Association of Salmon Fishery Boards

Mixed Stock Fisheries
May 2011

Summary

- Mixed Stock Fisheries (MSFs) are fisheries that exploit a significant number of salmon from two or more river stocks. Without knowing how many fish come from which rivers it is not possible to know the impact of the catch on individual catchments and therefore MSFs are considered by all interested northern hemisphere countries to present particular difficulties for management and species conservation.
- DSFBs will seek the closure of any Scottish coastal mixed stock fisheries during any period that the Stock Assessment Tool promoted by Marine Scotland indicates that management action to protect spring stocks should be considered.
- ASFB recognises the case for fair compensation for netting interests in these circumstances and such compensation should be negotiated on a case by case basis.
- A compulsory carcass tagging scheme should be introduced with immediate effect. Any person found in possession of an untagged fish taken, other than by rod and line, would be guilty of an offence.
- In the specific case of the West Highlands and Islands, the discrepancy between the number of salmon taken by the net fishery and the total number of returns to all rivers in the area is such that Salmon Conservation Regulations should be used to close all the area's remaining mixed stock fisheries including Cuil Bay.
- In the longer term, ASFB maintains that all mixed stock fisheries should be actively decommissioned using regulatory mechanisms where voluntary ones prove to be unsuccessful, consistent with the precautionary principle as agreed by NASCO and its contracting parties.
- ASFB believe that, as long as mixed stock fisheries are in operation, it is essential that the burden of conservation measures is allocated fairly between the rod and net fisheries. In the longer term, consideration should be given to adopting a system which reflects the exploitation of the stock rather than simply the use of the resource.
- ASFB recognise the potential of GSI and agree that the Scottish Government should make certain that the powers are available to ensure that fish genetic samples can be produced where necessary from any salmon fishery. However, ASFB do not believe that proactive action, in line with the precautionary approach should be postponed prior to the completion of such work.

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.

Background

Mixed Stock Fisheries

Mixed Stock Fisheries (MSFs) are defined by the North Atlantic Salmon Conservation Organisation (NASCO) as fisheries that exploit a significant number of salmon from two or more river stocks. Without knowing how many fish come from which rivers it is not possible to know the impact of the catch on individual catchments or to apply targeted conservation measures in the fisheries to protect individual catchments. Mixed stock fisheries are therefore considered by all interested northern hemisphere countries to present particular difficulties for management and species conservation.

Administration of Salmon Fisheries in Scotland

District Salmon Fishery Boards have statutory powers to protect, conserve and enhance salmon stocks within their district and Fisheries Trusts in most Board areas in Scotland are available to provide scientific advice to support management decisions. In order for managers to take appropriate management decisions, an overview of all salmon exploitation in the district is required and appropriate controls must be applied to exploitation where necessary. Such controls might be either through statutory regulations or voluntary codes. It should be noted that Boards, supported by information from Trusts, have a legal obligation to represent the views of both upper and lower proprietors, tenant netsmen and anglers through elected Board members and co-optees.

Salmon fishing rights in Scotland (freshwater and marine) are private heritable titles that are registered separately from land. As such these titles can be bought and sold like any other property. Net fisheries operate within a statutory framework of national regulations with regard to: the meshes, materials and dimensions of nets used; the method of fishing to be used; and by weekly and annual close times for salmon fishing. Scottish Ministers may, after consulting such persons as they consider appropriate, alter any of these parameters by regulation. Other than these national statutory restrictions, the only other limiting factors will be those of an economic nature to the commercial fishermen (i.e. the availability of fish and supply to, and demand of, the available market). Wild salmon (particularly the spring stock component) increasingly command a premium price and commercial fisheries continue to exploit this market. Indeed, the Scottish Government has recently applied to the EU for Protected Geographical Indication (PGI) status for 'Scottish Wild Salmon', a protection that would guarantee market advantage for this product.

A voluntary code promoted by the Salmon Net Fishing Association, recommends that nets do not operate before 1 April, but this still allows a significant number of spring salmon to be captured, with several netting stations continuing to fish from February. Declared net catches for 2007-2009 (January-April) were 86, 80 and 145 respectively. However it is difficult to reconcile these figures with the amount of wild Scottish salmon reaching the market prior to the end of April.

Furthermore, the cut-off point for the 'spring' of the end of April is arbitrary and there is now almost universal acceptance that May fish are spring salmon. Many DSFBs extend the definition to include fish running in June. The Statistical Bulletin for 2009 catches[1] included, for the first time, a monthly breakdown of the statistics. The declared catches of salmon for fixed engine nets for May and June 2009 were 526 and 1220 respectively (as opposed to the catches of grilse which were 19 and 458 respectively). In contrast, 67% of the annual rod catch and 82% of the rod catch of spring salmon was released during 2009.

Historical Perspective

Since the mid-19th century many netting rights have been purchased by rod fishery interests in order to increase the spawning escapement to the river system. Originally, these buyouts would have been viewed primarily as a means to expose more fish to the rod fishery. However, in recent years, a greater understanding of the salmon resource and its associated pressures (local, national and international) mean that such actions have been taken primarily in the interests of salmon conservation and river stocks as a whole. In most areas the rod fishery has also responded to declines in stocks through a range of measures, both statutory and voluntary.

[1] *Statistical Bulletin, Scottish Salmon & Sea Trout Catches 2009*

In 1963 the Scottish Office recognised that *indiscriminate* netting through the drift net fishery was contrary to good salmon management (the principle being that each river nurtured individual and discrete stocks and netting at sea would be unselective and therefore impossible to manage on a stock by stock basis. Drift net fishing was therefore prohibited in Scotland in 1963. In addition, in 1988 the weekly close time for net fishing was extended for conservation reasons, to cover the period from 18.00 on Friday to 06.00 the following Monday.

In the 1970's, the advent of salmon farming and the availability of cheaper farmed fish to the consumer had a marked effect on the commercial viability of salmon netting for wild stocks. The temporary drastic fall in prices realised for wild fish reduced the profitability of netting and many stations were sold to salmon conservation interests and subsequently mothballed. This has probably been the single biggest factor in the reduction of salmon netting effort in recent times. As a consequence, there has been a significant shift in the proportion of fish now taken between the rod fishery and the net fishery. In the 1960's approximately 10% of the retained catch was taken by the rod fishery. In 2008 the rod fishery took approximately 68% of the declared retained catch as opposed to 32% taken by the net fishery[2].

In 1991 the *mixed stock* principle was recognised by the UK Government in relation to the large scale drift net fishery which operated off the Northumberland Coast (under a system of licensing) and it accepted that the fishery should be phased out as soon as practicable. A large proportion of this fishery was decommissioned in 2003, principally due to a significant effort made by private fishery interests raising considerable finance with assistance from the UK Government in order to compensate those who had agreed to surrender their licences. The Irish Drift Net Fishery was closed in 2007 as a result of similar pressure.

The Scottish Salmon Strategy Task Force (SSSTF) was appointed by the Secretary of State for Scotland in 1995, *"To consider the challenges and opportunities facing Scottish salmon fisheries with a view to recommending a strategy for the management, conservation and sustainable exploitation of stocks into the next century".* The SSSTF's report published in 1997[3] made a thorough review of the Scottish salmon fishery, and included some 64 recommendations for preserving and increasing salmon stocks. Of particular relevance was recommendation 24, *"Fisheries for salmon should be progressively restricted to locations as close as possible to the rivers of origin of the fish".*

The SSTF did not ignore the impacts of rod fisheries. Recommendation 29 stated that "*the release of rod caught fish should be encouraged, where particular stock components are under threat or in decline*". Catch and release policies are now widespread throughout Scotland and are capable of being very flexible to respond to changing conservation needs. For example, the Aberdeenshire Dee now has a long standing voluntary policy that has resulted in over 95% of all fish and 97% of spring fish caught being released over the last 5 years. In addition, secondary legislation was introduced in 2002 to prohibit the sale of rod caught fish. Similar restrictions to the sale of rod caught fish were introduced in England and Wales in 2009.

The then Scottish Executive's 2001 Green Paper on Freshwater Fish and Fisheries stated that "*the exploitation of salmon outside their river of origin is widely accepted as contrary to good salmon management, primarily on the grounds that it does not discriminate between separate river populations and therefore severely inhibits monitoring and optimum management of exploitation of stock on a catchment basis*".

In 2007 Scottish Ministers agreed to terminate the lease of the last remaining major bag net fishery owned by the Scottish Government (Strathy Point on the North coast). A limited and non-commercial research fishery had been proposed for this site to further research into the factors impacting upon marine survival. However, this research fishery has never operated as a result of unforeseen and unfortunate circumstances.

[2] *Crawley, D. (2010) Report of the Scottish Mixed Stock Salmon Fisheries Working Group. Report by the Steering Group of the Freshwater Fisheries Forum.*
[3] *Scottish Executive (1997) Report of the SSSTF*

A carcass tagging scheme has been in operation in England and Wales since January 2009. Any salmon and sea trout caught by means other than rod and line (i.e. by licensed net or trap) must be tagged with a uniquely numbered Environment Agency carcass tag. This must be attached immediately after capture and remain attached until the fish is processed. Details of the fish and the tag reference numbers must be recorded in an annual log-book (supplied) and returned to the Environment Agency at the end of the year. Similar schemes have been in operation in the Republic of Ireland since 2001 and Northern Ireland since 2002. Carcass tagging has been considered both as a quality control measure and as a means to minimise the possibility of illegally caught fish reaching markets or dealers. In combination with the ban on sale of rod caught fish across the UK, any untagged fish would be made unmarketable and clearly identifiable as illegally taken.

In a recent answer to written Parliamentary Questions regarding the Scottish Government position on mixed stock fisheries and what impact such fisheries have on individual river stocks (S3W-38559), and more specifically on the impact the Usan Ness mixed stock netting station immediately south of Montrose is having on individual river stocks (S3W-38558), Richard Lochhead, Cabinet Secretary for Rural Affairs and the Environment, stated:

> *"The Scottish Government has its approach to mixed stock fisheries under consideration in the light of the report of the Mixed Stock Salmon Fisheries Working Group published last year. The accepted international definition of a mixed stock fishery (MSF) for wild Atlantic salmon is "a fishery exploiting a significant number of salmon from two or more river stocks". While fisheries by any method inside estuaries may be MSFs, those located outside estuaries are almost certainly MSFs. In 2009, the annual catch of the coastal fixed engine net fisheries was the lowest since records began in 1952, and was 3% of the maximum reported catch. Reported effort in the fixed engine net fisheries was also the lowest on record at 3% of the maximum reported. All salmon fisheries in Scotland are operated under private heritable titles. All those with a legal right to fish have the ability to exercise that right in accordance with the law, including the provisions for conservation measures in the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003."*

And:

> *"The impact of netting on individual river stocks depends on the composition of the catch in the fishery and the status of river stocks that are being exploited. Data on the precise stock composition of catches at individual netting stations such as the Usan Ness station in the Esk Salmon Fishery District is not collected. However, Marine Scotland is currently considering the likely effect of new conservation measures proposed for the River South Esk by the Esk District Salmon Fishery Board."*

International Policy Drivers

NASCO is an international organisation established under the Convention for the Conservation of Salmon in the North Atlantic Ocean in October 1983 (established under the United Nations Convention on the Law of the Sea 1982). The objective of the organisation is to contribute through consultation and co-operation to the conservation, restoration, enhancement and rational management of salmon stocks. All EU Member states are signatories to the NASCO Convention (including Denmark in respect of the Faroe Islands and Greenland) which sets out general provisions for conserving salmon stocks. NASCO and its Contracting Parties agree to adopt and apply a Precautionary Approach to the conservation, management and exploitation of salmon in order to protect the resource and preserve the environments in which it lives. NASCO has successfully negotiated reductions in salmon fisheries in their marine feeding grounds in the North Atlantic. At the 2000 NASCO meeting the Danish representative (who also acts in respect of Greenland and the Faroes) said his vote in favour of measures imposed on the West Greenland fishery was based on the understanding that there would be corresponding reductions in the catch of other EU member states in their home waters. In his view such action had yet to be taken and reductions in the catch by Southern European members (including Scotland) was necessary[4].

[4] *NASCO - Seventh Annual Meetings, 5-9th June 2000, Miramichi, Canada.*

Focus Area Reports (FARs) on the measures being taken by each jurisdiction to implement NASCO's agreements have now been completed. The FARs have been reviewed and the review group's findings for Scotland included the following statements[5]:

> '*The FAR provides some information on a proposed method for using catch data to assess stock status in the absence of CLs, but the Group notes that it is unclear whether this approach is being used and whether it provides a reliable reference point for satisfactory stock status. A strategy is being developed for the management of mixed-stock fisheries, but at present there is no clear policy. The Group is concerned that these fisheries are still being operated despite a lack of information to characterise the exploited stocks. These issues are not consistent with the NASCO agreements and guidelines and need additional actions.*'

Recently, mixed stock fisheries in home water countries have come under increased scrutiny for a number of reasons. The general decline in salmon stock status throughout the North Atlantic has focused attention on all active fisheries, not solely those over which NASCO has powers under its founding Convention. NASCO's success in achieving tight restriction of traditional high seas MSFs near Greenland and the Faroes has itself led to increasing pressure on all parties to the Convention to address MSFs in their home waters. The statement by the Faroes from the 2008 Report of the Annual Meeting of the Council of NASCO, (CNL(08)35) reflects this by indicating that they had *"refrained from salmon fishing but noted that the actions taken by the other Parties would be taken into consideration in deciding on the future management of their fishery"*. This statement must be considered in the light of the recent decision by Scottish Ministers to award funding of £100,000, via the European Fisheries Fund, to Usan Salmon Fisheries Ltd towards an on-shore pre-fabricated building for the repair and maintenance of nets and other gear, including power net-washing machines. Following this decision, a letter was sent to Scotland's First Minister by the Chairman and Vice-chairman of the Faroese Salmon Fishing Vessel Owners' Association. They point out that, over the past two decades, Faroese fishermen have made considerable sacrifices by deciding to limit their catches of salmon and during recent years they have operated a no-take policy. They also state that their members are now questioning the decision to forego fishing for salmon for reasons of conservation.

At its 2009 Annual Meeting[6], NASCO agreed general guidance on management of the fisheries which included the following specific guidance on mixed stock fisheries:

> *"NASCO has defined MSFs as fisheries exploiting a significant number of salmon from two or more river stocks; NASCO has also agreed that management of homewater fisheries should be based on the status of individual river stocks and management of distant water fisheries on the status of the stock complexes defined by managers.*
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> *ICES has advised that the management of all fisheries should be based upon assessments of the status of individual stocks. Fisheries on mixed-stocks, particularly in coastal waters or on the high seas, pose particular difficulties for management, as they cannot target only stocks that are at full reproductive capacity if there are stocks below CL within the mixed-stock being fished. Conservation would be best achieved if fisheries target stocks that have been demonstrated to be at full reproductive capacity. Fisheries in estuaries and especially rivers are more likely to meet this requirement. In addition to the general management guidance, the following actions should therefore apply to MSFs:*
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> a. *Rational management of a MSF requires knowledge of the stocks that contribute to the fishery and the status of each of those stocks;*
> b. *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;*
> c. *Management actions should aim to protect the weakest of the contributing stocks;*

[5] *NASCO Council document CNL(09)11 (2009).*
[6] See: http://www.nasco.int/meetings.html

d. *Consideration should also been given as to whether the above guidelines for MSFs apply to certain fisheries operating within larger rivers or estuaries."*

The International Council for the Exploration of the Seas (ICES) coordinates and promotes marine research on oceanography, the marine environment, the marine ecosystem, and on living marine resources in the North Atlantic. ICES produces annual advisory reports on the status of Atlantic salmon stocks, of which the most recent, prepared for NASCO, was in 2009[7]. ICES advice has been to reduce exploitation in all mixed stock fisheries to allow river-specific conservation limits to be met. The specific statement is included in the NASCO guidance (reproduced above).

The European Commission has also considered the question of mixed stock fisheries. The Commission Staff Working Document "Report on Mixed Stock Fisheries for Salmon in Atlantic Community Waters" (SEC(2006) 590, 04.05.2006)[8], states:

"In the present conditions, MSFs for salmon are widely considered to be inappropriate because the lack of information on the stocks being exploited make the conservation and rational management of individual river stocks very difficult. It is therefore widely agreed that there should be a general presumption against operating MSFs unless they can be shown not to contravene basic conservation policies".

The document also states:

"national legislation is perfectly adequate to minimise the impact of mixed stock fisheries on salmon conservation".

Whilst this paper recognises the view that mixed stock fisheries are not inherently detrimental to stock status (any fishery, single stock or mixed stock, only poses a problem if it exploits stocks where there is no exploitable surplus) it also reiterates that MSFs may present particular management difficulties in relation to assessment of the stock composition of such fisheries and the status of the components. The paper also suggests that even if the real effect of an MSF on a distant river is low, the interception of just a few fish could harm the rebuilding to sustainable levels of some small and depleted stocks, where the spawning population may consist of just a few tens of individuals. On the basis of NASCO objectives, this would require a precautionary approach including the complete banning of all MSFs.

The main European Directive which affects the regulation of salmon fisheries is 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (The Habitats Directive). The aim of the Habitats Directive is to "*contribute towards ensuring bio-diversity through the conservation of natural habitats and of wild fauna and flora*", and "*measures taken pursuant to this Directive shall be designed to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest*." The Habitats Directive lists Salmon as a "*species of community interest whose conservation requires the designation of Special Areas of Conservation*" (SAC). In an SAC, member states have to take measures to maintain or restore the listed species and such measures may need to be implemented outside the SAC. This may include statutory changes to protect the species, or protect against deterioration of the species' habitat. There are 17 Scottish rivers designated as SACs for Atlantic salmon and in 11 of which, Atlantic salmon are listed as a primary interest. Others are designated for freshwater pearl mussels for which salmon and sea trout act as parasitic hosts at the larval stage.

The conservation status of SACs is monitored by SNH and the following categories are used to describe the condition of interest features:

- **Favourable - maintained.** An interest feature should be recorded as *maintained* when its conservation objectives were being met at the previous assessment, and are still being met.
- **Favourable - recovered.** An interest feature can be recorded as having *recovered* if it has regained favourable condition, having been recorded as unfavourable on the previous assessment.

[7] See: http://www.ices.dk/committe/acom/comwork/report/2009/2009/nasco2009.PDF
[8] See: http://ec.europa.eu/fisheries/legislation/reports_en.htm

- **Unfavourable - recovering.** An interest feature can be recorded as *recovering* after damage if it has begun to show, or is continuing to show, a trend towards favourable condition.
- **Unfavourable - no change.** An interest feature may be retained in a more-or-less steady state by repeated or continuing damage; it is unfavourable but neither declining or recovering. In rare cases, an interest feature might not be able to regain its original condition following a damaging activity, but a new stable state might be achieved.
- **Unfavourable - declining.** Decline is another possible consequence of a damaging activity. In this case, recovery is possible and may occur either spontaneously or if suitable management input is made.
- **Partially destroyed.** It is possible to destroy sections or areas of certain features or to destroy parts of sites with no hope of reinstatement because part of the feature itself, or the habitat or processes essential to support it, has been removed or irretrievably altered.
- **Destroyed.** The recording of a feature as destroyed will indicate the entire interest feature has been affected to such an extent that there is no hope of recovery, perhaps because its supporting habitat or processes have been removed or irretrievably altered.

All interest features on all statutory sites will be assessed at least once within a six-year period corresponding to the six-year reporting cycle used for the Habitats Directive. Currently the conservation status for Atlantic salmon in all Scottish SACs is '*unfavourable recovering*' with the exception of the Aberdeenshire Dee and the River Tay which are both '*favourable maintained*'. A detailed seasonal analysis of 17 Scottish rivers designated as SACs commissioned by the Mixed Stock Fisheries Working Group[9] (see below) suggests that there has been a decline in the salmon caught in the spring stock component in the majority of the rivers, since records started in 1952. Trends in fish caught by rods in the summer and autumn seem to have been generally improving over recent decades. However the recent catch trends in the SAC rivers from year 2000 to 2007 have stabilized, albeit at a much lower level. The close correlation between SACs for Atlantic salmon and active salmon net fisheries in Scotland is demonstrated in Figure 1.

[9] *Mixed Stock Fisheries Working Group Paper (MSFWG0910)*

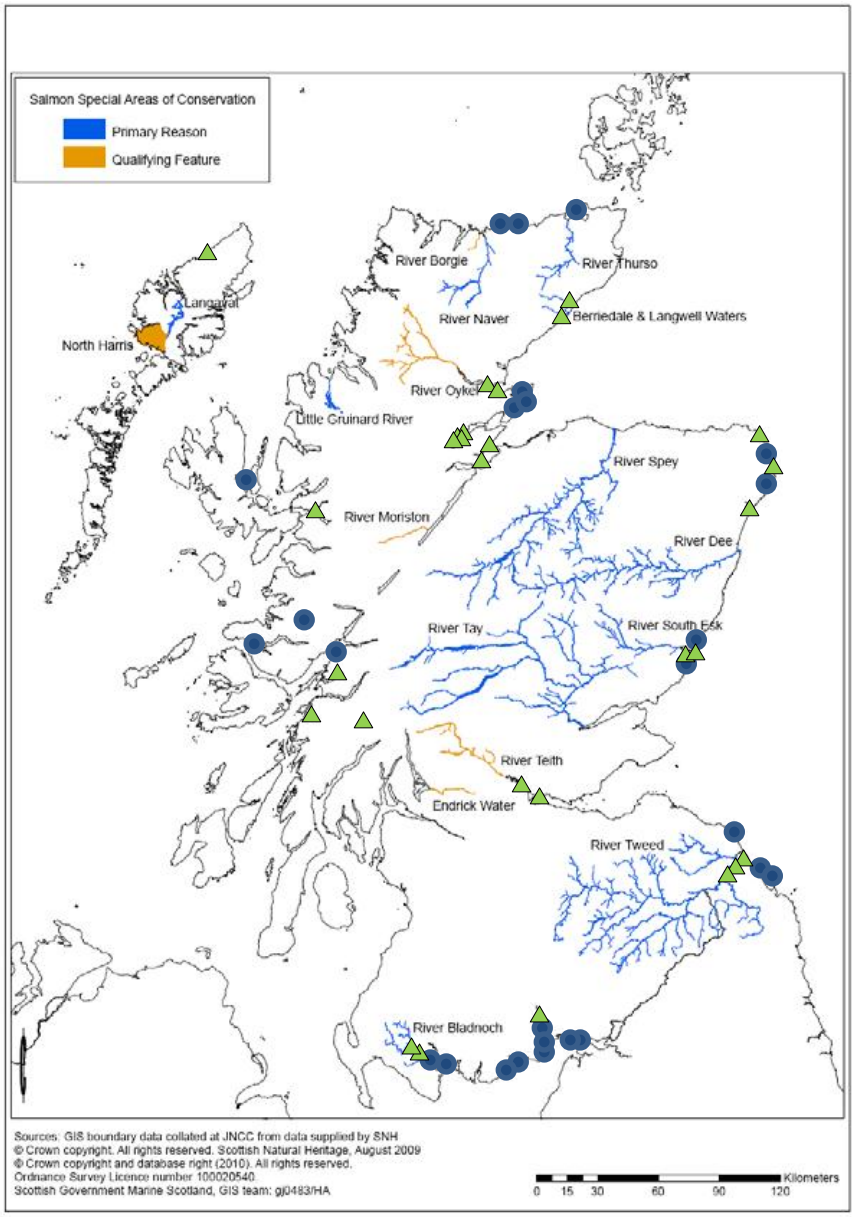

Figure 1: *Map showing the distribution of Special Areas of Conservation (SACs) for Atlantic salmon in Scotland*[10] *and the approximate locations of active salmon net fisheries in Scotland in 2008 (fixed engine fisheries symbolised by blue circles and net and coble fisheries symbolised by green triangles)*[11]

Mixed Stock Fisheries Working Group

In 2008 the Scottish Government published *A Strategic Framework for Scottish Freshwater Fisheries* which recommended a number of *Priorities for Action*. Priority for Action 2.5 was to develop a strategy for mixed stock fisheries which would review all aspects of mixed stock fishing, including its impact on management and conservation. ASFB were represented on the working group set up to inform this process, resulting in

[10] *From: Malcolm, I.A., Godfrey, J. and Youngson, A.F. (2010) Review of migratory routes and behaviour of Atlantic salmon, sea trout and European eel in Scotland's coastal environment: implications for the development of marine renewables. Scottish Marine and Freshwater Science Vol 1 No 14*

[11] *From: Crawley, D. (2010) Report of the Scottish Mixed Stock Salmon Fisheries Working Group. Report by the Steering Group of the Freshwater Fisheries Forum. (Figure 9)*

the *Report of the Scottish Mixed Stock Salmon Fisheries Working Group*[12]. However, it was not possible to reach agreement on a package of recommendations that all participants could endorse and therefore the recommendations of the Report were put forward under the responsibility of the Chair. A number of these recommendations are reproduced below:

Recommendation 1: *As the foundation of future strategy, the Scottish Government should, as soon as possible, make a clear, unequivocal policy statement about the strategy for MSFs. The many individuals and organisations who will contribute to the approach set out in this report need leadership and direction and a consistent framework. The statement should reflect the evidence and discussion in this report and recognise the concepts of equity and burden sharing developed here. It should take into account our international obligations and set out when and under what circumstances Government applies the precautionary principle to the management of wild salmon fisheries.*

Recommendation 2: *Government should also commit itself to a clear timetable for following up and implementing this report. This includes setting out how and when the additional information needed for effective management of all MSFs will be obtained, and a firm pathway to any legislative changes that might be required. To maintain the momentum built up by the Group the Scottish Government should publish its initial response to our recommendations by the end of September 2010.*

Recommendation 6: *A carcass tagging scheme for all wild net-caught salmon offered for sale, whether privately or on the open market, should be introduced. The Scottish Government should urgently work with all stakeholders to develop such a scheme with a view ultimately to making adherence to it compulsory.*

Recommendation 7: *Government in consultation with DSFBs should keep the overall condition of the salmon stock under very close review and should be ready to take urgent, precautionary action which will, if necessary, involve restrictions on all forms of exploitation. In particular the Government should include in its statement responding to this report a considered assessment of the state of the stock in the light of the very latest evidence including the catch statistics for 2008 and 2009.*

Recommendation 8: *The current GSI [genetic stock identification] work is a matter of high priority that should continue to be fully supported by private sector and public resources.*

Recommendation 10: *Sampling for GSI will require the active co-operation of all interested parties. The Scottish Government should therefore include as part of its response, by end of September 2010, proposals for the creation of reserve powers under the 2003 Act to ensure that fish genetic samples are produced where necessary from any salmon fishery.*

Recommendation 15: *Seasonal stock component catch statistics would be valuable for fisheries managers and should be available from Marine Scotland Science.*

Recommendation 18: *Marine Scotland Science should be consulted for its expert advice on a case by case basis on what might constitute 'significant' MSF captures from target rivers at risk on conservation grounds, and its advice made available to the DSFBs concerned.*

Recommendation 19: *DSFBs should work hard with all participants in order to arrive at suitable management agreements, using appropriate compensation as one tool. Where voluntary arrangements cannot be achieved and where the evidence justifies new action DSFBs should be ready to put proposals to Government for statutory measures.*

Recommendation 21: *A mechanism for ascertaining fair values for curtailing angling and/or netting business activity should be devised by agreement between the parties concerned. It should allow the basic information on investment, profitability, cost and potential losses required to calculate an equitable burden share to be consistently and transparently operated within the local management area.*

[12] *Crawley, D. (2010) Report of the Scottish Mixed Stock Salmon Fisheries Working Group. Report by the Steering Group of the Freshwater Fisheries Forum.*

This mechanism would normally be administered by a DSFB with the option of expert mediation to help reach agreement.

ASFB Policy Position

In agreement with the Report of the Scottish Mixed Stock Salmon Fisheries Working Group the UK Government has a clear moral duty as both an active founding member of NASCO, and as a member state of the EU, to seek to secure the continued adherence of all parties to its terms. As we expect Greenland and the Faroes to adhere to the current tight restrictions on their fisheries, we must keep our own house in order which, in this context means the UK must at least have due regard to NASCO guidance on fisheries management. The same applies to the Scottish Government, which has the domestic responsibility for implementing international and EU obligations in the fisheries sector.

In the light of the NASCO FAR review group's findings for Scotland, the Scottish Government must make a clear, unequivocal policy statement about the strategy for MSFs as soon as possible after the May 2011 election. As recommended by the Scottish Mixed Stock Salmon Fisheries Working Group, the statement should take into account our international obligations and set out when and under what circumstances the Scottish Government applies the precautionary principle to the management of wild salmon fisheries. The Scottish Government should also commit itself to a clear timetable for following up and implementing the report including setting out how and when the additional information needed for effective management of all MSFs will be obtained, and a firm pathway to any legislative changes that might be required.

Conservation of spring stocks

As made clear in the MSS contribution to the Scottish Mixed Stock Salmon Fisheries Working Group, the long term trend for the spring stock component demonstrates that 94% of SACs are declining (15 out of 16 rivers). Section 38 of the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003 allows Scottish Ministers to make regulations (Salmon conservation regulations) if they consider it necessary or expedient to do so for the conservation of salmon. Schedule 1 allows Scottish Ministers to make such regulations either on application to them by, any district salmon fishery board or otherwise. On this basis DSFBs, with the support of ASFB, will seek the closure of any Scottish coastal mixed stock fisheries during any period that the Stock Abundance Tool promoted by Marine Scotland (Appendix 1) indicates that management action to protect spring stocks should be considered. In recognition that netting rights are separate, private, heritable rights, it is ASFB policy that any moves to reduce mixed stock exploitation for conservation and/or management reasons should be based on a 'willing buyer/seller' arrangement at a fair market price negotiated on a case by case basis.

Carcass tagging

In agreement with Recommendation 6 of the Report of the Scottish Mixed Stock Salmon Fisheries Working Group (see above), ASFB policy is that a compulsory carcass tagging scheme should be introduced immediately, in order to bring Scotland into line with the rest of the UK and Ireland. This would aid the enforcement of the existing ban on the sale of salmon and sea trout caught by rod and line. The ASFB have produced a separate policy paper on carcass tagging.

Catch and release

ASFB will continue to encourage, for conservation reasons, means to reduce the rod exploitation rates of salmon where those stocks are under threat or in decline. ASFB recognises that, on occasions, there may be a need to reduce all forms of exploitation for compelling and urgent conservation reasons. Where this is the case regulatory action should be pursued based on sound scientific evidence.

West Highlands

The large rivers on the east coast of Scotland tend to have a higher proportion of spring salmon than those in the west coast, which support predominantly grilse and sea-trout stocks. Whilst the full implementation of the ASFB policy position on conservation of spring stocks would be valuable in this region, the problem on many rivers in the West Highlands is more acute. For example, the netting salmon station at Cuil Bay,

near Duror, is the last active unit in Loch Linnhe and the biggest on the west coast outwith Dumfries and Galloway. Despite agreement to prevent the killing of any fish before June 1, in some years this station has removed more fish than the entire (released) rod catch on all of the local rivers combined (which include the Lochy, Coe and Leven). The discrepancy between the number of salmon taken by net fisheries and the total number of returns to rivers is such that there is a strong case to remove all forms of exploitation for the entire duration of the season and not simply the spring component.

The future of mixed stock fisheries

Over the longer term, the ASFB policy position as set out in the *Report of the Scottish Mixed Stock Salmon Fisheries Working Group* still stands:

> *The ASFB, mindful of the statutory powers and duties of the DSFBs, accepts international advice that Mixed Stock Fisheries, as defined by NASCO, are a threat to the effective and responsible conservation and management of Atlantic salmon. The ASFB endorses the precautionary approach, agreeing that only stocks which can be proved to be above conservation limits should be exploited. The nature of mixed stock fisheries is such that their continued prosecution is in direct conflict with this precautionary approach. Therefore the ASFB believes that all mixed stock fisheries, defined as being those operating outside river or estuary limits, should be actively decommissioned using regulatory mechanisms where voluntary ones prove to be unsuccessful.*

In addition, a joint statement by the ASFB, Atlantic Salmon Trust and Salmon and Trout Association submitted to the MSF Working Group strongly advocates:

- *A positive stance to be taken by the Scottish Government on statutory closure of coastal fixed engine MSFs, based on the principle of precaution.*
- *A recognition of the socio-economic and cultural importance of coastal MSF, and therefore a requirement for the development of a formal 'compensation fund' of some type, which should include a contribution from the public sector.*

Investment in conservation measures

ASFB believe that, as long as mixed stock fisheries are in operation, it is essential that the burden of conservation measures is allocated fairly between the rod and net fisheries. Appropriate account must be taken of the cost of investing in conservation measures in river catchments. The present approach to funding conservation and management is inequitable on the grounds that coastal MSFs exploit fish stocks in which they have no investment or management stake. While both netsmen and proprietors pay the same rate of levy to the local board, the method by which the two fisheries are valued by the district assessor is different. The valuation system is based on the ability of the fishery to raise money in the form of rent or profit and values a returned fish on the same basis as a killed fish, thereby making no allowance to those who are helping to protect the stock. As an example, in 2007, 35% of the total declared catch was exploited by those paying less than 2% of the cost to protect and enhance that resource. This equates to £3 a fish killed in a net and more than £70 for a fish caught on rod and line and invariably released by the angler. In addition, netsmen pay nothing towards the management in other catchments to which fish were heading before being caught in coastal MSFs. Many of the present inconsistencies can be reduced through closer co-operation between boards and district assessors. In the longer term, consideration should be given to adopting a system which reflects the exploitation of the stock rather than simply the use of the resource.

Genetic Stock Identification

The *Report of the Scottish Mixed Stock Salmon Fisheries Working Group* makes a number of recommendations regarding genetic stock identification (GSI - Recommendations 8-10). Whilst ASFB recognise the potential of GSI in allowing a better understanding of the composition of catches in fisheries, we are concerned at the length of time it is likely to take before information about the stock composition of the major mixed stock coastal fisheries can be delivered from the GSI research projects. As such, ASFB do not believe that proactive action, in line with the precautionary approach, should be postponed prior to the completion of such work. However, we agree that the Scottish Government should make certain that the

powers are available to ensure that fish genetic samples can be produced where necessary from any salmon fishery.

Conclusions

- DSFBs will seek the closure of any Scottish coastal mixed stock fisheries during any period that the Stock Assessment Tool promoted by Marine Scotland indicates that management action to protect spring stocks should be considered.
- ASFB recognises the case for fair compensation for netting interests in these circumstances and such compensation should be negotiated on a case by case basis.
- A compulsory carcass tagging scheme should be introduced with immediate effect. Any person found in possession of an untagged fish taken, other than by rod and line, would be guilty of an offence.
- In the specific case of the West Highlands and Islands, the discrepancy between the number of salmon taken by the net fishery and the total number of returns to all rivers in the area is such that Salmon Conservation Regulations should be used to close all the area's remaining mixed stock fisheries including Cuil Bay.
- In the longer term, ASFB maintains that all mixed stock fisheries should be actively decommissioned using regulatory mechanisms where voluntary ones prove to be unsuccessful, consistent with the precautionary principle as agreed by NASCO and its contracting parties.
- ASFB believe that, as long as mixed stock fisheries are in operation, it is essential that the burden of conservation measures is allocated fairly between the rod and net fisheries. In the longer term, consideration should be given to adopting a system which reflects the exploitation of the stock rather than simply the use of the resource.
- ASFB recognise the potential of GSI and agree that the Scottish Government should make certain that the powers are available to ensure that fish genetic samples can be produced where necessary from any salmon fishery. However, ASFB do not believe that proactive action, in line with the precautionary approach should be postponed prior to the completion of such work.

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Appendix 1: Notes on the use of the Stock Abundance Tool[13]

The annual survey, collation and publication of Scottish catches are currently complete in September of the year after the catches were taken. At this time local management groups who have concerns about the status of their local salmon populations may contact Scottish Government Marine Scotland Science to obtain district level rod catches. DSFBs and Fisheries Trusts should carry out an assessment as follows:

1. Obtain the monthly reported rod catches for the district containing the catchment of interest
   - Historical and current monthly rod catches are readily available for all districts.
   - District rod catches provide information about salmon abundance.
2. Only consider catches over the last 20 years
   - Provides baseline for comparisons.
   - Excludes catches that may be irrelevant to current situation.
   - Allows straightforward analysis (see 8 below).
3. Aggregate salmon and grilse
   - Anglers' division of rod catch into salmon and grilse is too inaccurate to use.
   - A reliable method for dividing the rod catch into salmon and grilse is currently unavailable.
4. Aggregate numbers of rod caught and retained and rod caught and released fish
   - The total number of retained and released fish probably provides the most suitable figure for historical comparisons.
5. Aggregate rod catches into spring (Feb-May), summer (Jun-Aug) and autumn (Sep-Nov)[14]
   - Classification of the monthly Scottish rod catch trends produces identical groupings.
   - Anglers are familiar with these three seasonal groupings.
   - Salmon from a single population can return over several months.

   Aggregate into summer (Jun-Aug) and autumn (Sep-Nov) if no early-running fish.

6. Divide the catchment into upper, middle and lower subcatchments (*If ranks are tied make the most recent value the lower rank so that analysis is conservative/precautionary)*
   - Spring, summer and autumn caught fish tend to belong to populations in the upper, middle and lower parts of a catchment, respectively.
     - Or middle and lower if not spring-run.
     - Evidence includes radio-tracking studies, transfer experiments, as well as trap and net captures.
7. For each seasonal grouping, rank the catches
   - Does not assume a linear relationship between rod catch and abundance
   - Allows straightforward analysis (see 8 below).

   A small drop in catch could indicate a large drop in abundance.

8. For each seasonal grouping, ask the following three questions: 1) Identify the lowest value. Is it also the most recent value over the twenty year period? 2) Identify the lowest three values. Are two or more of these values found in the last three years? 3) Identify the lowest six values. Are four or more of these values found in the last six years?
   - Questions constitute simple analysis that can be performed on piece of paper.
   - With no trend (or autocorrelation) the probability of answering yes to each of these questions is c. 5, 4.5 and 4%.
   - With no trend (or autocorrelation) the probability of answering yes to one or more of these questions is c.11%.

[13] *Marine Scotland Science – taken from the Report of the Mixed Stock Fisheries Working Group.*
[14] *It is also acceptable to aggregate rod catches by month*

The conventional probability level is 5%. A level of 11% is justified by the precautionary principle, i.e., all other things being equal it is better to investigate and find that all is well than not to investigate and later discover the situation is serious.

9. If one or more yes answers take steps to reduce exploitation on the relevant stock component and investigate if there is a specific local problem impacting upon the stock component.
10. Continue to monitor the catches on an annual basis and maintain management action until all questions posed in 8. above are answered "no".