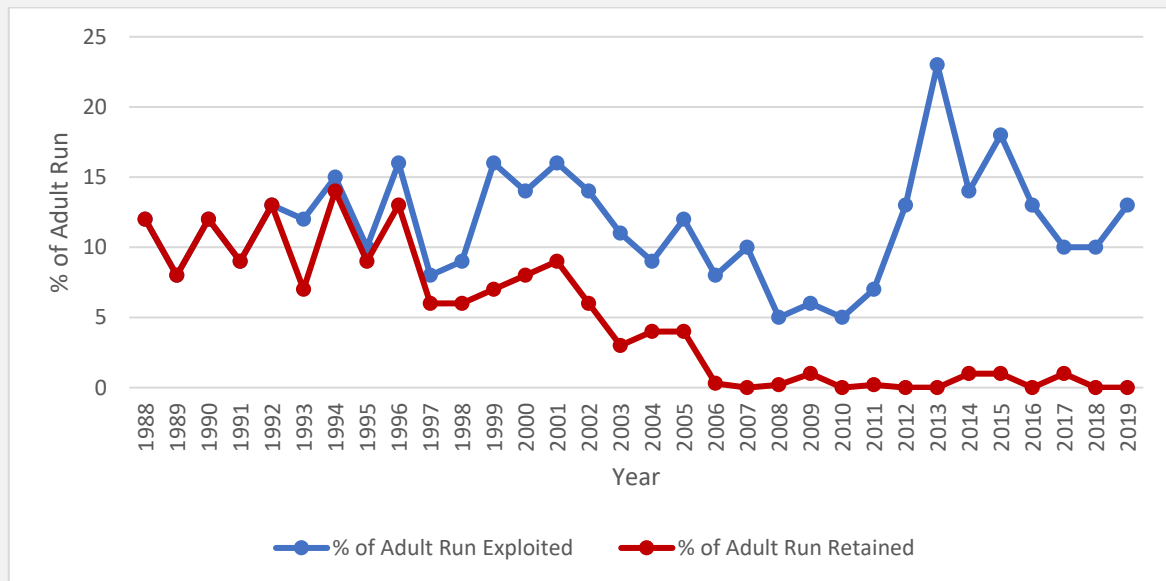


Figure 1: showing the exploitation rate (blue) and percentage of the adult Atlantic salmon run retained (red) by the rod and line fishery on the River Frome for 1988 to 2019

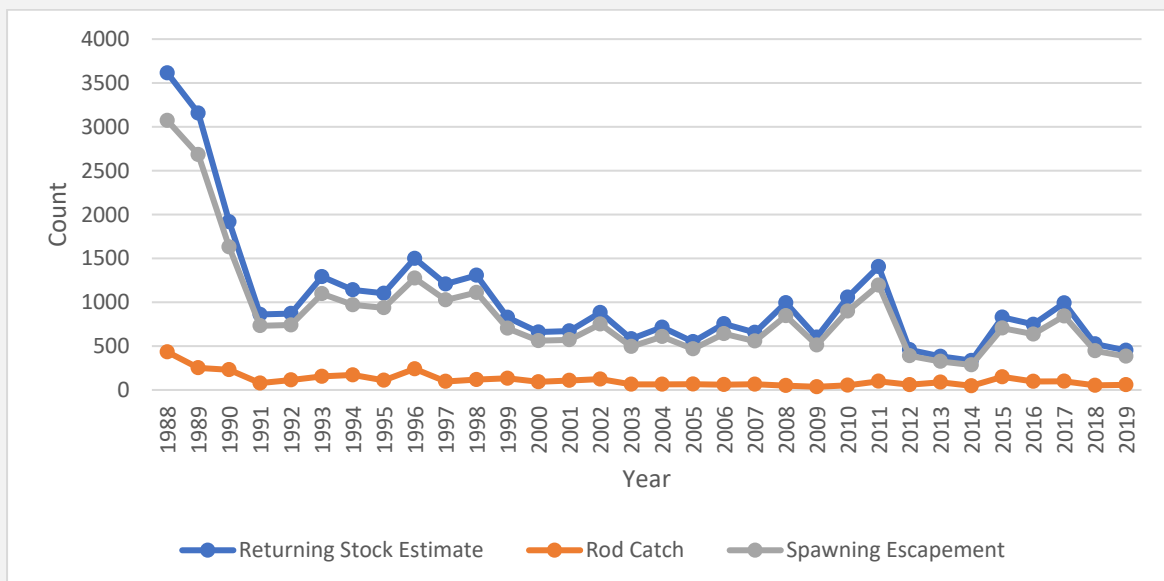


Figure 2: the validated count and run estimates of Atlantic salmon smolts and adults for the River Frome (blue), rod catch data (orange) and spawning escapement (grey) between 1988-2019.

Annex 5: TLSE summary for each feature (and supporting habitats)

Feature	Supporting Habitat (Functional Linkage)	Pressures	Sensitivity	In/Out	Relevant Attribute
Atlantic Salmon (<i>Salmo salar</i>)	Southampton Water	Removal of non-target species	S	In	Population (of the feature): Adult run size
	Southampton Water	Barrier to species movement	S	In	Population (of the feature): Adult run size
	Southampton Water	Collision below water with static or moving objects not naturally found in the marine environment	S	In	Population (of the feature): Adult run size
Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation. (Rivers with floating vegetation often dominated by water-crowfoot)	n/a	Absence of impact pathways		Out	
Bullhead (<i>Cottus gobio</i>)	n/a	Absence of impact pathways		Out	
Brook lamprey (<i>Lampetra planeri</i>)	n/a	Absence of impact pathways		Out	
Southern Damselfly (<i>Coenagrion mercuriale</i>)	n/a	Absence of impact pathways		Out	
White-clawed (or Atlantic stream) crayfish (<i>Austropotamobius pallipes</i>)	n/a	Absence of impact pathways		Out	
Otter (<i>Lutra lutra</i>)	n/a	Absence of impact pathways		Out	

Advice on Operations Sensitivity Key

SENSITIVITY CATEGORY DESCRIPTION	INTERACTION TYPE	
	DIRECT ¹	INDIRECT ²

SENSITIVE: The evidence base suggests the feature is sensitive to the pressure at the benchmark. This activity-pressure-feature combination should therefore be taken to further assessment.	S	S*
INSUFFICIENT EVIDENCE TO ASSESS: The evidence base is not considered to be developed enough for assessments to be made of sensitivity at the pressure benchmark. This activity-pressure-feature combination should therefore be taken to further assessment. The best available evidence, relevant to the activity in question, at the time of application, should be sourced and considered in any further assessment.	IE	IE*
NOT ASSESSED: A sensitivity assessment has not been made for this feature to this pressure. However, this activity-pressure-feature combination should not be precluded from consideration. The best available evidence, relevant to the activity in question, at the time of application, should be sourced and considered in any further assessment.	NA	NA*
NOT SENSITIVE AT THE BENCHMARK: The evidence base suggests the feature is not sensitive to the pressure at the benchmark. However, this activity-pressure-feature combination should not be precluded from consideration (e.g. thought needs to be given to activity specific variations in pressure intensity and exposure, in-combination and indirect effects). The best available evidence, relevant to the activity in question, at the time of application, should be sourced and considered in any further assessment.	NS	NS*
NOT RELEVANT: The evidence base suggests that there is no interaction of concern between the pressure and the feature OR the activity and the feature could not interact		
¹ An activity which exerts pressures that interact with a feature within the spatial and/or temporal footprint of the operation		
² An activity which exerts pressures that interact with a feature not associated with the immediate spatial and/or temporal footprint of the operation		

Risk Profile of Pressures Key

RISK CATEGORY	RECOMMENDATION
High to Medium Risk	Pressure is commonly induced by activity at a level that needs to be considered further as part of an assessment

Low Risk

Unless there are evidence based case or site-specific factors that increase the risk, or uncertainty on the level of pressure on a receptor, this pressure generally does not occur at a level of concern and should not require consideration as part of an assessment.

Annex 6: In Combination Assessment for the River Itchen

Plans/Projects shown in Annex 6 (a&b) have been sourced through liaison with Natural England. For the River Itchen, the scope of relevant plans/projects includes those which fall within the area of the estuary and upstream waters due to the fact that netting activity (and its associated potential effects) are localised and operating over a relatively small scale. All of the plans/projects included in Annex 6 (a&b) have been screened in at the first stage as they fall within the 'zone of influence' within which in-combination effects could feasibly occur.

Annex 6a: Other Plans/Projects				Stage 1		Stage 2				
Application/ Case Ref.		Project Title	Status	Potential Effects	Within Zone of Influence (Zol)?	Progress to stage 2?	Potential for overlap in temporal scope?	Scale and nature of development likely to cause significant in-combination effect?	Other factors	Progress to stage 3/4
1	MLA/2014/00592/2	ABP Southampton Navigational Maintenance Dredge	Consented: licence end date 31/10/25	Barrier to species movement resulting from increased suspended sediment and potential disturbance from noise	Yes	Yes	Yes, licence end date 31/10/25	No. Temporary increase in suspended sediments is small at any one time, localised and within limits of natural variability experienced within the estuary. Noise disturbance only likely to impact within 50m of source. Distance is considerably less than 50% of available channel width at any given time and location.	Licence Holder must ensure that at such time that the EA informs that the Autumn salmon run has commenced, no dredging will take place North of the Dock Head for a period of three days. The Licence Holder should ensure the best method of practice is used to minimise re-suspension of sediment during these works.	No
2	MLA/2016/00025/3	ESSO Fawley Marine Terminal Maintenance Dredge	Consented: licence end date 14/04/26	Barrier to species movement resulting from increased suspended sediment	Yes	Yes	Yes, licence end date 14/04/26	No. LSE assessment of project determined no likely significant effect providing works are carried out in strict accordance with proposed methodology.		No.

								Dredging activity has previously been carried out with the same methodology and no risks caused by the activities have been identified.		
3	MLA/2016/00341/3	BP Hamble Jetty and approached Maintenance Dredge	Consented: licence end date 03/04/27	Barrier to species movement resulting from increased suspended sediment and potential disturbance from noise	Yes	Yes	Yes, licence end date 03/04/27	<p>No. Temporary increase in suspended sediments is small at any one time, localised and within limits of natural variability experienced within the estuary.</p> <p>Noise disturbance only likely to impact within 50m of source. Distance is considerably less than 50% of available channel width at any given time and location.</p>	<p>Licence Holder must ensure that at such time that the EA informs that the Autumn salmon run has commenced, no dredging will take place North of the Dock Head for a period of three days.</p> <p>The Licence Holder should ensure the best method of practice is used to minimise re-suspension of sediment during these works.</p>	No
4	MLA/2015/00285	Hythe Marina Village Maintenance Dredge	Consented: licence end date 31/10/25	Barrier to species movement resulting from increased suspended sediment and potential disturbance from noise	Yes	Yes	Yes, licence end date 31/10/25	<p>No. Temporary increase in suspended sediments is small at any one time, localised and within limits of natural variability experienced within the estuary.</p> <p>Noise disturbance only likely to impact within 50m of source. Distance is considerably less than 50% of available channel width at any</p>	<p>Licence Holder must ensure that at such time that the EA informs that the Autumn salmon run has commenced, no dredging will take place North of the Dock Head for a period of three days.</p> <p>The Licence Holder should ensure the best method of practice is used to minimise re-suspension of</p>	No

								given time and location.	sediment during these works.	
5	MLA/2016/00501	Hythe Marine Park Maintenance Dredge	Consented: licence end date 25/04/27	Barrier to species movement resulting from increased suspended sediment	Yes	Yes	Yes, licence end date 25/04/27	No. Temporary increase in suspended sediments is small at any one time, localised and within limits of natural variability experienced within the estuary.	Licence Holder must ensure that at such time that the EA informs that the Autumn salmon run has commenced, no dredging will take place North of the Dock Head for a period of three days.	No.
6	MLA/2016/00421	Southampton Boat Show Maintenance Dredge	Consented: licence end date 26/02/27	Barrier to species movement resulting from increased suspended sediment	Yes	Yes	Yes, licence end date 26/02/27	No. Use of backhoe dredgers is accepted as a reduced impact method, reducing risk of overspill of sediment. Any levels of increased sediment concentrations are lower and remain very local to the site. Dredge method is advantageous as the duration of any impact is spaced with similar intervals of no activity.		No.
7	MLA/2019/00302	Ashlett Creek Seawall Maintenance	Consented: licence end date 01/10/20	Barrier to species movement resulting from increased suspended sediment	Yes	Yes	Yes, licence end date 01/10/20	No. While there is the potential for disturbance of sediment, however, this is likely to be temporary and localised and has been assessed as being unlikely to affect the water column or any features due to the low levels of sediment being suspended.		No.

8	MLA/2013/00321/3	Swanwick Marina Maintenance Dredge	Consented: licence end date 21/10/23	Barrier to species movement resulting from increased suspended sediment	Yes	Yes	Yes, licence end date 21/10/23	No. Dredging will only be undertaken during the winter months (1 October to 30 April).	Deliberate overfilling of the dredger/barges is not permitted to avoid overspill.	No.
9	MLA/2015/00287	Port Hamble Marina Maintenance Dredge	Consented: licence end date 31/03/26	Barrier to species movement resulting from increased suspended sediment	Yes	Yes	Yes, licence end date 31/03/26	No. Use of backhoe dredgers is accepted as a reduced impact method, reducing risk of overspill of sediment. Any levels of increased sediment concentrations are lower and remain very local to the site. Dredge method is advantageous as the duration of any impact is spaced with similar intervals of no activity.		No.
10	MLA/2016/00215	Mercury Yacht Harbour Maintenance Dredge	Consented: licence end date 13/10/26	Barrier to species movement resulting from increased suspended sediment	Yes	Yes	Yes, licence end date 13/10/26	No. Use of backhoe dredgers is accepted as a reduced impact method, reducing risk of overspill of sediment. Any levels of increased sediment concentrations are lower and remain very local to the site. Dredge method is advantageous as the duration of any impact is spaced with similar intervals of no activity.		No.
11	MLA/2016/00216/1	Hamble Point Marina	Consented: licence end	Barrier to species movement	Yes	Yes	Yes, licence	No. Use of backhoe dredgers is accepted as a reduced impact		No.

		Maintenance Dredge	date 13/10/26	resulting from increased suspended sediment			end date 13/10/26	method, reducing risk of overspill of sediment. Any levels of increased sediment concentrations are lower and remain very local to the site. Dredge method is advantageous as the duration of any impact is spaced with similar intervals of no activity.		
12	MLA/2014/00208/1	Shamrock Quay Maintenance Dredge	Consented: licence end date 02/12/24	Barrier to species movement resulting from increased suspended sediment	Yes	Yes	Yes, licence end date 02/12/24	No. Use of backhoe dredgers is accepted as a reduced impact method, reducing risk of overspill of sediment. Any levels of increased sediment concentrations are lower and remain very local to the site. Dredge method is advantageous as the duration of any impact is spaced with similar intervals of no activity.	Licence Holder must ensure that there is no overspill of dredged material or water from the vessel receiving the dredging where applicable.	
13	MLA/2014/0210/2	Ocean Village Marine Maintenance Dredge	Consented: licence end date 30/11/24	Barrier to species movement resulting from increased suspended sediment	Yes	Yes	Yes, licence end date 30/11/24	No. Works must be carried out during the winter months (October to April). Use of backhoe dredgers is accepted as a reduced impact method, reducing risk of overspill of sediment. Any levels of increased sediment concentrations are lower and remain	Licence Holder must ensure that there is no overspill of dredged material or water from the vessel receiving the dredging where applicable.	No.

								very local to the site. Dredge method is advantageous as the duration of any impact is spaced with similar intervals of no activity.		
14	MLA/2015/00284/1	Saxon Wharf Maintenance Dredge	Consented: licence end date 31/03/26	Barrier to species movement resulting from increased suspended sediment	Yes	Yes	Yes, licence end date 31/03/26	<p>No. The Licence Holder must not carry out dredging activity in the sensitive periods for salmon and sea trout. The sensitive periods for this area of Southampton Water are 16th March to 15th May and 1st June to 31st October.</p> <p>Use of backhoe dredgers is accepted as a reduced impact method, reducing risk of overspill of sediment. Any levels of increased sediment concentrations are lower and remain very local to the site. Dredge method is advantageous as the duration of any impact is spaced with similar intervals of no activity.</p>		No.
15	MLA/2019/00354	Fawley Power Station Maintenance Water Injection Dredging	In planning	Barrier to species movement resulting from increased suspended	Yes	Yes	Yes, licence not yet granted	<p>No. Temporary increase in suspended sediments entering the water column as a result of ABP maintenance dredging is small at</p>	Licence Holder must ensure that at such time that the EA informs that the Autumn salmon run has commenced, no dredging will take	No.

				sediment and potential disturbance from noise				any one time, localised and within the limits of natural variability experience within the estuary and as such these changes will not hinder the passage of Atlantic salmon. Noise disturbance only likely to impact within 50m of source. Distance is considerably less than 50% of available channel width at any given time and location.	place North of the Dock Head for a period of three days. The Licence Holder should ensure the best method of practice is used to minimise re-suspension of sediment during these works.	
16	MLA/2019/00014	Fairline Yachts New Hoist Dock	Consented: licence end date 14/10/21	Barrier to species movement resulting from increased suspended sediment	Yes	Yes	Yes, licence end date 14/10/21	No. Assessment determined no risk to fish in the estuary and no risk of delay or prevention of migration	Works contained within existing facility; no discharge expected which would result in potential barrier to species movement.	No.

Annex 6b: Fishing Activity Plans/Projects				Stage 1		Stage 2				Stage 3/4
Fishing Activity and detail		Status	Potential Effects	Within Zone of Influence (Zol)?	Progress to stage 2?	Potential for overlap in temporal scope?	Scale and nature of development likely to cause significant in-combination effect?	Other factors	Progress to stage 3/4	Will the cumulative effects resulting from the in-combination interaction result in an adverse effect on site integrity?
17	The clam dredge fishery	Managed under the Southern IFCA Solent Dredge Permit Byelaw	No potential impacts identified. There is no interaction between the fishery and the feature of Atlantic salmon, and no	Yes	No				No.	

			common features were identified at the TLSE stage.							
18	The oyster dredge fishery	Managed under the Southern IFCA Solent Dredge Permit Byelaw	No potential impacts identified. There is no interaction between the fishery and the feature of Atlantic salmon, and no common features were identified at the TLSE stage.	Yes	No				No.	
19	Coastal net fishing	The Authority is taking a risk-prioritised, phased approach to the review of net fishing management in the District. Following the introduction of sufficient management for harbours and estuaries, the Authority will consider the risk posed through coastal net fishing activities.	Potential effects are the same as those identified for netting in harbours and estuaries: <ul style="list-style-type: none"> • Removal of non-target species • Creating a barrier to species movement • The risk of collision below water with static or moving objects not naturally found in the marine environment. 	No	No			Within coastal areas the record of salmon bycatch is low. Data from the UK Bycatch Programme since 1998 provides data on the number of salmon caught in monitored hauls, for different gear types, within ICES areas. For area 7d (which encompasses Southampton Water and the wider Solent), out of 780 net hauls (static and drift) and 38 midwater trawls, no salmon were	No.	

								<p>recorded as bycatch. This included a wide mix of mainly inshore net fisheries and midwater trawls targeting mainly bass, mackerel and horse mackerel. For area 7e (which encompasses the west of the Southern IFCA District), out of 6010 net hauls (static and drift) there were no salmon recorded as bycatch. This included a wide mix of both inshore and offshore net fisheries. Out of 1761 midwater trawls, 4 salmon were recorded as bycatch, however these were all caught by the now banned bass pair trawl fishery which was banned</p>		
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								from 2015 onwards.		
20	Rod and Line Angling	Environment Agency's Regional Rod Fishing Byelaws and National Salmon and Sea Trout Protection Byelaws which stipulate when and where anglers can fish, legal fishing tackle, lures and bait and catch limits. Subject to periodic review. Data on the Rod and Line Fishery in the River Itchen and an assessment of potential impacts is provided in Annex 8. The current Environment Agency HRA ³⁶ concludes that the	There is the potential for overlap between these fisheries as both fisheries occur on the migratory route of Atlantic salmon. The rod and line fishery has the potential to impact salmon stocks through: <ul style="list-style-type: none"> • Removal of target species • Creating a barrier to species movement 	Yes	Yes	Yes	The rod and line fishery and the net fishery have the potential to create an in-combination effect due to an additive effect on the adult run of Atlantic salmon. Both fisheries have the potential to affect migration salmon by delaying or preventing migration through altered behaviour and physical barriers or through direct and indirect mortality as a result of illegal fishing, non-compliance with voluntary measures or delayed mortality from physical injury, stress and increased susceptibility to predation. Physiological affects resulting from capture and release in both fisheries can also affect the ability of	None.	Yes	No. The regulations currently employed by the Environment Agency and the proposed management measures for net fishing by the Southern IFCA contain measures which are designed to mitigate against potential impacts to salmonids and are subject to Habitats Regulations Assessments to ensure that these measures are robust and compliant with the Habitats Regulations. Through these measures, both of these fisheries are managed so as to ensure the risk of impact to the adult run of Atlantic salmon is as low as it can be and therefore the potential additive effect on the adult run is seen to be mitigated against.

³⁶ https://consult.environment-agency.gov.uk/fisheries/proposed-national-salmon-byelaws/results/appendix2_stage1hra_mar2018.pdf

		<p>management measures in place for the River Itchen SAC will have no likely significant effect on the Atlantic salmon feature. Catch and release data from the Environment Agency shows that rod fishing on the River Itchen is fully compliant and at 100%. New measures are seen to ensure that voluntary catch and release return rates remain at >90% from 2018 and will therefore ensure the continued protection of salmon stocks within the River Itchen SAC.</p>					<p>a fish to successfully reproduce.</p>			
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Annex 7: In Combination Assessment for the River Avon

Plans/Projects shown in Annex 7 (a&b) have been sourced through liaison with Natural England. For the River Avon, the scope of relevant plans/projects includes those which fall within the area of the estuary and upstream waters due to the fact that netting activity (and its associated potential effects) are localised and operating over a relatively small scale. All of the plans/projects included in Annex 7 (a&b) have been screened in at the first stage as they fall within the 'zone of influence' within which in-combination effects could feasibly occur.

Annex 7a: Plans/Projects Assessed					Stage 1		Stage 2			
Application/Case Ref.		Project Title	Status	Potential Effects	Within Zone of Influence (Zol)?	Progress to stage 2?	Potential for overlap in temporal scope?	Scale and nature of development likely to cause significant in-combination effect?	Other factors	Progress to stage 3/4
1.	MLA/2019/00244	Laying dinghy racing marks in Christchurch Harbour that remain in place for more than 28 days and are only removed for maintenance.	Consented: licence end date 28/05/20	No potential effects for Atlantic salmon highlighted.	Yes	No.				

Annex 7b: Fishing Activity Plans/Projects				Stage 1		Stage 2				Stage 3/4
Fishing Activity and detail		Status	Potential Effects	Within Zone of Influence (Zol)?	Progress to stage 2?	Potential for overlap in temporal scope?	Scale and nature of development likely to cause significant in-combination effect?	Other factors	Progress to stage 3/4	Will the cumulative effects resulting from the in-combination interaction result in an adverse effect on site integrity?
2.	Coastal net fishing	The Authority is taking a risk-prioritised.	Potential effects are the same as those	No	No			Within coastal areas the record of salmon bycatch is low.	No.	

		<p>phased approach to the review of net fishing management in the District. Following the introduction of sufficient management for harbours and estuaries, the Authority will consider the risk posed through coastal net fishing activities.</p>	<p>identified for netting in harbours and estuaries:</p> <ul style="list-style-type: none"> • Removal of non-target species • Creating a barrier to species movement <p>The risk of collision below water with static or moving objects not naturally found in the marine environment.</p>					<p>Data from the UK Bycatch Programme since 1998 provides data on the number of salmon caught in monitored hauls, for different gear types, within ICES areas. For area 7d (which encompasses Southampton Water and the wider Solent), out of 780 net hauls (static and drift) and 38 midwater trawls, no salmon were recorded as bycatch. This included a wide mix of mainly inshore net fisheries and midwater trawls targeting mainly bass, mackerel and horse mackerel. For area 7e (which encompasses the west of the Southern IFCA District), out of 6010 net hauls (static and drift) there were no salmon</p>		
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								recorded as bycatch. This included a wide mix of both inshore and offshore net fisheries. Out of 1761 midwater trawls, 4 salmon were recorded as bycatch, however these were all caught by the now banned bass pair trawl fishery which was banned from 2015 onwards.		
3.	Rod and Line Angling	Environment Agency's Regional Rod Fishing Byelaws and National Salmon and Sea Trout Protection Byelaws which stipulate when and where anglers can fish, legal fishing tackle, lures and bait and catch limits. Subject to periodic review. Data on the Rod and Line Fishery in the	There is the potential for overlap between these fisheries as both fisheries occur on the migratory route of Atlantic salmon. The rod and line fishery has the potential to impact salmon stocks through: <ul style="list-style-type: none"> • Removal of target species • Creating a barrier to 	Yes	Yes	Yes	The rod and line fishery and the net fishery have the potential to create an in-combination effect due to an additive effect on the adult run of Atlantic salmon. Both fisheries have the potential to affect migration salmon by delaying or preventing migration through altered behaviour and physical barriers or through direct and indirect mortality as a result of illegal fishing, non-compliance with voluntary measures or	None.	Yes	No. The regulations currently employed by the Environment Agency and the proposed management measures for net fishing by the Southern IFCA contain measures which are designed to mitigate against potential impacts to salmonids and are subject to Habitats Regulations Assessments to ensure that these measures are

		<p>River Itchen and an assessment of potential impacts is provided in Annex 8. The current Environment Agency HRA³⁷ concludes that the management measures in place for the River Itchen SAC will have no likely significant effect on the Atlantic salmon feature. Catch and release data from the Environment Agency shows that rod fishing on the River Itchen is fully compliant and at 100%. New measures are seen to ensure that voluntary catch and release return rates remain at >90% from</p>	species movement				<p>delayed mortality from physical injury, stress and increased susceptibility to predation. Physiological affects resulting from capture and release in both fisheries can also affect the ability of a fish to successfully reproduce.</p>			<p>robust and compliant with the Habitats Regulations. Through these measures, both of these fisheries are managed so as to ensure the risk of impact to the adult run of Atlantic salmon is as low as it can be and therefore the potential additive effect on the adult run is seen to be mitigated against.</p>
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³⁷ https://consult.environment-agency.gov.uk/fisheries/proposed-national-salmon-byelaws/results/appendix2_stage1hra_mar2018.pdf

		2018 and will therefore ensure the continued protection of salmon stocks within the River Itchen SAC.								
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Annex 8: Assessment of the Rod and Line fishery for Atlantic Salmon on the River Avon and River Itchen as a potential in-combination fishing activity

Rod and line angling for Atlantic salmon (*Salmo salar*) takes place on the River Avon SAC and the River Itchen SAC. The Environment Agency are the body responsible for the management of this activity with the primary management measure being the requirement for an angler to hold a rod licence. Fishing under a rod licence also permits an angler to fish within estuarine areas associated with a particular river however catch data is not specific as to whether a salmonid was caught in marine or freshwater so no distinction in the location of catches can currently be made. Due to a noted decline in the abundance of Atlantic salmon over the past 20-30 years, the Environment Agency have been working with Cefas and others to identify measures to help restore the abundance, diversity and resilience of salmon stocks throughout England through the implementation of the 'Salmon Five Point Approach'³⁸. These measures included reducing exploitation by rod and line fishing by implementing changes to existing Environment Agency byelaws. A Habitats Regulations Assessment was completed in 2018 addressing the impacts of these changes on Atlantic salmon and sea trout as designated features of protected sites³⁹.

Data from fish counters (which gives an estimate of fish recorded at the counters, unadjusted for catch and release mortality/survival to spawning) and rod catch data for the River Avon SAC and River Itchen SAC is available for 2006-2018. This data is based on local information obtained from fisheries log books. The Environment Agency use a figure of 80% survival for catch and release salmon, although this can vary from 20% in exceptionally hot weather to 97% survival as documented in published literature (personal communication Environment Agency). Using the figure of 80% and the number of fish caught and released on the River Avon and River Itchen each year an estimate can be made of the percentage of the adult run subject to mortality each year for the River Avon (Figure A8.1) and the River Itchen (Figure A8.2). The adult run for each year can therefore be divided into fish subject to mortality following catch and release, fish surviving after catch and release and fish not subject to catch and release for both the River Avon (Figure A8.3) and the River Itchen (A8.4). For the River Avon, the data indicates that on average, 20% of the adult run of Atlantic salmon are caught by rod and line angling each year and, on average, 4% of the adult run suffers mortality following catch and release over the period 2006-2018. For the River Itchen, the data indicates that on average, 49% of the adult run of Atlantic salmon are caught by rod and line angling each year and, on average, 10% of the adult run suffers mortality following catch and release over the period 2006-2018.

³⁸ <https://environmentagency.blog.gov.uk/2016/05/06/restoring-salmon-stocks-our-journey-to-a-new-approach/>

³⁹ https://consult.environment-agency.gov.uk/fisheries/proposed-national-salmon-byelaws/results/appendix2_stage1hra_mar2018.pdf

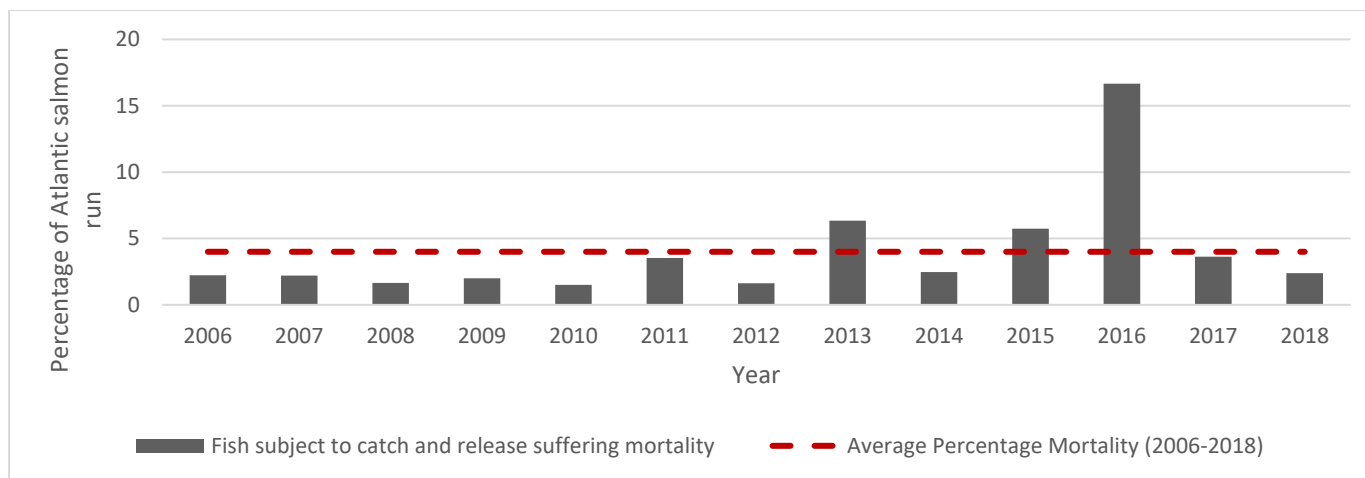


Figure A8.1: Percentage of the adult run of Atlantic Salmon (*Salmo salar*) on the River Avon which suffer mortality following catch and release for 2006 to 2018. Calculations based on the Environment Agency figure of 80% survival and the number of fish documented by the fish counters. The average percentage of the adult run suffering mortality for 2006-2018 is shown on the dashed red line (4%).

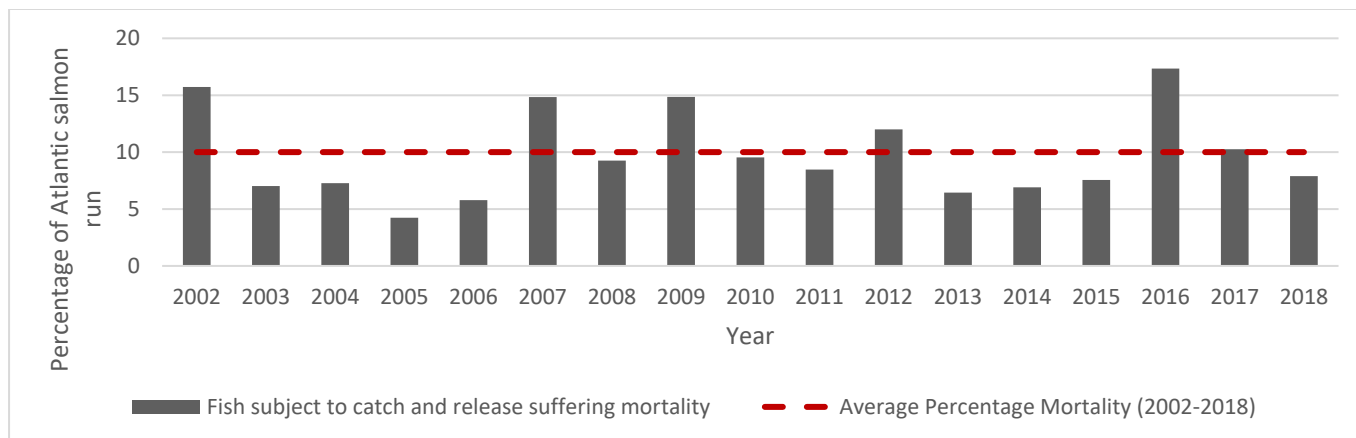


Figure A8.2: Percentage of the adult run of Atlantic Salmon (*Salmo salar*) on the River Itchen which suffer mortality following catch and release for 2006 to 2018. Calculations based on the Environment Agency figure of 80% survival and the number of fish documented by the fish counters. The average percentage of the adult run suffering mortality for 2006-2018 is shown on the dashed red line (10%).

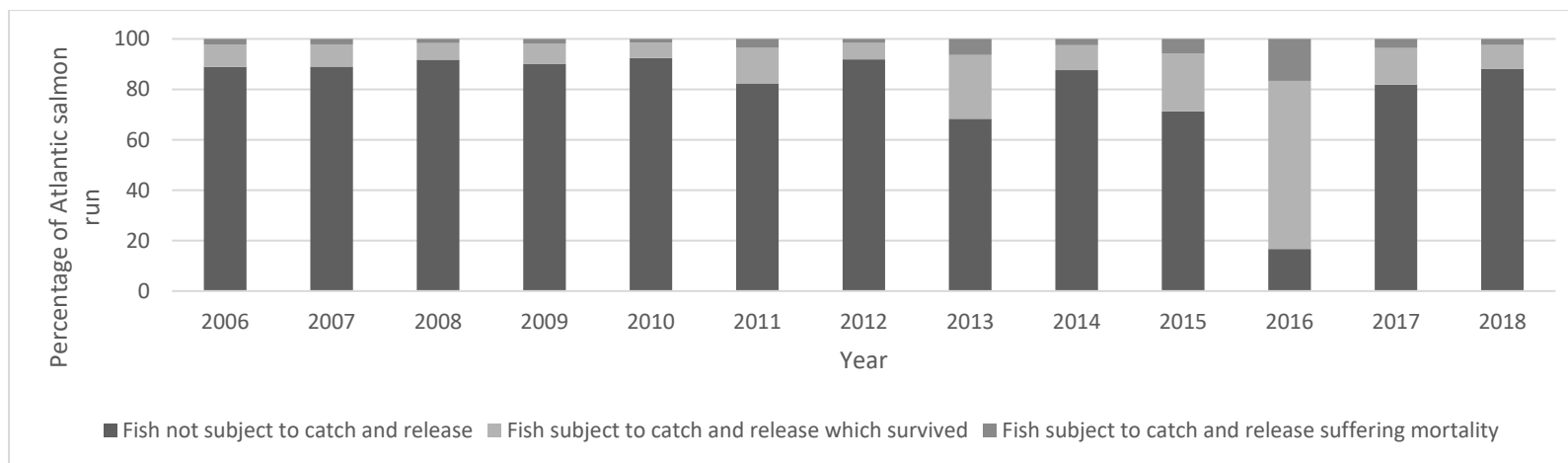


Figure A8.3: The adult run of Atlantic salmon (*Salmo salar*) on the River Avon for 2006-2018 divided into the percentage of fish subject to catch and release suffering mortality, the percentage of fish subject to catch and release which survived and the percentage of fish not subject to catch and release.

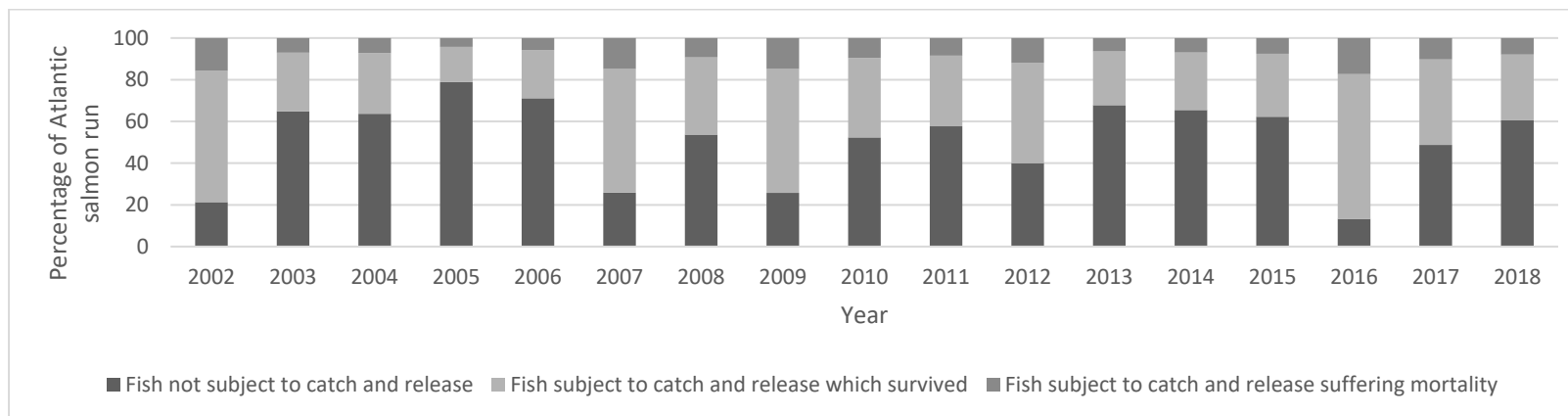


Figure A8.4: The adult run of Atlantic salmon (*Salmo salar*) on the River Itchen for 2006-2018 divided into the percentage of fish subject to catch and release suffering mortality, the percentage of fish subject to catch and release which survived and the percentage of fish not subject to catch and release.

The potential impacts of rod and line angling on the Atlantic salmon feature of the River Avon SAC and River Itchen SAC can be assumed to be through creating a barrier to species movement and the removal of target species. For the purposes of an in-combination assessment between this fishery and the net fishery, the barrier to species movement from rod and line fishing could result from obstruction to migrating Atlantic salmon through the presence of hooks and lines in the water. Voluntary catch and release is practised on both the River Avon and River Itchen, therefore the pressure caused by removal of Atlantic salmon as a target species could encompass both direct removal/mortality (from illegal fishing and/or non-compliance with voluntary measures) and indirect removal in the form of delayed mortality resulting from injury or stress caused to the fish as a result of an interaction with the fishing method.

The potential impacts of catch and release angling are explored in literature. Catch and Release (C&R) angling for salmon has been seen to be a viable management strategy provided that best management and angling practices are followed (Environment Agency, 2017). Additional measures are employed on the River Itchen and River Avon by the Environment Agency to aim to mitigate any potential impacts to Atlantic salmon as a result of catch and release angling. Based on 2018 advice, the fishery is closed in periods of high temperature. This occurs when the water temperature at 09:00 on the day of closure is at 19°C or if the water temperature is at 20°C at any time. The Environment Agency also promote good handling guides to assist fishers with using best practice for post-capture and release of fish.

The effect of C&R angling on the fish are dependent on a number of factors including the angling methods and gears used, the retrieval, landing and handling of the fish and the processing and eventual release of the fish. The effects of catch and release angling is seen to be dependent on the fitness consequences for the fish post release (Jensen *et al.*, 2010) and environmental conditions such as water temperature (Brobbel *et al.*, 1996). Physical stress to the fish has been documented as occurring as a result of exhaustive angling during the phase when the fish is hooked and played (Makinen *et al.*, 2000). The time that a fish is played is seen as an important factor in the likelihood of post-release mortality, with more time required to exhaust fish entering freshwater from the sea than those returning to the sea (Brobbel *et al.*, 1996). This is likely to be related to the different degrees of starvation between those fish entering freshwater who have only recently stopped feeding and those descending the river which will not have fed for almost a year (Brobbel *et al.*, 1996). A study by Donaldson *et al.* (2011) documented that capture times of 2.8+/-0.1min resulted in signs of exhaustion including difficulty maintaining equilibrium and few attempts to burst speed away from the sampling area. The degree of exertion has been shown to influence the time taken to recover with increased exertion linked to increased periods of altered behaviour which can include delay to migration, downstream movement, displacement and increased susceptibility to predation (Bartholomew and Bohnsack, 2005; Thorstad *et al.*, 2008). The impact of these factors is also seen to be affected by post-capture handling practices which are often dependent on the skill and awareness of the angler (Thorstad *et al.*, 2008). Poor handling practices can result in increased air exposure, scale removal and damage to reproductive organs, all of which can exacerbate physiological stress, increase recovery time and likelihood of delayed mortality. Water temperature is identified as having a significant effect on the impacts to salmon from catch and release angling. Higher water temperatures appear to exacerbate the occurrence of delayed mortality in exercised fish through influencing the magnitude of physiological disturbance experience and the ability/time taken to recover (Brobbel *et al.*, 1996; Bartholomew and Bohnsack 2005). Many of the studies concerning the impacts of catch and release on salmon species involve results from tagging experiments. Whilst this data is valid, it is important to note that tagging and release of fish introduces additional stressors which cannot often be separate from the impacts of the fishing practice. In addition, it is important to consider that migratory patterns of salmon species can vary greatly between rivers and individuals and therefore patterns of activity may not be as a result of fishing activity in isolation (Jensen *et al.*, 2010).

The current Environment Agency HRA⁴⁰ concludes that the management measures in place for the River Itchen SAC and the River Avon SAC will have no likely significant effect on the Atlantic salmon feature. Catch and release data shows that rod fishing on the River Itchen and the River Avon is fully compliant and at 100%. New measures are seen to ensure that voluntary catch and release return rates remain at >90% from 2018. The Environment Agency's Regional Rod Fishing Byelaws and National Salmon and Sea Trout Protection Byelaws, combined with the additional measures referenced above, are determined to result in no likely significant effect of rod and line angling on Atlantic salmon in the River Itchen SAC and River Avon SAC.

⁴⁰ https://consult.environment-agency.gov.uk/fisheries/proposed-national-salmon-byelaws/results/appendix2_stage1hra_mar2018.pdf

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