***Ad Hoc* Review Group**

IP(07)22 FINAL

Implementation Plan

Denmark (in respect of the Faroe Islands and Greenland)
- Faroe Islands

NASCO Implementation Plan for Atlantic Salmon Management in the Faroe Islands

1. Introduction

River stocks
There is no record of Atlantic salmon spawning in rivers in the Faroe Islands in historical time. In 1947 Atlantic salmon fry from the Icelandic River "Elliðá" in Reykjavík were released into several rivers in the Faroe Islands. This program continued for a number of years, and in the early 1960`s mature salmon were caught by anglers as well as by electro-fishing in river "Fjarðará" in Skálafjørður, Eysturoy and in the river at Saksun, Streymoy. This led to the construction of a hatchery for salmon and sea trout in Tórshavn.

Almost every year since then, some form of enhancement has been undertaken, the many first years mostly by bringing up fry for release in the rivers. During this early period grilse stocks were established in three other rivers in the Faroe Islands by this fry releasing method. Later in the 1980's salmon roe from Norway was introduced to the stock in the Faroes, in an attempt to get a higher proportion of multi sea-winter returns.

Marine fishery
Fishing for Atlantic salmon in the water around Faroe Islands started in 1968. Up to 1978 it continued at a low level – 40 tonnes annually or less. In 1979 the fishery was intensified and the yearly catches remained fairly stable at approximately 5-600 tonnes up to 1990. In 1981 the catches were more than 1.000 tonnes, however. The last year with commercial fishery was in 1991. In some of the following years research fishery has been undertaken. No fishery has taken place since 2001.

After the establishment of NASCO in 1984 the fishery for Atlantic salmon in the Faroese Fisheries Zone has been managed in accordance with resolutions made by NASCO on a yearly basis.

1.1 Objectives of the national management strategy

Regulations of all fisheries in the Faroese fisheries zone (FFZ), and by Faroese fishing vessels outside the Faroese fisheries zone are based on the Commercial Fishery Act from 1994.

The Act states that the living marine resources in the FFZ and Faroese allocations in waters outside the Faroese fisheries zone are the property of the Faroese people and that these fisheries should be managed sustainable in both biological and economic terms. Socio-economic factors should also be taken into account.

The Act also applies to the Atlantic salmon resources in the Faroese Fisheries Zone.

The primary management objective of NASCO is to contribute through consultation and co-operation to the conservation, restoration, enhancement and rational management of salmon stocks taking into account the best scientific advice available. NASCO focuses in particular on the need to maintain both the productive capacity and diversity of salmon stocks. NASCO's Action Plan for Application of the Precautionary Approach provides interpretation of how this is to be achieved, as follows:

- Management measures should be aimed at maintaining *all stocks above their conservation limits* by the use of management targets.
- The precautionary approach is an *integrated approach* that requires, inter alia, that stock rebuilding programmes (including as appropriate, habitat improvements, stock enhancement, and fishery management actions) be developed for stocks that are below conservation limits.

In applying the objectives set out in the Commercial Fishery Act with regards to the management of the fishery resources, the Faroese authorities take due account of the objectives as agreed by NASCO for the management of the Atlantic salmon resources.

1.2 Nature and extent of resource

Rivers

There are only four small Faroese rivers supporting local salmon stocks. While 400-600 fish are caught in the two most important rivers taken together, only 20-30 salmon are caught in the river and lake of Sandoy, and an even smaller number in "Fjarðará" on Eysturoy.

Faroese Fisheries Zone

The salmon resource in the Faroese Fisheries Zone is composed of Atlantic salmon mainly from the northern European river stocks as well from the southern European stocks when feeding in the North Atlantic. A small proportion is also migrating to the Faroese area from the Northwest Atlantic, mainly Canada.

1.3 Overview of fisheries

River stocks

In the Faroese rivers and lakes there is a recreational fishery by anglers, with an average annual catch of 400-600 salmon (mainly grilse) a year besides sea trout. Regulation No. 92 of 26 June 1990 prohibits fishery in the estuaries during the spawning season.

Faroese Fisheries Zone

The marine fishery for Atlantic salmon in the Faroese Fisheries Zone goes 40 years back. Faroese long liners increased their fishery in the late seventies. The yearly catches in the beginnings of 1980's were up to 1.000 tonnes. Since then they have decreased, and in 1990 they were at 200 tonnes only. Prior 1984 catches also were taken outside the Faroese Fishery Zone. When the NASCO was established this fishery was closed down. Since 1991 only research fishery has been practised and after 2000 no fishery at all has taken place. See Table 1.

Table 1. Faroese catches (tonnes) north of the Faroes since 1968.

Year	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Catch	5	7	12		9	28	20	28	40	40	37	119	536
Year	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Catch	1.025	606	678	628	566	530	576	243	364	315	95	23	23
Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Catch	6	5			6		8						

In the NEAC area there has been a general reduction in total catches since the 1980's. This reflects the decline in fishing effort as a consequence of management measures as well as a reduction in the size of stocks. The catch in the Southern area has declined over the period from about 4500 tonnes in 1972–1975 to below 1500 tonnes since 1986, and is now well below 1000 tonnes. The catch declined particularly sharply in 1976 and again in 1989–91. The catch in the Northern area also shows an overall decline over the time-series, but this is less steep than for the Southern area. The catch in the Northern area varied between 1850 and 2700 tonnes from 1971 to 1986, fell to a low of 962 tonnes in 1997, and then increased to over 1500 tonnes in 2001. The catch has shown a downward trend again since this time.

Although no distant water fishery has taken place in recent years, only approximately 50% of the total catches in the NEAC area have been taken in river fisheries; 40% of the catches are taken in coastal fisheries. As the coastal fishery is regarded as a possible threat to the conservation of salmon stocks the continuation of this fishery is of concern to ICES.

1.4 Management entities

River

The fishery is subject to the requirements set out in the Commercial Fisheries Act of 1994. Further regulations are set out in Regulation No. 92 of 26 June 1990. In cooperation with the land owners/farmers the Faroese Anglers Organisation issues licenses to the recreational fishery in specific rivers.

Faroese Fisheries Zone

Fishing for salmon in Faroese waters is subject to the requirements set out in the Commercial Fisheries Act of 1994. Fishing licences are issued by the Ministry of Fisheries and Maritime Affairs. Fishing without a license is a breach of the law.

In addition the fishery is managed based on annual resolutions adopted by NASCO.

2. Status of stocks

2.1 River stocks

The stocks in the Faroese Atlantic salmon rivers are self-contained, although some enhancement work is carried out each year. Brood fish are captured in the rivers prior to spawning. Fertilised eggs are hatched and fry raised in a hatchery, to be released as two-year old smolts into three of the salmon rivers. An average of 35-40.000 S2 smolts have been released annually over the last 10-year period.

Abundance

No assessment of the abundance has been done for any of the rivers. The catches have been rather stable in recent years, but lower than the previous decades, indicating a decrease in the production.

Diversity

As there is only four small Atlantic salmon rivers, the diversity might be low and the stock thus being less resistant to external pressures.

Threatened or endangered stocks
Due to limited knowledge of the abundance it is difficult to assess whether the stocks are under pressure, however, they are not considered endangered.

2.2 Faroese Fisheries Zone

Abundance
The Atlantic salmon resources in the Faroese Fisheries Zone are composed by salmon from rivers mostly in Northern Europe but also to some extent from Southern Europe (both 1SW and MSW) and to a small extent also from the Northwest Atlantic (Canada).

ICES make the assessment of the stocks, and for stock assessment purposes, ICES groups all salmon stocks into two stock groupings. The composition of the groups is shown below:

Southern European countries:	Northern European countries:
Ireland	Finland
France	Norway
UK (England & Wales)	Russia
UK (Northern Ireland)	Sweden
UK (Scotland)	Iceland (north/east regions)
Iceland (south/west regions)	

National origin of catches in the Faroese zone
The salmon population in Faroese waters is composed from most of the stocks in the North Atlantic. However, from tagging experiments it is estimated that more than 93% originates from the Northeast Atlantic, the remaining 7% were estimated to originate from the Northwest Atlantic. Tagging results further suggests that the salmon caught in Faroese waters is composed of mainly Northern European stocks and to a lesser degree of Southern European stocks.

From tagging experiments in the sea north of the Faroes during 1992/92–1994/95 (Hansen & Jacobsen, 2003), approximately 65% and 28% of the salmon in the Faroese fishery were estimated to originate from countries belonging to the Northern and Southern European regions, respectively. These figures add up to 93%, which is the sum of the Northern and Southern stock complexes estimated to be in Faroese waters, the remaining 7% were estimated to originate from Canada, Northwest Atlantic. Farmed salmon (20%) were excluded from the analysis.

From recoveries of microtags and external tags in the same fishery (Jacobsen *et al.*, 2001), the approximate sea-age distribution for the Northern group was 12% 1SW and 88% MSW salmon, respectively and for the Southern group 70% 1SW and 30% 2+SW salmon, respectively. In the Northwest Atlantic only 2SW fish were recovered.

Thus, by combining the geographical distribution with the seasonal (temporal) distribution the Faroese fishery – when it took place – exploited mainly the MSW northern stock complex (88% of 65% = 57%) and the 1SW southern stock complex (70% of 28% = 20%), followed by the MSW southern stock complex (30% of 28% = 8%) and the 1SW Northern stock complex (12% of 65% = 8%). The remaining 7% were estimated to originate from Canada (see Table 1).

Table 2. Approximate proportions (%) of various stock components And age groups exploited in the Faroese salmon fishery, as inferred From tag recaptures in the North Atlantic.

Exploitation at Faroes (%)	Sea age		
Group	1SW	2+SW	All ages
Northern stocks	8	57	65
Southern stocks	20	8	28
NW Atl-Canadian stocks	0	7	7
Total	28	72	100

Status of stocks (based on ICES ACFM Extract to NASCO May 2007)
ICES classifies the status of stock complexes prior to the commencement of distant water fisheries with respect to the SER requirements as follows:

• Northern European 1SW stocks are considered to be at full reproductive capacity.
• Northern European MSW stocks are considered to be at full reproductive capacity.
• Southern European 1SW stocks are considered to be at risk of suffering reduced reproductive capacity.
• Southern European MSW stocks are considered to be at risk of suffering reduced reproductive capacity.

Estimated exploitation rates have generally been decreasing over the time period for both 1SW and MSW stocks in Northern and Southern NEAC areas. Exploitation on Northern 1SW stocks is higher than on Southern 1SW and considerably higher for MSW stocks. There has been a slight increase in exploitation on 1SW and 2SW northern stocks since 2002. However, the current estimates for both stock complexes are amongst the lowest in the time-series.

Management advice
Conservation limits (CLs) have been defined by ICES as the level of stock that will achieve long-term average maximum sustainable yield (MSY). NASCO has adopted this definition of CLs. The CL is a limit reference point; having populations fall below these limits should be avoided with high probability. However, management targets have not yet been defined for all NEAC Atlantic salmon stocks.

Therefore:

• ICES considers homewater stocks in the NEAC Commission to be at full reproductive capacity when the lower bound of the confidence interval of the most recent spawner estimate is above the CL. In a similar manner, the status of stocks prior to the commencement of distant water fisheries has been interpreted to be at full reproductive capacity when the lower bound of the confidence interval of the most recent PFA estimate is above the Spawner Escapement Reserve (SER).
• ICES considers a stock to be at risk of suffering reduced reproductive capacity when the lower boundary of the spawner/PFA confidence limit is below the CL/SER, but the midpoint is above.
• ICES considers a stock to be suffering reduced reproductive capacity when the spawner/PFA midpoint is below the CL/SER.

However, ICES emphasised that the national stock conservation limits are not appropriate for the management of homewater fisheries, particularly where these exploit separate river stocks. This is because of the relative imprecision of the national conservation limits and because they will not take account of differences in the status of different river stocks or sub-river populations. Nevertheless, ICES agreed that the combined conservation limits for the main stock groups (national stocks) exploited by the distant water fisheries could be used to provide general management advice to the distant water fisheries.

Given the status of the stocks ICES provides the following advice on management (ICES ACFM Extract 2007):

• **Northern European 1SW stocks:** In the absence of specific management objectives for this stock complex the precautionary approach is to fish only on maturing 1SW salmon from rivers where stocks have been shown to be at full reproductive capacity.

• **Northern European MSW stocks:** In the absence of specific management objectives for this stock complex the precautionary approach is to fish only on non-maturing 1SW salmon from rivers where stocks have been shown to be at full reproductive capacity.

• **Southern European 1SW stocks:** In the absence of specific management objectives for this stock complex the precautionary approach is to fish only on maturing 1SW salmon from rivers where stocks have been shown to be at full reproductive capacity. Reductions in exploitation are required for as many stocks as possible, to increase the probability of the complex meeting conservation limits. Furthermore, due to the different status of individual stocks within the stock complex, mixed stock fisheries present particular threats to stock status.

• **Southern European MSW stocks:** The quantitative forecast of PFA for 2007 indicates that this stock complex is expected to continue to decline from the previous year. In the absence of any fisheries on this stock complex there is a less than 64% probability that the CL will be achieved in 2008. The PFA forecast for 2007-2010 predicts values below the SER and therefore there should be no fishing on this complex at West Greenland or Faroes. In the absence of specific management objectives for this stock complex, with the exception of the West Greenland fishery, the precautionary approach is to fish only on non-maturing 1SW salmon from rivers where stocks have been shown to be at full reproductive capacity. Reductions in exploitation are required for as many stocks as possible, to increase the probability of the complex meeting conservation limits. Furthermore, due t o the different status of individual stocks within the stock complex, mixed stock fisheries present particular threats to stock status.

3. Threats to stocks and current management measures

Mixed stock fishery in coastal areas in some Contracting Parties to NASCO is of concern to ICES. This continuous fishery may be seen as a threat to the stocks in their home waters and therefore also for stocks expected to migrate to the high seas and support an oceanic fishery for Atlantic salmon.

Lack of success to bring these fisheries to an end will impede the likelihood to recommence the fishery for Atlantic salmon in the Faroese Fisheries Zone.

3.1 Effects of salmon fisheries and fisheries taking juvenile or adult salmon as by-catch

Land based screenings of marine catches of pelagic species such as herring, blue whiting and mackerel in Faroese waters have not shown any by-catch of salmon. There is a small by-catch of salmon, as well of sea trout, in the limited seasonal fishery by small coastal boats with nets for herring in the fjords.

3.2 Factors affecting estuarine and freshwater salmon habitat

There are no external factors affecting the Faroese Atlantic salmon rivers and their estuaries, i.e. there is no industry in the areas. In the early 1970`s fish passes were constructed over three obstacles in the river “Leynará” on Streymoy, and salmon fry released further upstream in the system. This work transformed the river “Leynará” to be the most attracted Atlantic salmon river in the Faroe Islands.

3.3 Impacts of aquaculture, introductions, transfers and transgenics

There is fish farming in nearly all of the fjords in the Faroe Islands. The production of salmon was 10.700 tonnes in 2006, and is expected to increase in 2007. Unfortunately, accidents may occur where farmed salmon escape. Fish farm escapees have been caught in the rivers, and have been found among the fish taken for brood stock, during enhancement work.

The aquaculture industry is regulated by the Aquaculture Act of 1988. More specific requirements are set out in Regulation No. 131/2003. Special attention is given to prevent diseases and in case spreading of these.

3.4 Other influences affecting salmon abundance or diversity

All environmental analyses conclude that the Faroese marine environment is pristine.

4. Management approach

4.1 Management of fisheries

River fishery

The recreational fishery is regulated by Regulation No. 92 of 26 June 1990. Fishing is only permitted by angling. This is also applicable in lakes and in the estuaries. It is prohibited to destroy riverbanks. Fishing is prohibited from 1 September to 30 April. Fish lesser than 30 cm shall be released. In the two most important salmon rivers the recreational fishery is managed with a license issued by the Faroese Anglers Organisation in cooperation with the landowners.

Faroese Fisheries Zone

The Atlantic salmon resources in the Faroese Fishery Zone are managed under the Commercial Fishery Act of 1994. Furthermore, the Faroe Islands through negotiations within NASCO adopts resolutions to establish appropriate management measures for this fishery.

By NEA(07)4 NASCO agreed not to set a quota for the salmon fishery in the Faroese Fisheries Zone for 2008.

In doing so the NASCO parties

- agreed to continue to work together to establish an agreed mechanism to allocate any exploitable surplus between the Faroe Islands and home water fisheries on a fair and equitable basis;

- noted that the Faroe Islands will manage any salmon fishery on the basis of the advice from ICES regarding the stocks contributing to the Faroese salmon fishery in a precautionary manner and with a view to sustainability, taking into account relevant factors, such as socio-economic needs;

- acknowledge that Faroese management decisions will be made with due consideration to the advice of ICES concerning the biological situation and the status of the stocks contributing to the fishery;

- recognize that ICES considers it highly unlikely that the catch options provided for the North-East Atlantic Commission will change during the next three years;

- note that Denmark (in respect of the Faroe Islands and Greenland) will, in case of any decision to open the fishery, inform NASCO Secretariat and all members of the Commission of that decision and the attached conditions. In that event, other members of the Commission could call for a Commission meeting in accordance with Article 10 (7) of the Convention. In such a case, it is agreed to derogate from the provisions of Rule 16 of Procedure;

No decision has been taken by Faroese authorities whether to reopen for a commercial or a research fishery for Atlantic salmon in 2007/2008 or not.

If commercial fishery for Atlantic salmon in Faroese waters is resumed, the fishery will be managed on the basis of the advice from ICES regarding stocks contributing to the Faroese salmon fishery in a precautionary manner and with a view to sustainability. Any Atlantic salmon fishery will be limited in scope compared to the management measures agreed by NASCO, and will be subject to close surveillance and control. The fishery will be organized in

close cooperation between the fishermen and the authorities, and will seek to provide further scientific knowledge of the salmon resource, in conformity with ICES recommendations.

Actions:
Apply the Decision Structure for Managment of North Atlantic Salmon Fisheries (CNL 31.332) in management decisions.
Fisheries for salmon in the Faroese Fisheries Zone is Distant water fisheries and a Mixed river stock fishery. Part C of the Decision Structure applies to this fishery.
Time – scale: 5 years

4.2 Protect and restore salmon habitat
There are only four salmon rivers, and only two rivers with an annual catch of 400-600 fish pr. season taken together. All fishery in the estuary of "Leynará" (and up to the fish passes as well as 100 m from land) is prohibited from 15 June to 1 October as set out in Regulation No. 77 of 3 July 2006. The rivers run through land administered by farmers on behalf of the State. The Environmental Protection Act regulates the protection of rivers and the land around the rivers. All decisions regarding the land have to go through the Nature Conservancy Board.
Actions for the Faroese salmon rivers:
Establish inventories of rivers for the protection and restoration of salmon habitat in accordance with Annex 2 of – NASCO Plan of Action for the Application of the Precautionary Approach to the Protection and Restoration of Atlantic Salmon Habitat - (CNL (01)51):

- River data
- Salmon production data
- Habitat impact data

Develop a comprehensive salmon habitat protection and restoration plan in accordance with the aims of the NASCO Plan of Action
Time – scale: 3 years

4.3 Manage aquaculture, introductions and transfers
The aquaculture in Faroese fjords is regulated by the Act on Aquaculture. In accordance with this Act, licences to farming of salmon and trout are given with certain conditions. Among these are regulations on protection of the environment, requirements to construction of equipment, regulations on protection against diseases. If salmon escape, this has to be reported to the authorities.

The Act on Aquaculture is under revision and is expected to be amended in 2008.

Actions:
The Williamsburg Resolution will be applied in the management of aquaculture, introductions and transfers.

- Management of the aquaculture industry: Minimise escapes of farmed salmon through the development and implementation af action plans in accordance with Guidelines on Containment of Farm Salmon (CNL(01)53) - Annex 3 to the Williamsburg Resolution
- Management of the stocking of rivers: Apply the Guidelines for Stocking Atlantic Salmon – Annex 4 to the Williamsburg Resolution

Time – scale: 3 years

4.4 Actions to be taken in relation to other influences

As a nation dependent on the utilisation of the living marine resources Faroe Islands is committed to participate in research of the resources inhabited in Faroese waters. In this regard the Faroe Islands is doing an extensive effort to bring forward scientific knowledge about the marine environment in Faroes waters and its neighbourhood. One of the objectives is to contribute to the understanding of the marine phase of the Atlantic salmon.

5. Evaluation

With only four small salmon rivers in the Faroe Islands, the angling is limited to a few hundred salmon each year, on an average 400 to 600 fish, mostly grilse. There is for the time being no fishery for salmon at sea around the Faroes in the Faroese Fisheries Zone.

References

Hansen, L. P., and Jacobsen, J. A. 2003. Origin, migration and growth of wild and escaped farmed Atlantic salmon, *Salmo salar* L., in oceanic areas north of the Faroe Islands. *ICES Journal of Marine Science*, 60 (1): 110-119.

Jacobsen, J. A., Lund, R. A., Hansen, L. P., and O'Maoileidigh, N. 2001. Seasonal differences in the origin of Atlantic salmon (*Salmo salar* L.) in the Norwegian Sea based on estimates from age structures and tag recaptures. *Fisheries Research*, 52 (3): 169-177.