



Association of Salmon Fishery Boards

Further Comments on the North East Coast Net Limitation Order 2012

September 2012

Summary of the ASFB Position

- We profoundly disagree with the original Environment Agency analysis and the response from the EA to our substantive points. Specifically, the EA neglected to investigate the impact of the fishery on particular stock components, rather than the whole stocks of the larger East coast rivers. A single catch total cannot provide evidence on the strength of the different stocks making up that single catch total.
- The EA accepts that the reduction of the drift net fishery will enhance the prospect of recovery for those stocks not achieving management targets. However, the reduced survival of salmon and sea trout during their marine migration phase has fallen over the last 40 years and a key strategy for managing the adaptation of species sensitive to climate change is to minimise additional man-induced pressures. We see no justification for not taking such action immediately, thereby ensuring that those stocks that are at risk get the immediate benefits of protection rather than let such stocks encounter those risks in a weakened state.
- We are deeply concerned that the EA appears to take a contrary stance to the UK Government's general policy of phasing out mixed stock fisheries (as endorsed by the 2000 Review of Salmon and Freshwater Fisheries, and confirmed in the Government's response to the Review). Indeed, point 1 in the explanatory notes explicitly states that 'The Environment Agency is to undertake further research with the aim of assessing what would constitute sustainable net fishing in English north eastern waters...' We believe that the UK Government policy should be re-stated and that the reference to assessing what would constitute sustainable fishing be removed from the order.
- Whilst significant effort has been given to taking into account socio-economic impacts in NE England, no attempt has been made to assess the economic and social well-being of communities in Scotland.
- The River Tweed Commission (RTC) and District Salmon Fishery Boards (DSFBs) have responsibility for managing salmon and sea trout fisheries in Scotland, and have the capacity to manage individual stocks within rivers. It is therefore vital that Defra have particular regard to the views of the RTC and DSFBs.
- We do not believe that there should be any provision for new entrants (endorsees) within the T and J net fishery as this is incompatible with the stated aim of reducing the fishery.
- We believe that the solution should be the immediate closure of the fishery, with appropriate compensation for closure. However, significant progress could be made by: setting catch limits; setting an end date for the final closure of the fishery; facilitating a further round of buy outs with appropriate compensation for closure.

Introduction

The Association of Salmon Fishery Boards is the representative body for Scotland's 41 District Salmon Fishery Boards (DSFBs) including the River Tweed Commission (RTC), which have a statutory responsibility to protect and improve salmon and sea trout fisheries. The Association and Boards work to create the environment in which sustainable fisheries for salmon and sea trout can be enjoyed. Conservation of fish stocks, and the habitats on which they depend, is essential and many DSFB's operate riparian habitat enhancement schemes and have voluntarily adopted 'catch and release' practices, which in some cases are made mandatory by the introduction of Salmon Conservation Regulations. ASFB creates policies that seek where possible to protect wider biodiversity and our environment as well as enhancing the economic benefits for our rural economy that result from angling. An analysis completed in 2004 demonstrated that freshwater angling in Scotland results in the Scottish economy producing over £100 million worth of annual output, which supports around 2,800 jobs and generates nearly £50million in wages and self-employment into Scottish households, most of which are in rural areas.

Please find below detailed comments on the Environment Agency's response to comments on the North East Coast Review of the Net Limitation Order. These comments are submitted on behalf of the ASFB and Scottish East Coast rivers. For ease of presentation, we have replicated the EA response to the River Tweed Commission as the basis for the response, but we would emphasise that all East Coast District Salmon Fishery Boards and the ASFB received very similar responses. We have included our specific comments in blue italic text, indented after the corresponding paragraph in the EA response.

General Comments

Despite a stated commitment to sustainable salmon populations throughout the affected area, the Environment Agency have not demonstrated that this is the case in affected Scottish rivers. Those Scottish rivers that are most likely to be adversely affected at a population level have not even been considered at all, a point that has not even been acknowledged.

The Environment Agency have provided little meaningful information on exploitation rates by the drift net fishery, which, in the past, may have been over 50% for some rivers and still significant today. It is disappointing that this critical issue seems to have been relegated in terms of importance. Even with the great opportunity to monitor the effects of the effort reduction of 2002 / 2003, there appears to have been little formal attempt to do so. Indeed, it would appear that the EA wish to draw attention away from any impact and mask river specific exploitation rates. Therefore, we believe that the EA's analyses do not objectively assess the impacts of this fishery and, so, it is difficult to have confidence in their management of the NLO process.

A fundamental issue is the problem that mixed stock interceptory fisheries create for salmon and sea trout management. A basic need for effective management of a stock is to know where it's mortalities occur (both natural and due to human exploitation) so they can be assessed for their effect on the spawning escapement. With in-river fisheries, both rods and nets, this is relatively simple, the totals caught are known and the fisheries can be regulated to allow more fish to escape to spawn if need be. With mixed stock fisheries, this is impossible, it is not known how many fish of any particular stock are caught, and even if this was known, it would be impossible to regulate such a fishery to allow increased escapement of just one particular stock of the many it exploits. All exploitation of a stock should, as recommended more than 50 years ago by the Hunter Committee, therefore be within home rivers. The existence of the NEE fisheries makes proper management of some of the most important Atlantic salmon rivers in the world impossible.

The River Tweed Commission (RTC) and District Salmon Fishery Boards (DSFBs), who have a statutory responsibility to protect and improve salmon and sea trout fisheries, have a key interest in the outcome of the NLO review. Conservation of fish stocks, and the habitats on which they depend, is a key aspect of this work and the RTC and DSFBs operate riparian habitat enhancement schemes, fish passage improvements, enforcement and other fisheries management activities in order to ensure the health of fish stocks. Given the significant investment in the management of the resource in Scotland, it is inherently inequitable that fish are harvested by those who made no such investment. This disparity is especially marked by the North East drift net fishery, where only 14 licensed netsmen receive a disproportionate benefit from such conservation measures.

It is not a question of whether we agree or disagree with the assessment made by the EA – no credible assessment has actually been made by them for us to consider. **All** available evidence should be used and the assessment should be based on the known population structuring of the source rivers of the NEE fisheries, both in England and Scotland. We have also highlighted deficiencies in the assessment of the River Tyne in Annex 2. A proper assessment procedure would be:

1. To define the seasonal stock component(s) exploited by the NEE fisheries using seasonal catch data & scale reading of a sample of salmon from the fisheries. (Given the importance of the NEE fisheries, such a system of scale collection should be in place; if not, these fisheries are not being properly monitored and a system should be set up).
2. To then assess the strengths of such seasonal stock(s) within the various source rivers both in Scotland and in England. Seasonal catch data may be all that is available for some rivers, but for others (e.g. Tweed, Tay) there is radio-tracking data which will show which parts and how much of a catchment produce the stock(s) exploited by the NEE fisheries. Fish counter data can also show the strengths of particular seasonal stocks within rivers. Such seasonal stock assessments are already part of the SAC assessment process in Scotland, though they could (and should for this purpose) be made on all available data rather than on the limited range prescribed for the SAC assessment.
3. For each source river, the potential for damage by over-exploitation should then be assessed, looking at the local exploitation levels by rod and net fisheries of the stock(s) also exploited by the NEE fisheries
4. If there is no evidence for these stocks being at risk of over-exploitation within their home rivers, then it can be taken that the NEE fisheries are not impacting them adversely.
5. If, however, any one of the source rivers has a seasonal stock that is at risk of over-exploitation locally or is actually being over-exploited, then the NEE fisheries will be making a bad situation worse. In this way the risk to individual rivers can be assessed, even though the catches of the NEE fisheries cannot yet be broken down in to contributions from particular rivers.
6. Since the NEE fisheries are mixed stock and cannot be regulated to reduce exploitation on any particular stock, if one of its source SAC rivers has a stock that is being over-exploited, the whole NEE fishery will have to be reduced or closed. Within an SAC river, however, fisheries (both net and rod) can be regulated to reduce exploitation on particular stocks through catch & release for particular parts of the season.

The EA response to the River Tweed Commission (Our comments in blue italic)

1. Economic Value

The proposed NLO will help achieve our vision of fishing for salmon and sea trout in the north east of England which allows for the continued conservation and improvement of fish stocks in contributing rivers and provides a social and economic benefit to the region.

We recognise the significant economic value of rod and net salmon fisheries in both England and Scotland. We have assessed the value of net and rod fisheries in the north east of England, and include in our aims for the review sustainable exploitation of salmon and sea trout stocks by fisheries that contribute to the local economy. This includes provision, if they can be demonstrated to be sustainable, for both net and rod fisheries for salmon and sea trout in the north east.

However, there has been no attempt to assess the value of rod fisheries in Scotland to the local economies there. Given that 70% of the drift net catch is of Scottish origin, this is completely unacceptable.

Although in our assessments we have focused on the first sale value of salmon and sea trout, we recognise that as fish move through the supply chain to hoteliers, caterers and retail outlets, there is substantial value added at each step.

No matter how expensive the restaurant a net caught salmon ends up in, numerous socio-economic studies have demonstrated that the sporting value of a rod caught salmon is far higher.

In evaluating options, we have first considered conservation needs and then options have been reviewed for management which meet these needs, taking into account costs and benefits together with social, cultural and economic implications.

Under the Environment Act 1995 and subsequent guidance, we must consider the economic and social well-being of rural communities in England and Wales and have regard to the costs and benefits of our actions. We support regulated exploitation provided that it is sustainable. When reducing exploitation, due regard is given to the needs of those dependent on the fishery to earn a living.

We are also required by Defra to enhance the contribution salmon and freshwater fisheries make to the economy, particularly in remote rural areas with low levels of income.

Again, no attempt has been made to assess the economic and social well-being of rural communities in Scotland. Given that 70% of the drift net catch is of Scottish origin, this is completely unacceptable. We would seek clarification on the definition of 'remote' as used by the Environment Agency. In fact, the remote communities that utilise salmon and sea trout are far more likely to be found in inland areas where rod fishing is important. The best means of enhancing the value of fisheries to remote communities is to reduce the netting take on the coast. The commercial health of inland fisheries (and the associated hotels, bars etc) rely primarily on salmon and sea trout.

2. Management of mixed stock fisheries

In our strategy 'Better salmon and sea trout fisheries' (2008) we say that we will 'move to close net fisheries that exploit predominantly mixed-stocks where our capacity to manage individual stocks is

compromised'. We define mixed stocks as 'stocks of sea trout or salmon originating from different home rivers'.

The EA has no "capacity to manage individual stocks" outside of its jurisdiction, in Scotland & never has had. However, District Salmon Fishery Boards and the River Tweed Commission, do have the capacity to manage individual stocks and therefore we would emphasise the importance of DEFRA having particular regard to the views of such organisations in Scotland.

In 2009, NASCO published guidelines for the management of salmon fisheries. These are intended to serve as guidance to the NASCO parties for the management of wild salmon fisheries subject to their national legislation. The guidelines advise that:

- rational management of a mixed stock fishery requires knowledge of the stocks that contribute to the fishery and the status of each of those stocks;
- where such fisheries operate, managers should have a clear policy for their management that takes account of the additional risks attributable to, among other things, the number of stocks being exploited and their size and productivity;
- management actions should aim to protect the weakest of the contributing stocks.

We recognise the potential risks introduced by mixed stock fisheries to the stocks they exploit, and have taken these risks into account, having regard to our strategy and NASCO guidance, in reaching our conclusions.

Since 1992 the north east drift net fishery has been phased out gradually, using a reducing Net Limitation Order (NLO). This has provided salmon and sea trout stocks with increased levels of protection and reduced the risks of fishing on mixed stocks whilst at the same time preventing unnecessary hardship to licensees.

We know from genetic and fish tagging studies that both the drift net and T and J net fisheries operate as mixed stock fisheries, exploiting salmon and sea trout from a number of rivers along the eastern coast of Britain. Many of these rivers have healthy sea trout stocks and the majority of those in England are exceeding their conservation limit for salmon. Where stocks of salmon are failing to meet their management targets, evidence shows that populations are improving. We must manage exploitation of fish from these rivers carefully. By reducing netting effort as netsmen leave the fisheries on a voluntary basis, these rivers will have a better opportunity to recover.

Netting with fixed engines (T & J nets) or seine nets can be selective as they do not kill the fish to catch them and Sea-trout can be exploited separately from salmon by such methods: the RTC, for example, has agreed "Catch and Release" for salmon with the Tweed river netsmen up to the 15th of June. The netsmen can take the sea-trout while returning the salmon, so healthy stocks can be fished while weaker ones are protected. Drift nets cannot be operated in this way as they kill everything they catch.

Those stocks of salmon in England that are failing to meet their management targets would have more chance of doing so if fish were not being exploited by the NEE fishery.

Comparison of the 5-year mean salmon spawner numbers in England and Wales for the periods 1997-2001 and 2007- 2011 shows a 44 percent increase in the 5 principal salmon rivers in the north east region between the earlier and the later period, an improvement that is statistically significant.

Based on this trend and other evidence of stock performance, we find there is no compelling conservation case to accelerate closure of either the drift net or T and J net fisheries. To do so would cause unnecessary hardship to licensees.

I provide further detail on the impact on Scottish rivers, including the Tweed in section 5 below.

We believe it is an appropriate precautionary measure to maintain a reducing Order on the drift nets and introduce a reducing NLO on the T and J net fishery, allowing existing netsmen to continue fishing and providing limited opportunities for some endorsees to take over licences from netsmen.

This statement is contradictory. How can allowing new entrants (endorsees) be compatible with reducing the fishery? Of more concern however, is the fact that this statement suggests that the EA do not have the aim of ever extinguishing this mixed-stock fishery. This appears to be contrary to the long standing policy of the UK Government. It is our understanding that the general policy of phasing out mixed stock fisheries was endorsed by the 2000 Review of Salmon and Freshwater Fisheries, and confirmed in the Government's response to the Review.

This position will be reviewed in 5 years time. In the meantime, we propose no compulsion on existing licensees to cease fishing. All licensed netsmen can continue to take up licences until such time as they choose or their own circumstances cause them to leave the fishery.

3. Sustainable exploitation

The current review will help achieve our vision of fishing for salmon and sea trout in the north east of England which allows for the continued conservation and improvement of fish stocks in contributing rivers and provides a social and economic benefit to the region.

The purpose of the NLO review is to control exploitation of salmon and sea trout through the appropriate and precautionary limitation of the number of net licences available in the fishery.

To achieve this vision we have developed four aims :

- Sustainable salmon and sea trout populations returning to east coast rivers, meeting salmon conservation objectives.
- Sustainable exploitation of salmon and sea trout stocks by fisheries that contribute to the local economy.
- A low and manageable risk from exploitation to the stocks of salmon and sea trout returning to individual east coast rivers.
- Management of salmon and sea trout stocks that takes account of commitments to international regulations, directives (e.g. Habitats Directive) and agreements (e.g. by the North Atlantic Salmon Conservation Organisation).

While our jurisdiction extends only to, and so our focus must be on, fisheries in England, these aims are framed to extend to all of the relevant rivers and fisheries in England and Scotland.

The second objective for this NLO review, "sustainable exploitation of salmon and sea trout stocks by fisheries which contribute to the local economy" includes provision, if they can be demonstrated to be sustainable, for both net and rod fisheries for salmon and sea trout in the north east.

This again seems to indicate that the EA has no intention of phasing out even the Drift nets, despite the fact that this appears to be contrary to UK Government Policy. This is extremely disappointing from a Scottish perspective as these fisheries are dependent on catches of fish produced outside of the EA's jurisdiction.

In the context of the NLO, we would define sustainability as having three components:

1. Sufficient numbers of adult salmon and sea trout, after catches in rod and net fisheries and any other losses have been accounted for, returning annually to spawn in every catchment contributing to the fishery to ensure the maintenance and development of a naturally self-sustaining (for salmon, performing above their conservation limit) and healthy fish population in every catchment.
2. Exploitation controlled in such a way and at such a rate that it does not lead to the long-term decline of fish stocks in any catchment and which will meet the needs and aspirations of present and future generations, including the interests of communities which are particularly dependent on salmon fisheries. This does not imply that abundance will be constant.
3. Controlled opportunities for exploitation of surplus stocks, which maximise the total sustainable catch from both net and rod fisheries, to generate social and economic benefits without compromising the long-term performance of those stocks and protect the weakest of the stocks exploited.

We recognise that the operation of mixed stock fishing introduces additional risks in fisheries management. However, we do not agree that this means that net fishing in the north east is necessarily unsustainable. We believe it may be possible, provided management takes account of these risks as NASCO advises, to manage net fishing in the north east that operates sustainably. We are developing a programme of further investigations, including genetic research to improve our understanding of the patterns of exploitation of stocks originating from different catchments by the net fisheries, and will use this to inform future management.

This again seems to indicate that the EA has no intention of phasing out even the Drift nets, despite the fact that this appears to be contrary to UK Government Policy.

As stated above, mixed stock fisheries are inherently poor management since they do not allow proper assessments to be made of the mortalities of individual stocks. Even if genetics evidence became available as to the river origins of the fish caught in the NEE, are the EA intending to supply District Salmon Fishery Boards in Scotland with an annual report of how many fish were caught in this fishery?

Advised by this new research, we will review the situation again in 2017. At this time we should better understand the impact of nets on individual river catchments and will use this with other latest evidence to determine whether and how best net fishing can be operated sustainably.

In the intervening period, by continuing to reduce the drift net fishery, the difficulties associated with its operation as a mixed stock fishery will reduce over time. This approach provides protection for salmon and sea trout stocks, enhances the prospect of recovery for those stocks currently not achieving management targets and further reduces any potential impacts on protected river stocks in Scotland. Consequently, we believe that maintaining a reducing Order on the drift nets is an appropriate precautionary approach to managing the impact of the drift net fishery.

There is a fundamental issue here. It is clear that survival of salmon and sea trout during their marine migration phase has fallen over the last 40 years. Some of this reduced survival can be explained by changes in sea surface temperature and subsequent contraction of feeding grounds as demonstrated

most recently by the SALSEA programme. These issues can only be addressed by controlling atmospheric concentrations of greenhouse gases. However, a key strategy for managing the adaptation of species sensitive to climate change is to minimise additional man-induced pressures. The EA admit that the reduction of the drift net fishery will enhance the prospect of recovery for those stocks not achieving management targets. However, we see no justification for not taking such action immediately, thereby ensuring that those stocks that are at risk get the immediate benefits of protection. Given the background of reduced marine survival, we believe that it is far better to protect weaker stocks as soon as possible against the risks of the future rather than let them encounter those risks in a weakened state.

We know the T and J nets also operate as a mixed stock fishery. Therefore, we believe it is appropriate to set in place precautionary measures to prevent this fishery growing further and potentially to reduce in size by closing the fishery to new entrants whilst allowing existing licensees to continue fishing. As above, this measure will be in place while we undertake our further investigations and assessments.

4. Provisions for endorsees

The provision of limited opportunities for those endorsees with an established business relationship with a specific licensed netsman to take over their licence is an appropriate means of ensuring those participating in the fishery do not suffer unnecessary hardship.

The provision is only available to endorsees who have been endorsed on the same licence continually since 2008, and are actively engaged in fishing for their livelihood.

This is the first occasion we have sought to introduce a reducing NLO on the T and J net fishery. The controlled transfer of licences to endorsees fulfilling these requirements provides a similar opportunity to take over a licence that the arrangements for business partners of drift net licensees provided when the 1992 NLO was first confirmed.

We expect this will only apply to a limited number of endorsees, and any transfer can only be undertaken on one occasion for each licence.

The proposed NLO will ensure that there are no new entrants to the fishery. Over the five years, as licensees choose to leave the fishery, the number of licensees will reduce. We accept the limited opportunity for transfer of T and J net licences to endorsees may slow this process, but nevertheless, we feel it is an appropriate provision to ensure we manage the socio-economic impacts of protecting salmon and sea trout stocks.

5. Salmon originating in Scottish rivers

Our genetic studies confirm that around 65% of the salmon caught in the north east nets are of Scottish origin, although the specific catchments from which they originate could not be determined with confidence.

Previous tagging studies have shown that salmon from Scottish rivers taken in the north east net fisheries originate from catchments along the Scottish east coast, as far north as the Aberdeenshire Dee and in smaller numbers from more northerly catchments. These results have been confirmed by the 2011 genetic study.

In the north east net fisheries, the drift net fishery in Northumbria takes the greater number of fish returning to Scottish rivers, followed by the Northumbrian T nets. The contribution from catches of salmon in nets in Yorkshire is very small.

As you are aware, five catchments on the east coast of Scotland are designated as Special Areas of Conservation (SAC) with salmon listed as an interest feature. They are (from south to north) the rivers Tweed, Teith (tributary of the R. Forth), Tay, South Esk and Dee. We have undertaken a Habitats Regulations Assessment on these in accordance with the requirements of the Conservation of Habitats and Species Regulations 2010 to assess the impact of netting. In undertaking this assessment, we have taken account of advice and have fully consulted with both Natural England and Scottish Natural Heritage. We have also sought further technical input from CEFAS and Marine Science Scotland, including on the use of rod catch data to inform exploitation estimates.

We do not believe that these organisations have the detailed information on stock structure that the various Scottish Boards and Trusts have and which is necessary for the understanding of the impact of a seasonal fishery on seasonal stocks. Nor did any of these organisations request such information from the Boards and Trusts in making their contribution to this assessment. This assessment was therefore made without all the available evidence.

The most recent report by JNCC on the conservation status of Atlantic salmon (2007) records salmon stocks in Scottish rivers as stable. Concern regarding salmon stocks is recorded for the smaller west coast rivers, rather than the larger east coast catchments.

As we have consistently stated, the impact of the NEE fishery is not on whole stocks of the larger East coast rivers, it is on a particular component of the stocks of these rivers. The EA's analysis was cursory to say the least and not critical in any way, despite the fact we had already provided them with ideas in our submission to the informal consultation which would have improved matters. None of this appears to have been taken on board.

As salmon conservation limits have not yet been developed for Scottish rivers, the best available data published to inform estimates of the number of adult salmon spawners returning to these rivers are rod catches.

Management targets have been produced for the River Ettrick, which is one of the sources of the stock component of the Tweed exploited by the NEE fishery. These targets are, in some years, only just met and would not be so if it was not for the Catch and Release policy of the RTC for the early running stock component. There is no surplus for exploitation of this stock, whether in the river Tweed or outside of it.

We have used the total declared rod catch as an index of stock performance, recognising in our Supporting Technical Report to the Habitats Regulations Assessment the assumptions and caveats such an approach entails. We state in the report that our method provides 'a useful indication of the possible magnitude of impact'. We feel that this is an appropriate measure, given the potential for the net fishery to impact on both summer and autumn runs of salmon from SAC rivers.

No evidence is presented to show the NEE fishery affects those stock components that run outside of the NEE fishery season. The data from the 1976 & 77 MAFF tagging of fish released from the NEE drift nets clearly shows that there is a very direct connection between the time fish are caught in the nets and the time they run the river – the average period between tagging and recapture in the Tweed was only 10 days. It is wrong therefore to say that the NEE net fisheries exploit stock components outside of their

season and it is a fundamental flaw to include the catches of such fish in any analyses of the impact of that fishery.

As the best available evidence could not provide a catchment specific apportionment of salmon for SAC rivers, we believe an estimated rod exploitation rate is appropriate in developing a stock size estimate. We employed a value of 15% based on typical values as reported in the Annual Assessment of Salmon Stocks and Fisheries 2011. We note this would provide a more conservative estimate of stock size compared to the 10% value you quote for summer fish on the Tweed.

The genetic results show that the salmon originating from all of the SAC rivers are taken in the north east net fisheries. Although the genetic study undertaken in 2011 could not assign with high confidence sufficient numbers of salmon to their home catchments to allow a catchment-based apportionment of the whole catch, salmon from all SAC rivers were apportioned with high confidence. These results demonstrate that the concern that salmon from only one or two catchments are being exploited is unfounded.

We acknowledge that the catchment on which the impact of the net fishery is greatest is the river Tweed. Here rod fishery performance shows a stable trend (see appendix for further discussion), suggesting stock levels are stable. In light of this stable trend and recent increase in salmon rod catch, it can be concluded that there is currently no significant adverse impact on salmon stocks in this catchment from the north east net fisheries, either alone or in combination with other impacts. We accept that the operation of the net fishery will have an impact on the number of adult salmon returning to the catchment, and also on rod fishery performance in the Tweed, but we can find no evidence that there is any significant adverse impact on the conservation status of any part of the Tweed's salmon population.

The EA analysis did not look at effects on different Tweed components, only on annual catch totals, so it is unclear on what basis this statement is made.

The information from radio-tracking on the Tweed clearly shows that the stock components exploited by the NEE fishery come from a limited area of the Tweed catchment, not from the whole. The EA analyses were made without such information, and the response by the EA has not taken any account of evidence relating to this issue which was presented by the RTC.

If the EA accept there is an impact on Scottish East coast fisheries, then this suggests that the NEE fishery should pay towards the management of these fisheries: DSFBs derive their income from the component fisheries and their ability to manage the resource is compromised by the reduction in its revenue due to the impact of the NEE fisheries. The EA should charge a realistic amount of for the netting licences and 65% of this should be provided to the Scottish Boards.

Those SAC rivers designated for salmon which are more distant from the north east net fisheries are believed to be exploited to a lesser extent, depending on distance from the fisheries. The levels of exploitation of salmon from these catchments by north east nets are very low. Rod catches in these catchments are stable or improving. It can therefore be concluded that the north east net fisheries are not exerting a significant adverse impact on salmon stocks, either alone or in combination, in these catchments.

The only salmon river on the Scottish east coast not designated as an SAC which is exploited by the north east net fisheries to any degree is the North Esk. Given its distant position in relation to the north east nets, we can expect that any impact is not significant. This is confirmed by the strong performance of the North Esk declared rod catch for salmon in recent years, which shows an increasing trend.

We recognise it would be prudent not to allow any increase in netting activity to ensure salmon stocks retain existing levels of protection. Whilst there is no immediate necessity to reduce exploitation below current levels based on this assessment, further reductions in exploitation would provide greater protection for these stocks. This would be supported by the intended phased reduction in drift nets and any accompanying reduction of T and J net licences.

As stated above, if “greater protection” is useful for the future, why not take such action immediately? The sooner it is done, the less likely damage is to occur. It appears that the EA are content to wait for damage to happen before taking action, and we believe that this is contrary to UK Government policy.

Should the performance of salmon stocks in these rivers cause concern at any point in the future, other regulatory mechanisms, including byelaws, can be utilised to modify fishing effort.

By completing the necessary Habitats Regulations Assessment, and considering impacts on the North Esk, in addition to a comprehensive assessment of impacts on more local salmon and sea trout stocks, we have appropriately assessed any impact of the north east net fisheries on all catchments where an effect is likely, including those rivers designated as SAC's where salmon are listed as an interest feature.

We do not accept that an appropriate HRA has been completed, because the EA have not taken account of the structuring of salmon stocks nor of the fact that the NEE impacts on some stock components more than others. All available evidence should be used for Habitat Regulations Assessments, but significant evidence has been ignored, as outlined above. This evidence clearly shows, for example, that the Tweed Autumn rod catches are irrelevant to any assessment of the NEE fishery on Tweed Summer stocks. In addition, the rod catch records for the Scottish East coast rivers are available on a monthly basis, but this information has not been used, even to exclude the catches made each year before the NEE fisheries open.

6. Provision to limit salmon and sea trout catches

As you will understand, a net limitation order specifically addresses the number of licences allocated in the fishery and is not the regulatory tool to apply catch limits.

Although we have experienced a significant increase in reported catches in 2010 and 2011 (from both net and rod fisheries), we have no evidence that this has been detrimental to the ongoing maintenance and improvement of stocks.

We believe that existing fishing controls alongside the measures proposed in the new NLO provide the appropriate level of regulation. We will keep this under review as we undertake our further assessments and research in the next five years. From this research, we aim to gain a better understanding of the nature of exploitation of the different river stocks, something that would be necessary to inform any catch limits, if we chose to apply them.

Evidence indicates the north east net fisheries operate exclusively on salmon and sea trout from catchments along the eastern coast of Britain. These catchments are either meeting their conservation limits for salmon, where such have been developed, or are improving. We have applied an appropriate precautionary approach to managing the north east nets, and will undertake an early review, informed by further research.

See comments above. We do not believe that the precautionary approach has been adopted, nor do we accept that the assessment was robust enough to determine whether individual stock components are meeting conservation objectives.

7. End point of the fishery

Under the proposed NLO, all netmen will surrender their licences when they retire. Based on current rates of retirement, licensed netting will cease within the next 20-30 years. This is consistent with the predicted levels of effort reduction anticipated in the 1992 NLO, and allows individuals and communities time to adapt to the social and economic impacts of reducing the fishery.

I can confirm that the licensee must be in attendance at the net at all times when it is fishing, and a net cannot be worked by an endorsee or other person except in assisting the licence holder. These provisions may be waived in the event of the illness or death of a licensee, but only for the current fishing season.

We believe we are following the advice given by NASCO on the management of homewater mixed stock fisheries (as set out in section 2 above) in our approach to this NLO review and that we have made the case that the component management units in the north east mixed stock fishery are well on the way to meeting, or are already exceeding, management objectives. Hence we believe that our approach to managing regulation through a reducing NLO is the appropriate level of response.

Speeding up this process will make it increasingly difficult for local communities to adapt to the change, and create undue and unnecessary hardship for netmen and their communities.

This statement gives the impression that there is significant infrastructure and supply chains within local communities which are dependent on these 14 drift net licences. No evidence is presented to substantiate such a claim and we believe that this claim is overstated.

Without compelling conservation grounds, we believe further acceleration of the closure of the fishery is unwarranted. Therefore, we are not proposing any additional measures at this stage to accelerate reduced fishing by nets.

It would be possible to accelerate the operation of a reducing NLO in both the drift and T and J net fisheries by introducing a buy-out. However, public funding would be unlikely to be made available to contribute to a buy-out of nets from either the drift or T and J net fisheries in the absence of an urgent conservation case. Therefore such funding would need to be provided from private sources, reflecting the benefits from a reduction in net fishing to riparian interests and other private beneficiaries.

8. Potential to increase fishing effort

The T and J net fishery has seen an increase in the number of licensees since the drift net buyout, rising from 30 in 2002 to 61 in 2011. There has also been a corresponding increase in fishing effort, from 1049 days in 2002 to 2143 days in 2011. The average effort per T net licence in Northumbria increased from 21 days in 2007 to 34 days in 2011, and for J nets in Yorkshire from 27 days to 38 days over the same period. Effort in the fishery is variable, with some netmen issued with a licence not fishing at all, and others on very few occasions. Adverse weather conditions in 2012 have significantly reduced the effort expended in the fishery this year.

Whilst there is potential scope for T and J nets licensees to increase the proportion of available fishing effort they utilise, operational and commercial practicalities make a further substantial increase unlikely, particularly on those occasions where the return is seen as marginal. This, together with a reduction of 6 licences in District 5 and the reducing NLO introduced on the T and J net fishery will serve to restrict fishing effort.

We do not understand the basis for this comment. The EA states quite clearly that the number of licenses and effort have increased and that there is potential scope for T and J nets to increase the proportion of available fishing effort.

9. Options appraisal

We believe our proposal provides the most appropriate management option for the fishery. The preferred option prevents any new entrants to either the drift net or the T and J net fishery, and introduces a reducing NLO on all nets in the north east. This will see licences reduce steadily over time. The rate of reduction in drift net licences is consistent with that forecast previously, and T and J net licences may also reduce.

Although the NLO will be made for a period not exceeding ten years, we have committed to a formal review after five years. Over this time, we will secure further evidence to inform future sustainable management of a net fishery. This five year review period presents an opportunity to re-assess the impacts of netting on salmon and sea trout stocks informed by new evidence, and make any changes deemed necessary. At that time we expect to better understand the impact of nets on individual river catchments, which will allow us to manage a net fishery from a more informed position. Until then, we believe it is an appropriate precautionary measure to close the fisheries to new entrants, but allow existing netsmen to continue fishing.

However, as stated above, the EA have not taken account of the full range of evidence on stock structuring in individual river catchments that is already available (and has been so for more than a dozen years in the case of the Tweed). The present assessment is fundamentally flawed and must take into account the full range of evidence on a river by river and stock by stock basis.

10. International good practice

The Greenland and Faroe Island authorities have agreed not to operate their high seas mixed stock fisheries for commercial purposes for a further three years based on the advice from ICES and as regulated by NASCO. This advice reflects the principle that their fisheries need to have component river stocks at full reproductive capacity and be simultaneously meeting or exceeding the management objectives of their large component management units.

We expect that both authorities look forward to the day that they can operate their commercial fisheries again and look to other countries to follow the NASCO principles in order to achieve that.

This again seems to indicate that the EA has no intention of phasing out even the Drift nets, despite the fact that this appears to be contrary to UK Government Policy. We would again emphasise that this is extremely disappointing from a Scottish perspective as these fisheries are dependent on catches of fish produced outside of the EA's jurisdiction.

As outlined in section 7 above, we believe we are following the advice given by NASCO on the management of homewater mixed stock fisheries (as set out in section 2 above) in our approach to this NLO review and that we have made the case that the component management units in the NE mixed stock fishery are well on the way to meeting, or are already exceeding, management objectives. Hence we believe that our approach to managing regulation through a reducing NLO is the appropriate level of response.

I hope that this letter has addressed the points you raise. As above, the attached appendix offers a response to the detailed comments you have made on the supporting technical report for the Habitats Regulations Assessment.

Thank you for your contribution to the NLO review, both during the informal consultation and in response to the formal advertisement of the proposed NLO.

If, having considered my response and having heard any further exchanges on the proposed Order, you decide that you are able to withdraw your objection to its confirmation, I will be grateful if you could write to let me know before the end of August 2012.

Habitats Regulations Assessment

Supplementary technical report - Response to River Tweed Commission comments

I have set out below our response to the detailed feedback you provided on the above report.

Genetic studies we commissioned in 2011 provided apportionment of salmon taken in the net fisheries to either English or Scottish catchment groups with high confidence, but not at a catchment level. In the absence of direct assessment of the contribution of stocks originating from each catchment, it was necessary to make an assessment of the impact on salmon from SAC rivers by other means, using the methods and assumptions clearly stated in the report.

We reviewed historic exploitation estimates, and made a current estimate based on an estimation of stock size generated from exploitation rate and declared rod catch. This provided an estimate of total run size for each catchment.

This takes no account of the fact that the NEE fishery, simply due to its season, does not affect all the stock components of the Tweed (see Annex 1).

We have adopted total declared rod catch as a measure of stock performance as it provides a useful index of returning run size. We accept that the net fishery does not exploit spring salmon. In that this more vulnerable component of the stock is not affected by the net fishery, and we have introduced byelaws to protect early running salmon, this provides greater confidence that the net fishery gives rise to no significant adverse impact. The relatively small contribution of spring salmon to the total run, and hence declared rod catch means that the inclusion of this component of the run does not affect the conclusions of the assessment.

Then why not exclude Spring salmon catch totals from the assessment? It is relatively simple to do this. While spring salmon may make up a very small proportion of the catch in NE England, that is not necessarily the case in Scotland. Of the total annual average rod catch over the period 2004 – 2010, 20% of the Tay district catch was taken before the end of June. In the Dee district it was 43%, and that includes the recent two week October extension. For the North Esk fish counter it was 28% of the total annual count. For the Tweed, the proportion taken before the end of June is 13% - but the season there is

much longer than in the other rivers, going on to the end of November. In addition, some Scottish rivers continue fishing well after the summer ends. By October and November, which are both fished on the Tweed, the impact of fish saved from the drift nets would most likely also be reduced. There is, therefore, no justification, in a Scottish context, at least, for considering all season catches.

We acknowledge that the impact of the north east nets will diminish with increasing distance from the fishery, and that the impact is greatest on the Tweed catchment.

As the net fishery operates until 31 August, and considering the distance to some of the catchments from the fishery, we feel it likely that fish from the autumn run of all rivers are exploited in the nets to some degree. Therefore, we feel it is appropriate that the assessment is not simply based on summer catches. This may be more pronounced for the more northerly rivers contributing to the net fishery, given the greater distance fish must migrate before reaching their home catchment.

See above for why this is not the case.

Based on the best available evidence, and given the assumptions we have made in our calculation, we feel use of the declared rod catch for the whole year is valid in generating an estimate of exploitation based on assumed exploitation and run size.

“Feelings” have no place in a scientific assessment. Justification should be provided with facts.

We recognise that difference in stock characteristics exist between catchments, as you set out in points 8 and 9. However, given the absence of catchment specific allocation of salmon of Scottish origin for the north east net catch, we do not consider it appropriate to try to use catchment specific values in assessing specific exploitation rates. Rather, our assessment is intended to produce an indicative level of exploitation for salmon from Scottish rivers to provide a context for our estimate of numbers of salmon of Scottish origin captured.

This ignores (a) differences in stock strengths between rivers and (b) differences in stock strengths within rivers. It is vital that the assessment of the impact of such a large fishery is robust, in order to ensure that false conclusions are not reached. A method using only existing data by which assessments can be made of whether individual stocks are at risk from the NEE is outlined at the start of this paper, so the absence of catchment specific allocation of Scottish origin salmon is not actually a problem.

As we previously pointed out it is meaningless to have estimated a single exploitation rate figure for the whole east coast of Scotland combined. To “conclude that the overall exploitation rate is low, and that there is no significant adverse impact on the conservation status of salmon stocks” is totally inappropriate and misleading given even the EA accept the level of exploitation is not constant across the rivers.

On the basis of comments received under this heading, it appears that the EA have ignored perfectly sound advice and would seem to wish to defend a position which, intentionally or otherwise, seems to present the drift net fishery in the best possible light.

With regard to SAC site condition assessment, we approached SNH to obtain the updated condition assessments, which were expected to be available towards the end of 2011. Unfortunately, these could not be provided, and I understand are still not available. The previous assessments, from 2004, were included in our assessment, but given they were undertaken seven years ago, we feel declared rod catches better represent the recent trends in performance of salmon stocks in the SAC catchments.

We do not assume that all salmon are a single stock, as you state in point 12, and are aware of the body of genetic studies that have been undertaken over the last decades. For the reasons above, we have used the total declared rod catch to provide an indication of stocks size and hence exploitation rates in the net fishery. We have worked with Marine Science Scotland to utilise genetic techniques to inform our decision making in this NLO review, which has significantly contributed to the body of knowledge and understanding in this area.

a) Taking total annual catches, not broken down even by season, does not give any indication of the relative strengths of the different stock components that contribute to the total annual catch. This statement is quite illogical. If they do not assume all salmon are a single stock, then it is inconsistent to use total annual catches. A single catch total can in no way provide evidence on the strength of the different stocks making up that single catch total.

b) The radio-tracking evidence presented in the previous response by the RTC clearly shows that different run timing stocks come from different parts of the Tweed catchment (and similar evidence is available for some other Scottish and English rivers (e.g. the Cumbrian Eden)) and therefore that using total annual rod catches is not an appropriate way to measure the strength of the individual stock components which are differentially affected by the NEE fisheries.

We will continue to improve our understanding of patterns of exploitation in the net fishery through commissioning further genetic research, including the use of Single Nucleotide Polymorphism (SNPs) technique to apportion the catch in the net fishery on a catchment basis.

We anticipate this work will provide valuable insight into the operation of the north east net fishery, as well as providing useful information to inform the management of salmon stocks. This might include investigations into the genetic components of run timing and sub-populations within catchments, as you detail for the Tweed in points 12 – 16. There may be advantage in, and we will be happy to consider, extending these researches and collaborating to embrace all of the salmon rivers and fisheries on either side of the England/Scotland border.

This already exists for the Tweed in the form of the radio tracking results for 1994-96, it does not require genetic investigations. Neither does it require genetic analysis to define the different seasonal stocks of salmon. Scale reading (see 6c in Annex 1, below) has been able to do this for the last hundred years or so.

As stated in point five of my letter above, we accept that the operation of the net fishery will have an impact on the number of adult salmon returning to the catchment, and also on rod fishery performance in the Tweed, and that these effects are most pronounced on summer and early running autumn fish. However, we can find no evidence that there is any significant adverse impact on the conservation status of any part of the Tweed's salmon population.

The performance of Tweed salmon rod catches you illustrate in the graph accompanying point 17 shows a clear improvement in rod catches between 1980 and 2010. As you observe, there is a marked improvement since 2003, co-incident with the reduction in fishing effort brought about by the drift net buyout.

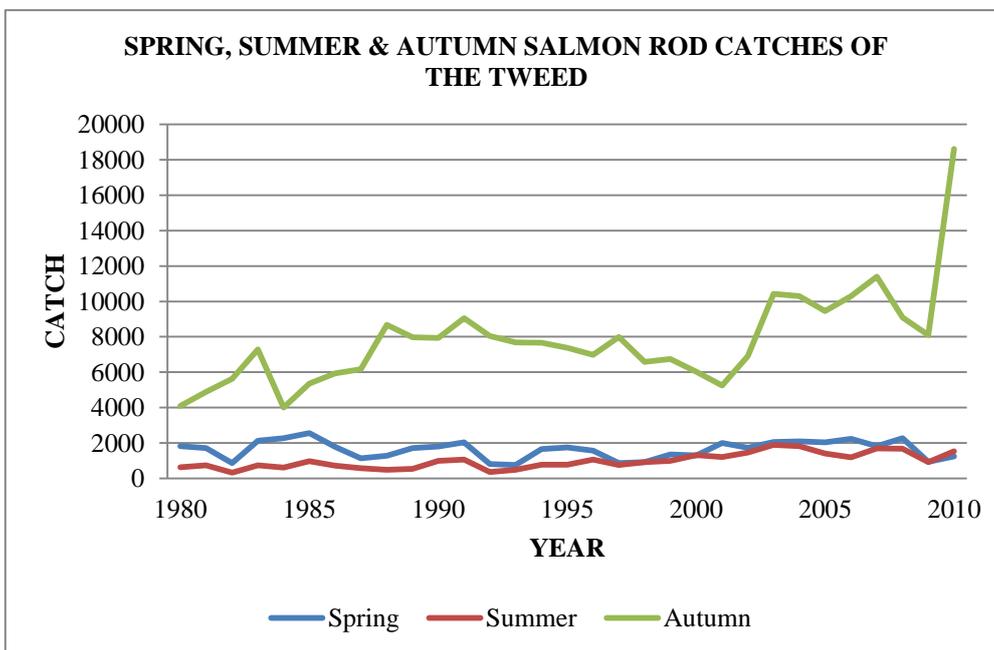
This upward trend in rod catches suggests that a greater number of salmon are returning to the Tweed in the summer. As this is the stock component that is most strongly affected by the north east net fishery, we believe this trend provides evidence that the fishery is not currently exerting a significant adverse effect on Tweed stocks.

Given that the EA accept that one particular stock component is more affected than others, we do not understand the justification for using total annual rod catches as a measure of impact. Our fundamental objection is the underlying basis of the assessment, which ignores stock structuring. On that basis we cannot accept the assessment in its present form.

Our proposed confirmation of the reducing NLO on drift nets, and introduction of a reducing NLO on T and J nets will serve to further reduce any impact.

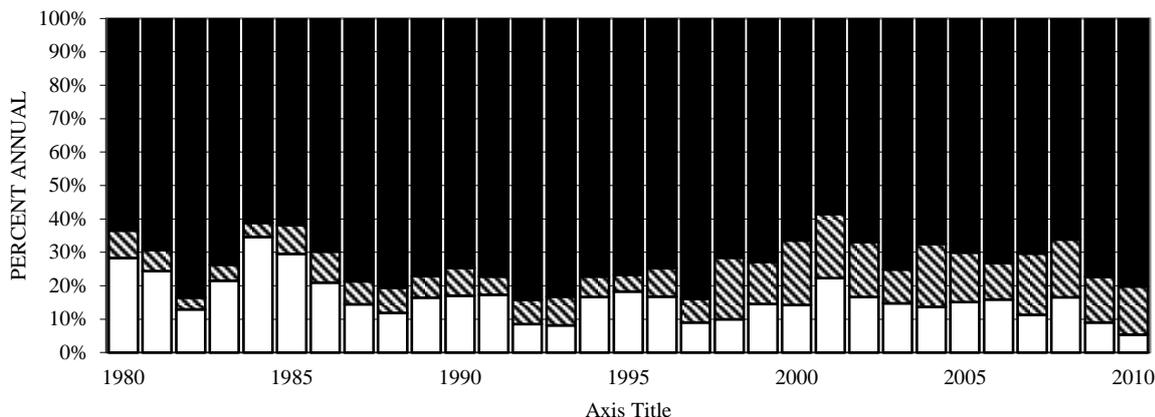
Annex 1. The context for the Salmon management of the River Tweed

1. The Tweed has a ten-month, salmon fishing season which is longer than most other Scottish and English Salmon rivers. This is based on the fact that it has a continuous series of runs of fresh salmon through the year. To maintain this long season it is essential to maintain each of the different run-timing stocks so management is therefore on a stock-by-stock basis in which each stock is assessed for its strength and whether it is in need of support. This is why there is total catch & release for the Spring salmon run but not for the Autumn run, the latter being a very numerous stock and the former a very limited one as shown by both catch records and other data.
2. While this management format is aimed at maintaining the long fishing season, it also effectively supports the wildlife conservation of the salmon of the Tweed as to be effective this needs all the different populations to be maintained.
3. In such a multi-stock system, it is not possible to gauge the strength of all the different stocks from a single, combined, measure such as total annual rod catch. By its nature, such a measure reflects the bigger stocks not the smaller ones whose catches are effectively disguised by being submerged in them. This is obvious from the graph below which shows the Spring, Summer and Autumn rod catches of the Tweed separately – the annual catches effectively come from the Autumn, the Spring and Summer catches are almost irrelevant to the annual totals. In terms of the ten month fishing season and of the conservation of the different stocks in the river however, the Spring and Summer stocks are critical, which is why both the management and any assessment of the salmon of the Tweed has to be on a stock by stock basis. This is why the SAC assessment includes analyses on a Spring, Summer and Autumn basis and all assessments should use at least these seasonal divisions.



In percentage terms Spring and Summer catches combined come to only 20-30% of the annual catch total:

PERCENT CONTRIBUTION OF SPRING, SUMMER AND AUTUMN TO THE ANNUAL ROD CATCH TOTALS OF SALMON ON THE TWEED



□ Spring (1st Feb 31st May) ▨ Summer (1st Jun 31st Aug) ■ Autumn (1st Sep to 30th Nov)

4. To gauge the strength of the Spring salmon stocks of the Tweed by using the total annual rod catch which is dominated by the Autumn months would be self-evidently absurd – yet this is what this report does for the Summer stocks of the Tweed!
5. This point also applies equally to the English source rivers of the NEE fishery. They too will have a number of different runs / stocks, but if the only measure used for their assessment is their total annual catch, then the status of their smaller stocks will be disguised by the strength of the larger stocks. If the conservation targets for these rivers are being “met” by the estimated egg deposition of the bigger stocks alone, then there is in fact no assessment being made of the state of the smaller and more vulnerable, stocks, whether exploited by the NEE fisheries or not. Any conclusion drawn from such analyses that these rivers are in healthy state is therefore false as no assessment has in fact been made of the smaller, earlier, stocks and to be in a healthy state, **all** the component stocks of a river have to be healthy not just some.
6. While the EA report admits that Spring salmon do not contribute to the NEE fisheries there is an assumption that the Summer fish exploited by the NEE fisheries in June, July and August contribute so significantly to the main rod catches of the Tweed in September, October and November that their strength or weakness is reflected in the overall catches for the whole year. That this assumption is false for the June and July fish is shown by:
 - a) The evidence from the 1976/ 1977 tagging of fish taken from the drift & coastal nets (data from E. Potter, *pers comm*). This shows that there is only a short period between the fish leaving the NEE fishery area and their arrival in the Tweed.

DAYS FROM TAGGING TO RECAPTURE IN THE TWEED

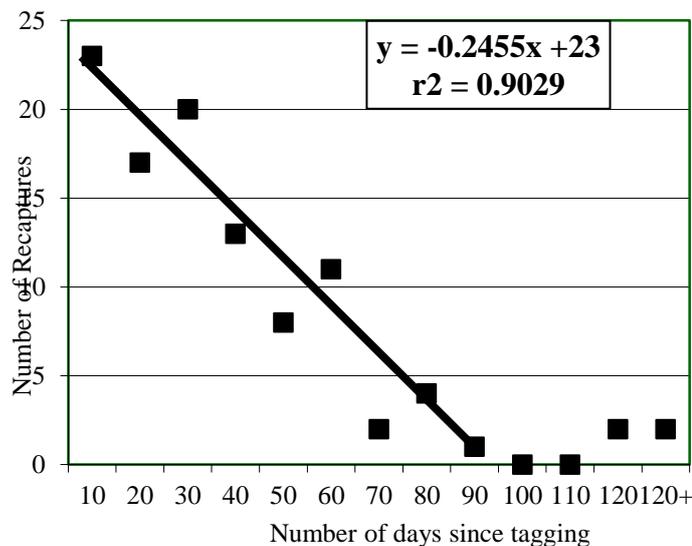
| Tag location | Capture method | Av. Days elapsed |
|--------------|----------------|------------------|
| Amble | Drift nets | 9.50 |
| | T-Net | 12.71 |
| | Unspecified | 11.50 |
| Blyth | Drift nets | 10.59 |
| Seahouses | Drift nets | 5.52 |
| Sunderland | Drift nets | 11.33 |

| | | |
|-----------------|------------|-------|
| Whitby | Drift nets | 11.46 |
| OVERALL | | 10.01 |
| Drift nets only | | 9.71 |

The June and July fish exploited by the NEE nets are therefore entering the Tweed directly, not waiting around at sea to run the river in September, October and November. While only four of these tagged fish were caught by rods rather than by nets, they were caught after 9, 10, 30 and 50 days after being tagged, again showing the fish are entering the river directly and not waiting till Autumn to do so.

The EA should repeat this tagging work from 1976 / 77 to test their assertion that the NEE fisheries catch the same salmon that make up the large Autumn catches in the Tweed: the 1970s work shows that this assertion is unfounded. Either they accept this 1970s evidence and withdraw this assertion or withdraw it until they have repeated the work and found that it is no longer accurate.

b) There is a limited window of catchability by rods after fish enter the river as shown by the data on how long after tagging in the lower river or estuary fish are recaptured by anglers upriver: 60% are caught within a month of tagging, 90% within two. June and July fish therefore make no significant contribution to the Autumn rod catches.



Salmon that are in the NEE fishery area in August will contribute to the main, Autumn, rod catches in September and to a lesser degree in October, but will make no significant contribution to the November catches.

c) Further evidence that the fish caught in Autumn in the Tweed belong to different stocks from those caught in Summer (and in the NEE fisheries) comes from the readings of scales systematically collected (the catches of two tides per week) at the Gardo netting station in the Tweed estuary. The different run-types of salmon are formally defined by the growth type found at the edge of their scales:

- Spring salmon have a full Winter (closed) growth band at the edge of their scales indicating that they stopped feeding and started their migration during Winter.
- Summer salmon & Grilse have a Summer (open) growth at the edge of their scales, showing they stopped feeding and started migrating during Summer
- Autumn salmon & Grilse have some Winter (closed) growth at the edge of their scales, showing that they stopped feeding and started migration as their growth slowed with the approach of the coming Winter.

| GARDO NETS | <u>June</u> | <u>July</u> | <u>August</u> | <u>September</u> |
|---------------|-------------|-------------|---------------|------------------|
| Spring Salmon | 30.00% | 1.50% | 0.00% | 0.00% |
| Summer Grilse | 15.00% | 37.59% | 58.82% | 40.35% |
| Summer | | | | |
| Salmon | 55.00% | 44.36% | 20.00% | 14.04% |
| Autumn Grilse | 0.00% | 5.26% | 9.41% | 29.82% |
| Autumn | | | | |
| Salmon | 0.00% | 11.28% | 11.76% | 15.79% |
| TOTAL | 100.00% | 100.00% | 100.00% | 100.00% |

N=627, 2007-2011

Sources of error in reading: (a) "Droppers Down": fish that have been upriver but have dropped down back in to the estuary (b) Growth "checks" on the edge of scales can look like "closing " growth and cause a Summer fish to be misclassified as an Autumn one.

These results show clearly that:

- Some Spring salmon are still coming in to the river in early June. This is why the RTC operates a Catch & Release policy for its river nets until the 15th of June – however, such fish will be killed in the NEE fishery in early June, showing that contrary to the statements made in the report, Spring salmon are exploited by this fishery.
- The changeover to Autumn stocks does not occur till September, after the NEE fisheries close. They are therefore exploiting only Summer fish and the rod catches of Autumn fish should not be included in any analyses of their impact on the Tweed.
- The EA should systematically collect scales from the NEE fishery so it can be seen if their assertion that this fishery exploits Autumn stocks (for which no evidence has yet been produced) is correct.

- As said above, however, the main concern of both salmon management and conservation for the Tweed is that all the different stocks are in good conditions, the smaller ones as well as the larger. That the June and July fish are in smaller numbers than the August fish is shown by the catches of the NEE nets themselves: from 2000 to 2010 the North Northumberland drift nets averaged 1634 fish (19% of their seasonal total) in June; 3645 fish (31%) in July and 4570 fish (50%) in August.
- Any assessment of the impact of the NEE fisheries on their source stocks must therefore be more concerned with the smaller, and therefore more vulnerable, June and July runs than with the larger and therefore stronger, August runs – but such assessments cannot be made using annual rod catch totals for even single rivers, let alone five grouped together.

Annex 2: Specific comments relating to the Tay DSFB submission relating to the River Tyne

Tyne Spawning target compliance

Our submission argued that, based on the EA's own evidence from the Tyne, the number of spawners used in spawning target compliance was too high.

However, we note from the EA's comments and accept that the EA had recently taken account of fish counter evidence and that the Tyne egg deposition has been revised downwards. We also note that even with such an estimate, the Tyne is still considered by the EA to be above its conservation limit. Tyne rod exploitation rates are now considered to be around 25% instead of the 16% originally used in the Tyne Salmon Action Plan (SAP).

However, we consider that a conservation limit of 11.24 million eggs is woefully inadequate for a river of the size of the Tyne. Assuming 5000 eggs per female, that equates to 2248 female spawners, a level so low that would raise very serious alarm on any river of equivalent size in Scotland. Even twice as many spawners may well be far too low.

Leaving aside the much larger issue that the fundamental methodology for estimating conservation limits may be seriously flawed, it was pointed out in our original submission that the Tyne SAP Review had shown that, even using the accepted methodology, the Tyne conservation limit may have been underestimated. This point has not been answered directly.

Can it be assumed, therefore, that the comment "it may be that the spawning target for the Tyne catchment is revised in the future in light of improved understanding" is an admission that the spawning target may in fact be wrong?

If so, should the EA not take appropriate precautions when making decisions? e.g. to assume that the spawning target is too low unless better information proves otherwise, rather than the other way round?

The EA also made the point that the Tyne has the highest rod catches in England and Wales, and has improved in spite of the drift net fishery. However, that does not necessarily mean it is achieving its full potential. Again, a such a comment would appear be a diversion.

The question of the adequacy of the Tyne Spawning Target is considered again below.

Tyne Electric Fishing data

In our response, it was pointed out that Tyne electrofishing data presented by the EA in the FAR, which also supported the conclusion that the Tyne now exceeds its spawning target, was in fact not representative enough to support such a conclusion.

The comments received did not consider that point directly, but they do seem to acknowledge that suitable data do not exist. For example, the EA stated that the monitoring programme "has not been designed to directly answer the questions posed by the NLO review" (which is surprising given these occur every ten years?). "We accept that our electric fishing data were of limited benefit when attempting to assess catchment scale changes in returning adult salmonids and subsequent spawning activity. However, it must be recognised that the juvenile salmonid monitoring programme was established to investigate the degree and extent of spawning at specific sites across each catchment, rather than to provide an index of adult run size."

Again, as in the case of catch trends, if the data are not appropriate for assessing the degree of catchment utilisation over time, why present it? Why not say there are no data?

We also highlighted the fact that the Tyne SAP Review had shown that wider electrofishing data indicated that the Tyne salmon population was underperforming relative to predictions from the HABSCORE model.

Again, it appears the EA have been selective in their response to this issue.

“We are aware of the comments in the Tyne SAP report relating to the prevalence of ‘F’ grade sites. However, there are a number of issues, including access to migratory fish which may influence these results.”

However, this issue had in fact been considered. The Tyne SAP Review actually stated that “the data were edited by removing all sites that were inaccessible to salmon due to physical barriers, leaving 137 sites. The overall mean HUI values were 0.75 and 0.66 for 0+ and > 0+ salmon respectively, suggesting that across the catchment the juvenile abundance was slightly below carrying capacity.”¹

We note, however, that the EA’s comments go on to say that “review of the observed utilisation of available habitat, as informed by HABSCORE assessment results may inform any future revision to the Tyne’s Conservation Limit, as discussed in the section above.”

A further admission that the Spawning Target may be wrong?

Tyne Smolt estimates

In our original submission we pointed out that the Tyne SAP Review had shown that Tyne smolt estimates did not accord with the estimated level of egg deposition / adult return to the river and that this was yet another strand of evidence that pointed to potential errors in the primary salmon stock assessment method on the Tyne.

The EA’s response suggests we should have regard to potential errors in these smolt estimates. This is accepted, as this is normally the case with any salmon data. The point, of course, being that the same should apply to conservation limits, egg deposition estimates etc.

Tyne Microtagging data

In our submission, some revised estimates of drift net exploitation rates were made by applying revised parameters to old data. The point of the exercise was principally to show that there was a lot of uncertainty in the assumptions used, but that the various revisions indicated that exploitation rates in the past may have been even higher than originally thought. The fact that the EA now consider that Tyne rod exploitation rates are relatively high also means that even current drift net exploitation will be higher than may be generally imagined.

However, in their response, the EA seem to imply that we were considering microtagging data to assess rod exploitation rates, which was not the case.

The EA’s comments on this section of our submission were, therefore, largely irrelevant.

¹ Note – In the FAR, the EA also considered long term electrofishing data from only four sites on the River Wear, which were again not all fished in every year. No difference in salmon densities was reported before and after the drift net buyout. However, the River Wear SAP Review performed a HABSCORE analysis on a much wider electrofishing data set that revealed a Habitat Utilisation Index for 0+ salmon of only 0.29 and for salmon parr 0.4, indicating that the River Wear is well below its carrying capacity. The Tees SAP Review shows that river to be even worse. However, the River Coquet SAP Review showed that, for sites accessible to salmon, the average HUI for 0+ salmon was 2.08 and for parr 1.2. The HUIs of these rivers seem to accord with predicted rod catches on these rivers for fully recovered populations as shown by the graph on the following page. It is, however, concerning that a model that is supposed to make predictions based on pristine reference sites (HABSCORE), can under-predict salmon densities by half, as in the case of salmon fry in the Coquet. This backs up a point made in our original submission that the reference sites used for HABSCORE are not appropriate for predicting salmon densities in productive northern salmon rivers. If that is the case, then the Tyne and Wear HUI scores should be even lower.

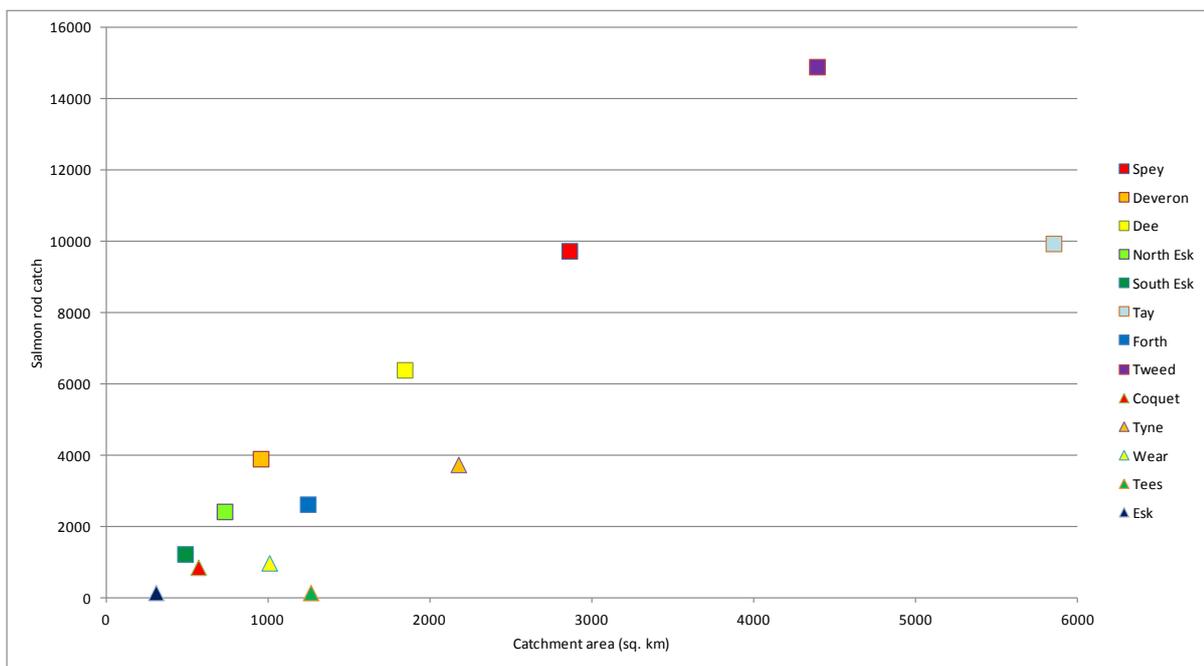
Summary of Tyne Issues

The common theme running through these Tyne issues is that the EA appear to have evaded criticism of their central methodologies but have been keen to point out errors where data suggest their central conclusions may be wrong. Of course, we are not criticising these methodologies *per se*, because we recognise that errors and shortcomings are a reality in salmon stock assessments everywhere. But what we do say is that fisheries management decisions must take account of these shortcomings in a precautionary way.

The EA’s comments have not dissuaded us from the view that the actual fisheries data available do not support a definite conclusion that the Tyne salmon population has fully recovered, irrespective of the spawning target model. For the EA then to point out that the Tyne has at least made a considerable way along this recovery seems to be missing the point.

By way of a practical example, we did refer in our submission to an interesting analysis in the Tyne SAP Review, whereby the Tyne rod catch was compared with other rivers according to catchment area. Our comments were not referred to by the EA. A similar analysis is now shown below.

The figure below presents the average salmon rod catch over the period 2004 – 2010 for the east coast salmon fishery districts considered in the FAR, plus the River Deveron, plotted against the catchment area upstream of the lowest river gauging station. While it is accepted that there will be some error in that gauging stations are not all located at the same distance above the tidal limit, this was the most readily available source of catchment area data.



Plot of average annual salmon rod catch (2004 – 2010) for rivers in eastern England and eastern Scotland versus river catchment area. (Note – Forth district catchment area does not include some of the smaller catchments. Tay catchment also includes rivers Earn and Eden)

It is interesting to note that almost all of the Scottish rivers, with the exception of the Forth and Tay, fall closely along a line. That the Forth and Tay do not fit this pattern is perhaps not surprising. Both catchments have significant areas that are inaccessible to salmon due for both natural and man-made reasons. This is particularly true of the Tay. They are also the only two catchments considered that have

large natural stillwaters which further reduce salmon production capacity. However, most of the English rivers fall well below the line. The Tees, in particular, falls far below. The Tyne is also well below.

Another point to consider, which we raised in our original submission, is that any differences in the exploitation rate between rivers will also have a bearing on this relationship. A relatively high exploitation rate will increase the apparent production of the river and vice versa.

As has previously been pointed out, the Tyne salmon exploitation rate over this period has been estimated to be 25%. This might be a relatively high exploitation rate.

For example, if it is assumed that the entire North Esk annual rod catch as presented in the FAR over the period 2004 – 2010 crossed the fish counter on that river (in practice this will not be the case as approximately one third of the total North Esk rod catch is taken below the counter and a proportion of those fish will be retained by anglers), the average exploitation rate would have been 17.4%.

While the total number of salmon entering the Tay is unknown, what is known is that over the period 2004 – 2010, an annual average of nearly 14,000 salmon were counted up only two tributaries, the Erich and the Tummel. Extrapolating from these, it would seem unlikely that exploitation rates in the Tay are as high as 25%. Indeed, given the large size of the river, we suspect exploitation rates on the Tay are perhaps lower than the Scottish average.

The Tweed Foundation have also estimated autumn angling exploitation rates by mark recapture for some years and have found this to be less than 10%.

That the Tyne should have higher exploitation rates is maybe not surprising.

Fishing takes place through the full week, whereas no salmon fishing is permitted in Scotland on a Sunday. The Tyne also has a longer autumn season than some of the Scottish rivers, though not the Tweed. We also understand that a greater proportion of the Tyne is fished by angling clubs and syndicates than may be the case in the Scottish rivers. It is our observation that skilled regular local anglers can often be more effective than visitors and tend to fish longer hours. Most major beats on the Tay, for example, only fish from 9am to 5pm with a lunch break, while club waters can be fished from daybreak to sunset. It is also understood that a greater range of angling methods might be deployed on the Tyne. On the Tweed, for example, only fly fishing is allowed after 15 September which must significantly reduce chances in higher water.

Thus, the figure above may paint a particularly optimistic comparison between the Tyne and east coast Scottish rivers.

It is very obvious to us that this whole situation requires a fresh and independent analysis.