



River Yorkshire Esk Tideway

Byelaw Report 2022

Date: February 2022

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Published by:

Environment Agency
Horizon House, Deanery Road,
Bristol BS1 5AH

www.gov.uk/environment-agency

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Executive summary

During the 1980s to mid-1990s, salmon and sea trout catches on the River Esk declined to the lowest levels on record. This was in contrast to the patterns of catches observed on other nearby North East rivers.

Salmon and sea trout were shown to be especially vulnerable to angling and illegal fishing in the tideway at that time, so a byelaw was introduced in 1987, following a Public Inquiry, to prohibit fishing for salmon and sea trout in the tideway. The status of both salmon and sea trout stocks has improved since that time, at least in part due to the byelaw. The byelaw was amended in 1997 to remove a loophole that allowed some anglers to continue to exploit vulnerable salmon and sea trout in this area. This byelaw was subsequently renewed in 2002 for ten years and again in 2012 for another ten years. The current byelaw will expire in February 2022.

The Esk salmon stock is currently classified as being “At Risk” of failing to achieve its Conservation Limit (CL) more than 80% of the time and is projected to be “Probably At Risk” in five years’ time. Our own Decision Structure guidance directs us to identify options to ensure sufficient spawning escapement to improve the stock to “Probably Not At Risk” of failing CL within 5 years, and maintaining socio-economic benefits where possible.

The Esk sea trout stock is currently classified as being “Probably Not At Risk”, based on a simplistic assessment of the performance of the rod fishery in recent years.

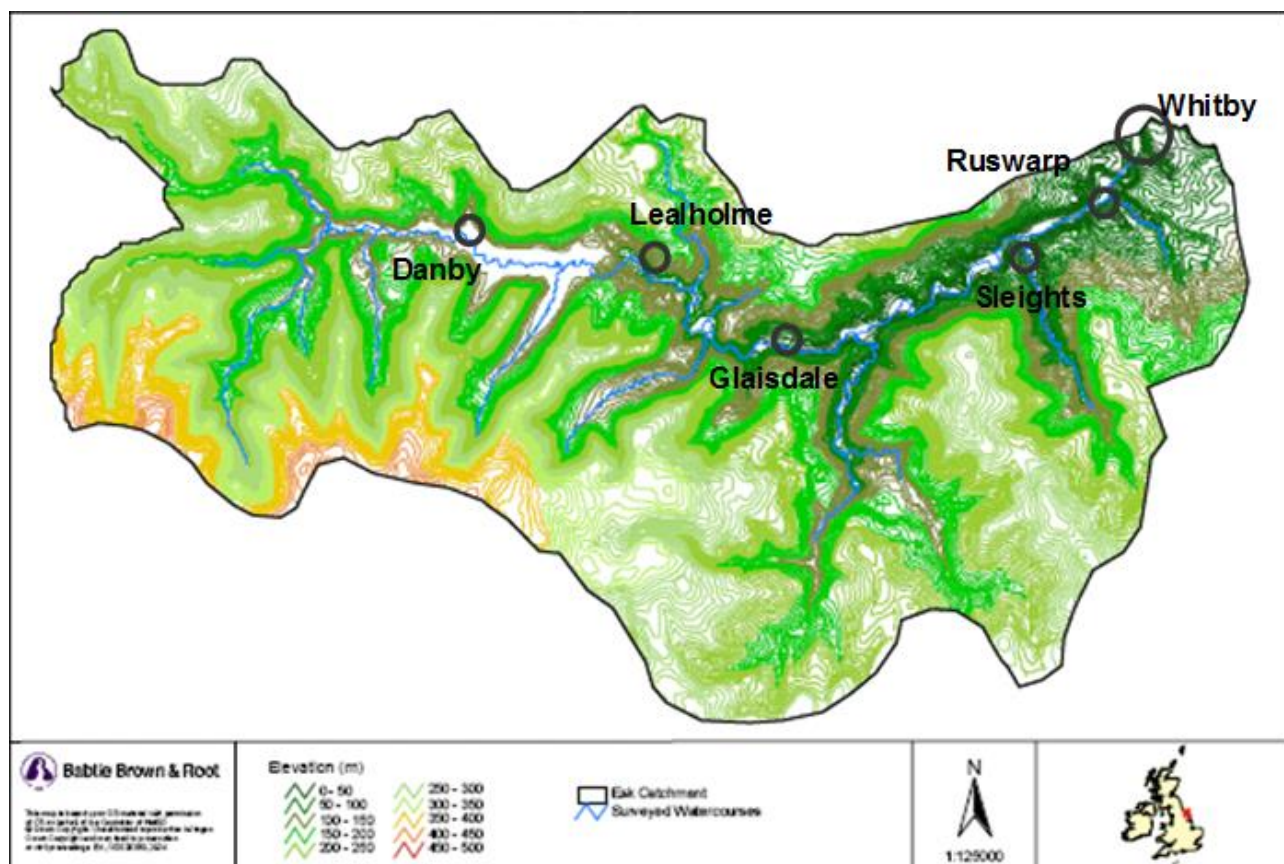
Our preferred management option in these circumstances is to renew the River Esk (Yorkshire) Tideway Byelaw as a permanent, rather than time-limited byelaw, in order to continue the prohibition of fishing for salmon and sea trout between Ruswarp Weir and Eskside Wharf in Whitby. Additional voluntary measures to improve the survival of salmon and sea trout released from the fisheries are recommended, along with directed action to improve the production of juvenile salmon and trout within the catchment.

Introduction

This document describes the recent status of salmon and sea trout stocks in the Yorkshire Esk to inform the review of the time-limited Esk Tideway Byelaw that expires in February 2022.

Esk Catchment and Fisheries

The River Esk rises on the moorlands of the North York Moors National Park only 42 km from the sea at an altitude of between 300 and 400 metres above sea level (Map 1). It then flows east to meet the sea at Whitby draining an area of 362 square kilometres. The narrow estuary extends 3.5 kilometres from the tidal limit at Ruswarp Weir to the sea at Whitby. Average rainfall within the catchment inland is 950 mm with 650 mm on the coast. Throughout its length the River Esk flows through a narrow valley cut into the soft shale of the Jurassic rocks of the North York moors. The Esk's steep sided valleys mean that river levels rise quickly following rainfall.



Map 1 – the Yorkshire Esk Catchment

Water quality throughout the catchment is generally good and the river supports abstraction for drinking water from both its headwaters and its lower reaches. The headwaters suffer from natural acidification from the peat moorland though natural buffering means this is localised.

The topography of the tideway is narrow and shallow with a pool and riffle nature at low tide. The tidal rise is between four and six metres at Whitby but less at Ruswarp and the width of the river at high tide is up to 40 metres in places.

Day ticket fishing for migratory salmonids is available within the river and there are a number of “free” fishing locations which also provide the opportunity to enjoy fishing for salmon and sea trout. Ruswarp weir effectively forms the boundary between the estuary or tideway and the freshwater river upstream. An old pool and traverse fish pass at Ruswarp weir was replaced in 2012 with a new, more effective, larinier fish pass. Despite this expected improvement in fish passage, Ruswarp weir still acts as a partial obstruction to the upstream passage of adult salmon and sea trout to some extent. Whilst fish wait for favourable conditions to ascend the fish pass at Ruswarp, they will move up and down the tideway with the tides, where they are highly visible and very vulnerable to angling and illegal fishing. Fishery ownership in the tideway is uncertain and fishing is therefore uncontrolled and unregulated by any organised owner or club, other than through Environment Agency byelaws. These factors have made this area highly attractive to illegal and unregulated fishing in the past, whereby anglers using snatches, gaffs and gill nets, and invariably under the cover of legitimate angling, took a heavy toll on the salmon and sea trout trying to make their way back to their spawning grounds upstream.

Legitimate fishing in the tideway historically appeared to account for a disproportionately high catch of salmon and sea trout. Results from smolt tagging exercises in the early 1980’s are presented in Table 1.

Table 1 - Smolt tagging and adult recapture records 1979 to 1983

	1979	1980	1981	1982	1983	Total
Smolts tagged	15	2160	1924	1984	2028	8111
Adult Recaptures Tideway (downstream Ruswarp)			5	17	12	34
Adult recaptures Freshwater Esk (upstream Ruswarp)				7	1	8

From 1979 to 1983, a total of 8111 salmon smolts were tagged at Ruswarp as they emigrated to sea. A total of 42 of these tagged individuals were subsequently recaptured by rod and line as returning adult salmon in the Esk – 8 of those being recaptured in the main freshwater rod and line fishery, upstream of Ruswarp weir, and 34 of those being recaptured in the tideway. The latter represents over 80% of the total recaptures of tagged salmon in the Esk.

Declared rod catches through the early 1980’s also demonstrated a relatively high proportion of legitimate catches being taken in the relatively short tideway, and by relatively few anglers (Tables 2-4).

Table 2 - Number of Catch Returns submitted 1980 to 1983

	Tideway (downstream Ruswarp)	Freshwater Esk (upstream Ruswarp)	Whole river	% tideway
1980	2	295	297	0.67
1981	5	266	271	1.85
1982	5	228	233	2.15
1983	4	179	183	2.18
total	16	968	984	1.62

Table 3 - Number of salmon reported on catch returns 1980 to 1983

	Tideway (downstream Ruswarp)	Freshwater Esk (upstream Ruswarp)	Whole river	% tideway
1980	19	135	154	12.34
1981	31	129	160	19.37
1982	65	48	113	57.52
1983	21	28	49	42.86
total	136	340	476	28.57

Table 4 - Number of sea trout reported on catch returns 1980 to 1983

	Tideway (downstream Ruswarp)	Freshwater Esk (upstream Ruswarp)	Whole river	% tideway
1980	28	420	448	6.25
1981	62	310	372	16.67
1982	48	292	340	14.12
1983	46	100	146	31.51
total	184	1122	1306	14.09

From 1980 to 1983 inclusive, a combined total of 968 catch returns recorded 338 salmon and 1122 sea trout from the freshwater fisheries, while 16 catch returns recorded 138 salmon and 184 sea trout from the tideway. These catches equate to 0.35 salmon and 1.16 sea trout per catch return for the freshwater fishery upstream of Ruswarp weir and 8.6 salmon and 11.5 sea trout per catch return for the tideway fishery. Overall, the licensed tideway fishing activity amounts to less than 2% of the catch returns from the whole river over these four years. And these tideway anglers have accounted for over 28% and 14% of the salmon and sea trout catch respectively. It is generally recognised that a high proportion of the catch is often accounted for by a small proportion of the anglers. In this particular case we do not have a record of the time spent fishing by each angler in the

tideway and freshwater, in order to more closely scrutinise the catch per unit effort from the two fisheries. Nonetheless, this data strongly suggests that the tideway is a much more productive fishery than the freshwater length of the river, upstream of Ruswarp. And from past observations, the high preponderance of historic illegal fishing activity through the tideway, also pointed to an abundance of salmon and sea trout in this reach and the relative ease with which they could be caught.

As a consequence of the declining stock sizes and the vulnerability of salmon and sea trout in the tideway, a proposal to control fishing on the tideway by byelaw was promoted by the Environment Agency's predecessors in 1979. A Public Inquiry was held in 1984 and the inspector supported the case for a byelaw. The byelaw was confirmed in 1987 for an initial period of ten years. A loophole was subsequently identified which enabled illegal and unregulated fishing to persist, whereby salmon and sea trout continued to be exploited under the guise of fishing for sea fish, as the original byelaw related only to salmon and trout. In 1997 the Esk Tideway Byelaw was amended to close this loophole and renewed for a further five years. The amended byelaw prohibited fishing for all fish between Ruswarp Weir and Eskside Wharf, but allowed rod fishing for sea fish during the daytime when good visibility enabled effective enforcement. This byelaw was renewed in 2002 for ten years and again for a further ten years in 2012.

Although enforcement activity has been reduced, a consistent pattern of reducing illegal activity has also been seen. Between 1982 and 1986, an average of 28 illegal nets per year were removed from the tideway. This number fell to just 10 per year between 1992 and 1996. Since 2000 only 8 nets in total have been found and only two offenders have been reported. In 2019, 1 net was removed from the tideway and in 2018, 3 nets were removed. No offenders have been reported in 2020 and 2021. This reduction of illegal activity is associated with the existence of the byelaw and the effectiveness of the powers it provides to take action against those suspected of illegal fishing.

Current status of stocks

We assess the current status of salmon and sea trout stocks primarily using rod catch data. Supplementary data from juvenile electric fishing surveys as well as estuarine or coastal net catches may also be used to evaluate stock status where relevant.

Salmon

The time series of declared rod catches of salmon, and recent catch per unit fishing effort is presented in Figure 1 below.

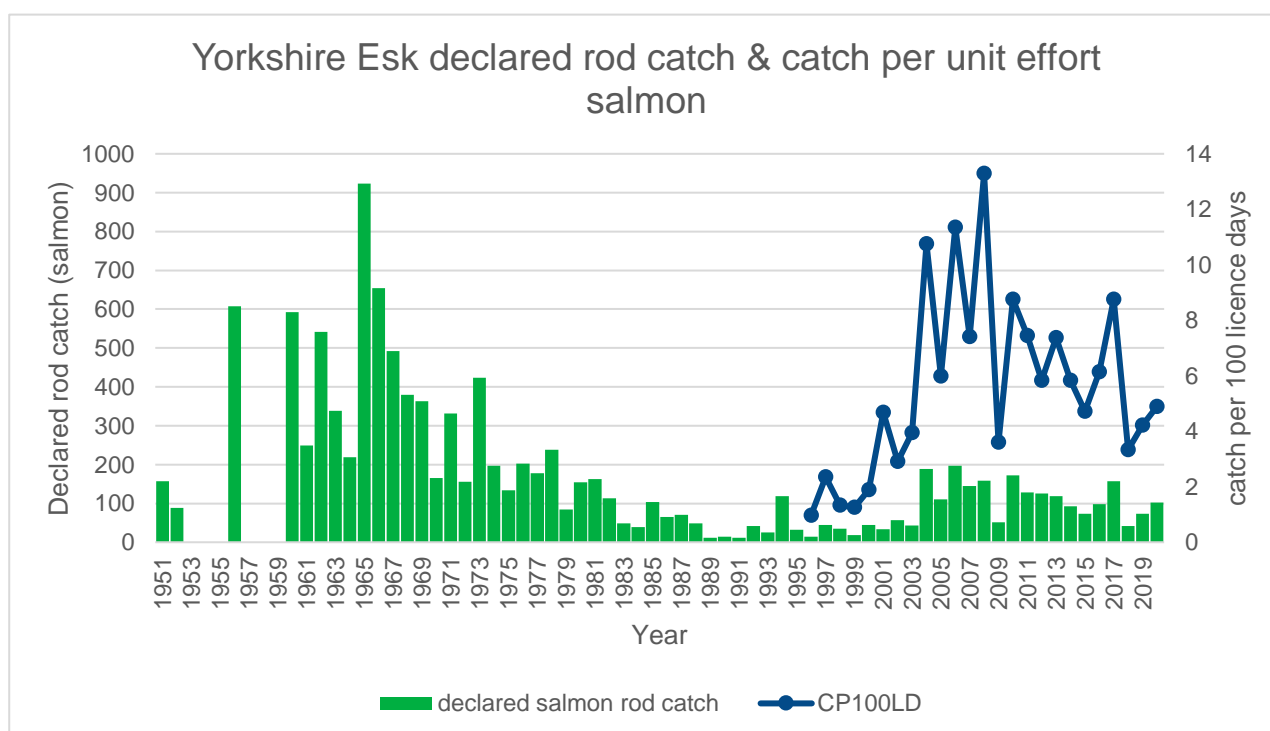


Figure 1: Declared salmon rod catch and salmon catch per 100 licence days for the Yorkshire Esk from 1951 to 2020.

After an initial period of relatively high catches usually exceeding 150 to 200 salmon per year through the 1960's and 1970's, catches declined to their lowest recorded levels through the 1980's and 1990's, often less than 50 salmon per year. Catches have improved since the mid-2000's, typically around 100 salmon per year. Catch per unit fishing effort can be used as a further proxy for stock size. Incorporating the declared fishing effort*, the catch of salmon per 100 licence days has increased from its lowest level through the late 1990's to reach the highest levels in the mid-2000's but has declined slightly in the last 10 to 12 years. In the region of 90% of the salmon catch is voluntarily released by anglers at the present time.

* note that declared fishing effort represents all fishing activity, for salmon and sea trout combined.

The most recent salmon stock assessment (2020) is presented in Figure 2, below.

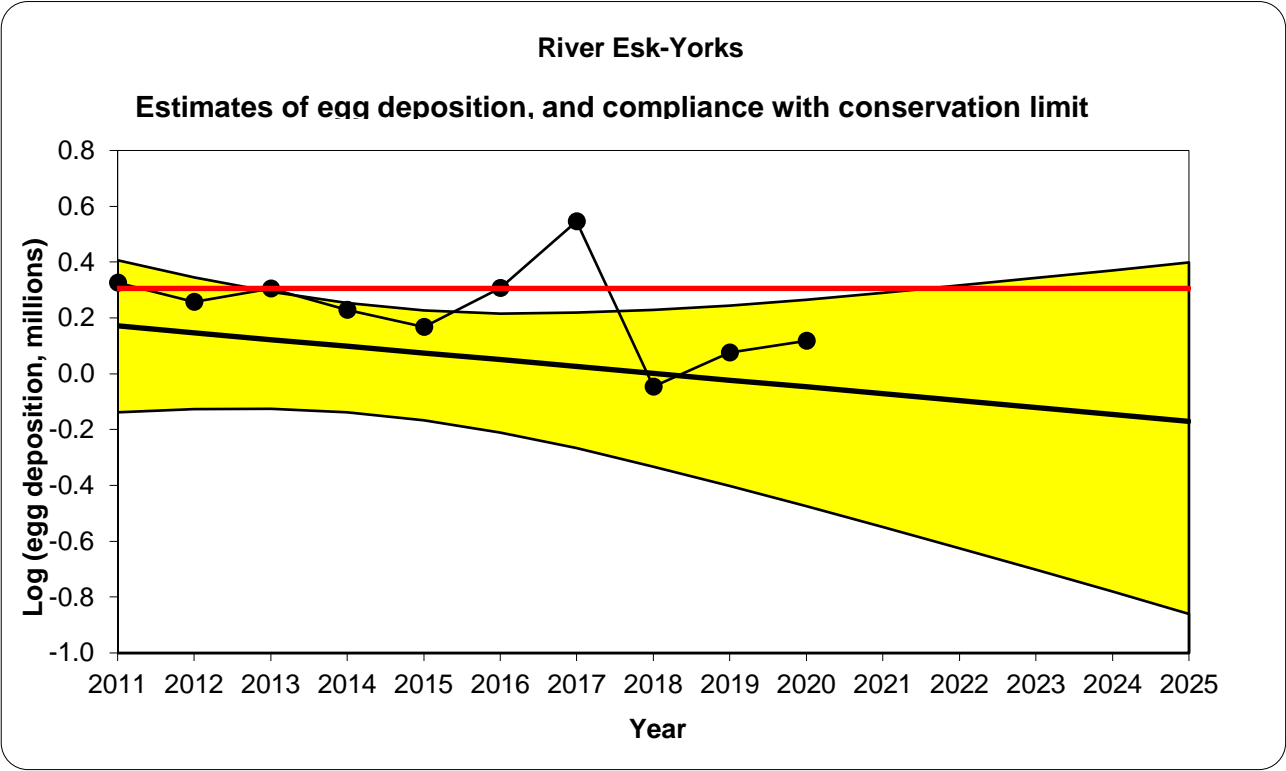


Figure 2: Compliance against the Conservation Limit in the Yorkshire Esk over the last ten years and projected five years’ into the future.

Key to graph	
	20 th percentile trend line for egg deposition estimates
	Annual egg deposition estimates
	Conservation Limit
	Upper and lower boundaries of the Bayesian Credible Interval around the 20 th ile regression line

The Yorkshire Esk salmon stock is currently classified as being “At Risk” of failing to achieve its Conservation Limit in at least four years out of five (2020 classification). Six out of the last 10 annual egg deposition estimates have failed to achieve the minimum biologically acceptable stock level that is defined by the Conservation Limit. The prevailing trend in annual egg deposition estimates over the last ten years is declining. Furthermore, the salmon stock is projected to be “Probably At Risk” of failing to achieve its Conservation Limit by 2025. Our Decision Structure guidance for a Probably At Risk stock directs us to identify options to ensure sufficient spawning escapement to improve to “Probably Not At Risk” of failing CL within 5 years, maintaining socio-economic benefits where possible.

Sea Trout

The time series of declared rod catches of sea trout, and recent catch per unit fishing effort is presented in Figure 3 below.

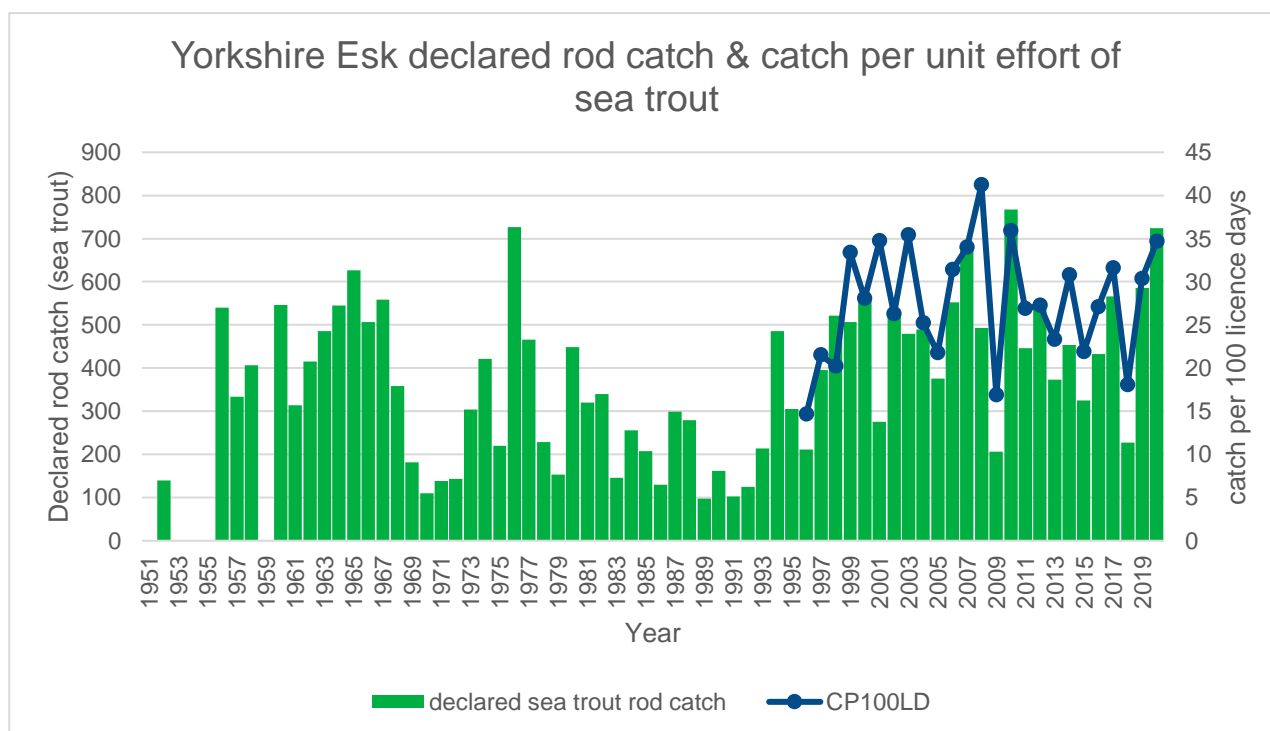


Figure 3: Declared sea trout rod catch for the Yorkshire Esk from 1951 to 2020.

From the mid-1950's to the mid-1960's, sea trout catches ranged between 300 and 500 fish per year. From then to the mid 1990's, catches were more variable but regularly fell below 200 per year. Since the mid-1990's, catches of sea trout have again regularly ranged from 300 to 500 per year. The catch of sea trout per 100 licence days ranges mostly between 20 and 35, with no strong increase or decrease in this measure being apparent. Currently approximately 80% of the annual sea trout catch is voluntarily released by anglers.

The Esk sea trout stock is currently classified as "Probably Not At Risk" based on a relatively simplistic appraisal of the current performance of the fishery in relation to historic performance.

Juvenile salmonid survey data

Juvenile abundance at three sites on the River Esk is surveyed on an annual basis using electric fishing methods (Table 5 and Map 2). Two additional sites have been added recently and are being surveyed alongside the original sites as they are deemed to be more suitable for surveying the juvenile fish population. Surveys were not carried out in 2012 and 2019 due to high flow events and 2020 because of the restrictions on monitoring imposed nationally to prevent the spread of the coronavirus (Covid-19). Dibble Bridge was not surveyed in 2021 due to safety concerns at the site.

Table 5: Electric fishing survey site names and locations

National Fish Population Database Site Number	Site Name	National Grid Reference
71664	US Dibble Bridge	NZ6757607813
383	Dibble Bridge	NZ6757607887
1952	Lealholm Stepping Stones	NZ7617707562
382	Lealholm	NZ7650607514
1932	Toll Road	NZ8223705507

All sites surveyed since 2010 have been classified into abundance classes (Classes A to F) by comparing juvenile density (numbers per 100m²) estimates against standardised density values from the National Fisheries Classification Scheme (NFCS), to provide a measure of the health of the juvenile population (Table 6). This has been carried out for both salmon and trout species, and fry (0+) and parr (>0+) age classes. Other species were caught during surveys but for the purposes of this report have been excluded.



Map 2: Location of electric fishing sites on the River Esk.

Table 6. The densities (number per 100m²) of juvenile salmon and trout and corresponding NFCS grades.

Grade/species life stage	A	B	C	D	E	F
0+ trout	≥38.0	17.0-37.9	8.0-16.9	3.0-7.9	0.1-2.9	0
>0+ trout	≥21.0	12.0-20.9	5.0-11.9	2.0-4.9	0.1-1.9	0
0+ salmon	≥86.0	45.0-85.9	23.0-44.9	9.0-22.9	0.1-8.9	0
>0+ salmon	≥19.0	10.0-18.9	5.0-9.9	3.0-4.9	0.1-2.9	0

Tables 7 to 10 show the NFCS grades for each species and age group captured through recent surveys, listing survey sites in order from upstream to downstream.

Table 7. NFCS for 0+ salmon on the River Esk

Year/Site	2010	2011	2013	2014	2015	2016	2017	2018	2021
US Dibble Bridge								E	F
Dibble Bridge	E	C	D	D	D	F	F	D	
Lealholm Stepping stones							C	E	D
Lealholm	B	B	C	D	E	D	D	C	C
Toll Road	D	D	D	E	E	E	E	E	E

Table 8. NFCS for >0+ salmon on the River Esk

Year/Site	2010	2011	2013	2014	2015	2016	2017	2018	2021
US Dibble Bridge								E	D
Dibble Bridge	C	A	D	C	C	E	E	E	
Lealholm Stepping stones							C	E	B
Lealholm	B	B	A	C	A	C	D	A	B
Toll Road	D	C	D	E	D	E	E	E	E

Salmon fry (0+) and parr (>0+) densities tend to be quite low at all sites, with the Lealholm sites recording the better grades, particularly for salmon parr. The absence of 0+ salmon at the two Dibble Bridge sites suggests that salmon may only periodically be able to spawn in these higher reaches of the river.

The Toll road site again performs poorly with a typical E grade – this is likely to be a result of the habitat being sub-optimal for salmon spawning and the presence of limited juvenile habitat. The higher previous grades at this site and Dibble Bridge may be associated with salmon stocking that operated up until 2016.

The distribution and abundance of juvenile salmon appears to be relatively poor, with predominantly lower densities or grades being prevalent. This suggests that the capacity for the stock to recover from any further reduction in spawning adults, or other such population-level impact, could be quite limited.

Table 9. NFCS for 0+ trout on the River Esk

Year/Site	2010	2011	2013	2014	2015	2016	2017	2018	2021
US Dibble Bridge								B	B
Dibble Bridge	D	B	B	C	C	D	B	B	
Lealholm Stepping stones							C	E	C
Lealholm	C	B	C	D	D	C	D	B	C
Toll Road	D	D	E	E	E	E	E	E	E

Table 10. NFCS for >0+ trout on the River Esk

Year/Site	2010	2011	2013	2014	2015	2016	2017	2018	2021
US Dibble Bridge								A	B
Dibble Bridge	B	A	C	D	B	E	C	B	
Lealholm Stepping stones							E	E	D
Lealholm	C	C	C	E	D	E	E	D	E
Toll Road	D	D	E	E	E	E	E	E	E

Trout fry and parr tend to be more prevalent in the upper reaches of the catchment with higher densities and grades achieved through this area on several occasions. In addition, poor grades have been recorded in the lower survey reaches. Such a distribution and abundance of juvenile trout is typical of the species, as they prefer smaller streams for spawning and nursery habitat.

Management Options

As the current byelaw is due to expire in February 2022, we need to consider the possible options available to continue to protect salmon and sea trout stocks, particularly through the Esk tideway.

The following facts are of key importance:

- the current stock assessment defines the Esk salmon stock in the Probably At Risk category in 5 years' time, with the most recent assessment year (2020) recording a stock level below the conservation limit.
- Although limited in coverage, the low apparent abundance of juvenile salmon suggests that the stock may have quite limited resilience to withstand further impacts.
- The Environment Agency follows the North Atlantic Salmon Conservation Organisation's (NASCO) Guidelines for the Management of Salmon Fisheries in prioritising the conservation of the productive capacity of individual stocks.

Our Decision Structure guidance for a Probably At Risk stock, as this Esk stock currently is, directs us to identify options to ensure sufficient spawning escapement to improve to "Probably Not At Risk" of failing CL within 5 years, maintaining socio-economic benefits where possible. It is therefore important that exploitation is not increased at the present time. Additional actions to improve stocks will likely be advantageous, should any further stock decline become apparent in the short term.

Option	Advantages	Disadvantages
Option 1 Do Nothing - Allow the current Tideway Byelaw to Expire	For salmon & sea trout stocks: None For Fishery: Potential for short term increase in fishing activity and catches in tideway.	For salmon & sea trout stocks: Protection afforded by existing legislation is lost. Potential for high legal exploitation by rod licence holders is re-introduced. Potential for illegal exploitation by unlicensed fishermen and poachers is re-introduced. Likely difficult to effectively police the tideway given much reduced resource from the 1980's and 1990's. For Fishery: Potential for immediate and long term impact on the performance and participation in upstream fisheries.

Option	Advantages	Disadvantages
<p>Option 2</p> <p>Allow the Byelaw to Expire and Promote Voluntary Catch Controls</p>	<p>For salmon & sea trout stocks:</p> <p>None</p> <p>For Fishery:</p> <p>Potential for short term increase in fishing activity and catches in tideway.</p>	<p>For salmon & sea trout stocks:</p> <p>Protection afforded by existing legislation is lost.</p> <p>Potential for high legal exploitation by rod licence holders is re-introduced.</p> <p>Potential for illegal exploitation by unlicensed fishermen and poachers is re-introduced.</p> <p>Likely difficulty to effectively police the tideway given much reduced resource from the 1980's and 1990's.</p> <p>For Fishery:</p> <p>The lack of ownership of the fishing rights in the tideway makes voluntary controls difficult to apply effectively.</p> <p>Potential for immediate and long term impact on the performance and participation in upstream fisheries.</p>
<p>Option 3</p> <p>Renew the byelaw to prevent angling for salmon and sea trout in the Tideway.</p> <p>Plus seek complimentary byelaw from IFCA to control angling for sea fish in the tideway.</p>	<p>For salmon & sea trout stocks:</p> <p>Maintains high degree of protection for stocks through the vulnerable tideway reach, in line with previous regulations.</p> <p>For Fishery:</p> <p>No change from existing regulations.</p> <p>Affords the opportunity of voluntarily improving catch and release survival through adoption of best practice angling methods. Voluntary adoption of such practices is likely to be more popular than mandatory imposition through byelaws.</p>	<p>For salmon & sea trout stocks:</p> <p>None (as long as complimentary prohibition of angling for sea fish is implemented in parallel with this EA byelaw).</p> <p>For Fishery:</p> <p>None</p>

Option	Advantages	Disadvantages
Option 4 Renew the tideway byelaw plus mandatory catch and release byelaw for the rest of the river.	For salmon & sea trout stocks: Affords the maximum level of protection through regulations, for the salmon and sea trout stock. For Fishery: None.	For salmon & sea trout stocks: None. For Fishery: Resistance to widespread mandatory catch and release may result in reduced participation in angling throughout the river.

Recommended management option

Options 1 and 2 are likely to result in an increase in exploitation of the salmon and sea trout stocks, and are therefore discounted.

Option 3 is essentially a continuation of the previous regulations so is unlikely to result in any increase in exploitation of the stocks.

Option 4 presents the maximum regulatory protection for the salmon and sea trout stocks, but is not considered to be necessary in the immediate term.

In view of the above, the Yorkshire Area of the Environment Agency chooses Option 3, as the best regulatory option to implement at the present time. This renewed byelaw would prohibit fishing for salmon and sea trout between Ruswarp Weir and Eskside Wharf. It is our intention to apply this as a permanent byelaw, rather than as a ten-year time limited byelaw as has been the case previously.

The Marine and Coastal Access Act (2009) placed regulatory responsibility for sea fish to the Inshore Fisheries and Conservation Authority (IFCA), so the new byelaw proposed here only applies to salmon and sea trout, and not to angling for sea fish species. We will seek the implementation of a complimentary sea fishing byelaw restriction for the tideway, through the IFCA.

However, it is important to recognise that recent stock assessments have indicated the Esk salmon stock to be below its Conservation Limit, and other directed actions should be implemented;

- **by fisheries in order to maximise the survival of salmon and sea trout caught and released,**
- **and by catchment partners to improve the freshwater environment to maximise juvenile salmon and trout production.**

Impact Assessment

Recreation and the local economy

The proposed prohibition of angling for salmon and sea trout in the Esk tideway presents no fundamental change from the existing regulations. There is therefore not likely to be any specific impact for the fisheries or for the local economy, from the implementation of these regulations. Indeed, the improvement and maintenance of healthy salmon and sea

trout stocks ought to result in an improved contribution that fishing makes to the local economy.

Local reaction to the byelaw

In considering the renewal of the byelaw in 2021, all the angling interests consulted informally have supported the byelaw and have urged its renewal. Letters of support have been received from local interests including, The Grosmont Estate, Grosmont Angling Club, the Esk Fisheries Association, Whitby town council, North York Moors National Park and the River Esk Salmon Group, Egton Bridge Estate.

Conclusion to the impact assessment

This byelaw, in its previous forms, has played a major role in delivering powers to protect and ensure the safe passage of salmon and sea trout through the Esk tideway where, without effective regulation and control they are extremely vulnerable to angling and illegal fishing and the survival of their stocks and associated benefits would be threatened.

The regulation has provided a cost effective and efficient enforcement regime to allow the limited amount of angling for sea fish that the reach attracts whilst giving proper protection for the vulnerable salmon and sea trout.

There is support for the continuance of the regulation amongst all local angling groups consulted.

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