EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR MARITIME AFFAIRS AND FISHERIES

THE DIRECTOR-GENERAL

Brussels, 13.02.2009
MARE D(2009) 1460 (Annex)

Consultation paper to support development of a Baltic salmon management plan

INTRODUCTION

The purpose of this paper is to launch a consultation of stakeholders as part of the impact assessment undertaken by the Commission to consider different options for a new Baltic salmon management plan. This consultation paper builds on data and information obtained from the International Council for the Exploration of the Seas (ICES) advice on salmon fisheries[1,2,3,4,5] on one side, and on the results from a socio-economic study[6] on the other side. Other scientific sources and knowledge on Baltic salmon biology and management were also used.

1. BALTIC SALMON FISHERIES MANAGEMENT

1.1. History of management to date

Salmon stocks in the Baltic Sea were managed by the International Baltic Sea Fisheries Commission (IBSFC) from 1974 until 2005, when the IBSFC ceased to exist[7]. In 1989 the IBSFC recommended that the catch levels for salmon should be based on preserving a sufficient number of wild spawners to increase and maintain production of wild salmon strains. In 1991, for the first time a total allowable catch (TAC) system for Baltic salmon was introduced.

In 1997, following a serious decline in stocks, partly caused by the M74 disease, the IBSFC adopted the Salmon Action Plan (SAP)[8]. The objective of the SAP was to re-establish/recover wild Baltic salmon in order to attain natural production of at least 50% of the potential production for each salmon river by 2010. Other objectives were to maintain the genetic diversity of the stocks, to re-establish salmon populations in potential salmon rivers and to keep the level of fishing as high as possible. The plan also provided rules for setting TACs for marine commercial sea fisheries up to the shoreline and special rules for harvesting reared salmon. On top of this, Coastal States were also requested to adopt national measures, such as closed seasons and areas or improvements to river habitats and water quality, to supplement the measures taken by the IBSFC.

1 ICES advice 2007, 8.4.14: Salmon in the Main Basin and the Gulf of Bothnia (Subdivisions 22-31).

2 ICES advice 2007, 8.4.15: Salmon in the Gulf of Finland (Subdivision 32).

3 ICES advice 2008, 8.4.14: Salmon in the Main Basin and the Gulf of Bothnia (Subdivision 22-31).

4 ICES advice 2008, 8.4.15: Salmon in the Gulf of Finland (Subdivision 32).

5 ICES special advice 2008, 8.3.3.3: Request to ICES for advice on management of Baltic Sea salmon. http://www.ices.dk/committe/acom/comwork/report/2008/Special%20Requests/EC%20Revision%20of%20salmon%20action%20plan.pdf

6 Finnish game and fisheries research institute SI2.491891, FISH/2007/03 – Lot 6, 2009. Data analysis to support development of a Baltic Sea Salmon Action Plan.

7 The IBSFC was a forum which brought together Russia and the current Baltic EU Member States, not all of which were Member States at that time.

8 International Baltic Sea Fisheries Commission Salmon Action Plan 1997-2010.

Map from old SAP from 1999 with 89 Baltic salmon rivers divided into 3 categories
(1) Rivers with wild salmon production – **bold**
(2) Rivers with released salmon and no wild production – normal
(3) Rivers with extinct salmon population but with potential for re- establishment - underlined.

As from 2005, although the IBSFC ceased to exist, the European Commission has continued to manage marine salmon fisheries by setting TACs on an annual basis, combined with technical measures such as closed seasons. In addition some Member States kept national measures set up in accordance with the objectives of the old SAP.

In Krakow in November 2007 the Helsinki Commission (HELCOM) together with all Baltic Sea EU Member States, the EU and the Russian Federation agreed on a Baltic Sea Action plan[9]. This plan contains actions for the Baltic salmon including classification and inventory of salmon rivers and the development of appropriate breeding and restocking activities as well as a production target.

1.2. Biology

The salmon is an anadromous species, which spends its juvenile and adult phases in the sea, while spawning and nursing in rivers. In the Baltic Sea, adult salmon usually enter rivers during the summer. They breed and the offspring (parr) spend one to five years in the river before migrating to the sea as smolt. They stay in their feeding ground for one or, usually, more years before they migrate back to their native river (homing). Most spawners die during breeding, and only 5% to 10%, mainly females, are repeat spawners[10].

The Baltic salmon stock (*Salmo salar*, L.) is geographically but also genetically distinct from the North Atlantic salmon. It is known to have been present historically in about one hundred Baltic rivers, but as a result of habitat destruction, pollution, overfishing and other human activities the number of rivers with native self-reproducing strains is now below thirty[11].

1.3. Current state of stocks

ICES evaluates the state of the Baltic salmon stocks and gives its advice to the Commission in June every year[1, 2, 3, 4]. ICES has established six assessment units (AU) based on the EU management objectives and the biological and genetic characteristics of the stocks. In setting these six assessment units, ICES assumes that stocks in any particular unit have similar migration patterns and are subjected to the same fisheries and exploitation rates. The assessment units are:

1. North-eastern Bothnian Bay stocks: on the Finnish-Swedish coast from Perhonjoki northwards to the River Råneälven, including the River Tornionjoki;
2. Western Bothnian Bay stocks: on the Swedish coast between Lögdeälven and Luleälven;
3. Bothnian Sea stocks: on the Swedish coast from Dalälven northwards to Gideälven and on the Finnish coast from Paimionjoki northwards to Kyrönjoki;
4. Western Main Basin stocks: rivers on the Swedish coast in Divisions 25 to 29;
5. Eastern Main Basin stocks: Estonian, Latvian, Lithuanian and Polish rivers;
6. The Gulf of Finland: Division 32.

The state of the stocks is evaluated against the SAP target of achieving wild salmon smolt production of 50% of the potential smolt production in each river. The potential production has been calculated for each river, based on the chance of successful spawning size of the production area, habitat quality of the parr area, mortality during migration and smoltification age.

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9 Helsinki Commission, Krakow November 2007. Helcom Baltic Sea Action Plan.

10 A. Romakkaniemi, 2008 – Conservation of Atlantic salmon by supplementary stocking of juvenile fish - academic dissertation thesis.

11 International Baltic Sea Fisheries Commission and Helsinki Commission, 1999. Baltic salmon rivers – state in the late 1990s, as reported by the countries in the Baltic region.

Wild Baltic salmon rivers (excluding the Gulf of Finland) can potentially produce between 2.5 and 5.1 million (most likely 3.45 million) wild smolts per year[12]. Currently wild smolt production is estimated to be around two thirds of the potential total smolt production and it is expected to remain high in the near future, but production is still low in rivers where salmon have been reintroduced. The number of spawners is expected to increase slightly in 2008 and again in 2009.

The SAP has been partially successful in achieving its objective of restoring natural smolt production in salmon rivers to 50% of their potential by 2010. Overall, the northernmost stocks (AUs 1 and 2) have shown the most positive trend in smolt abundance over the last ten years and several of them are expected to reach the 50% production target by 2010. Stocks in AUs 4 and 5 have been relatively stable but less abundant in recent years. However, some of the stocks in AUs 4 and 5, especially the small rivers, were so depleted at the start of the Salmon Action Plan that they have not been able to recover, and some of them have even weakened. The reason for this might be that small rivers are more sensitive to fluctuations in environmental conditions and anthropogenic pressures. ICES conclude that in order to fully evaluate if re-establishment of salmon in potential rivers has been successful, a period of one generation (four or five years) after the last release is needed. Preliminary results suggest, however, that only a few of the potential salmon rivers show promising developments, while most show no signs of recovery.

The condition of the wild stocks in the Gulf of Finland (AU 6) is poor. Although the estimates of smolt production and the potential production capacity of the three wild salmon rivers in the area are uncertain, the status of these populations is considered unsafe.

1.4. Description of Baltic salmon fisheries

Salmon fisheries are made of two components having different characteristics: the commercial fishery and the recreational fishery. Both fisheries have been assessed[6] and conclusions are presented hereafter**:**

1.4.1. Commercial fishery

In 2007 the commercial salmon catch in the Baltic Sea was the lowest recorded since 1980. During the period covered by the SAP (1997-2007) salmon catches decreased from 2 395 tonnes to 913 tonnes (435 000 and 177 000 salmon respectively). The main focus of the fishery has moved slightly from off-shore to coastal waters. In 1997 88% of the total salmon catch was taken offshore and in 2007 about 61%. This trend is expected to continue. During this period Sweden, Finland, Poland and Denmark took around 90% of the total Baltic salmon catch. In 2007 only 11 active[13] Finnish, Swedish and Danish vessels were fishing for salmon in the Main Basin, each employing two or three persons onboard. The Polish fleet consisted of 15 salmon vessels employing a total of 36 onboard. In the Swedish and Finnish coastal fisheries the number of salmon fishermen stood at 340 in 2007.

Since 2005 the TAC has not restricted salmon fishing in any of the Baltic countries and in 2007 the nominal commercial catch was about 40% of the TAC. Restrictions on

12 ICES WKBALSAL Report 2008, ICES CM 2008/ACOM:55.

13 In the study an active vessel is defined as a vessel operating for more than 60 fishing days per year

marketing of salmon due to high dioxin content, increasing seal damage to fishing gear and caught fish causing regional and temporary deterioration in fishing opportunities, particularly in coastal fisheries, higher fishing costs (e.g. fuel) and low salmon price are regarded as factors that have contributed to this situation. Several other factors have also played a role in limiting salmon fishing, including technical measures such as the opening times of the fishery and closed areas and restrictions on drift nets.

Following the phasing-out of drift nets in the Baltic Sea, a total ban was introduced on 1 January 2008[14]. It is still too early to assess the effects of this ban on salmon fisheries; the likely consequence could be that offshore fishing would be significantly reduced from the 70% previously taken. Other coastal and river fisheries for salmon could partly benefit from this reduction, but if fishing effort deployed in these fisheries does not change considerably from the current level, the total annual harvest will decrease by about 40% for the southern stocks and by 25% to 35% for the northern stocks.

The value of the Baltic salmon catch was about €2.7 million in 2007. The salmon catch makes up about 0.5% of the total catch value of all species in Poland, Denmark, Sweden and Finland. The total salmonids market (supply of salmon, sea trout and rainbow trout) in Poland, Denmark, Sweden and Finland was about 100 000 tonnes in 2005. The share of wild-caught salmon was about 1%. Wild-caught salmon is established as a special niche in the market and often commands a higher price than farmed salmon.

Fish mortality and catch losses caused by seals are difficult to estimate but are considered major problems for the coastal and offshore fisheries in the Gulf of Bothnia and Gulf of Finland. The rough estimates for the direct observed losses in Finland and Sweden in 2007 is around 67 tonnes (13 000 salmon) with a value of € 245 000[6]. According to ICES, catch losses for fishermen have decreased as fishermen have switched to specially designed trap nets and are expected to decrease further as more fishermen will change to such gears.

1.4.2. Recreational fishery

Within the recreational salmon fisheries the river catch was about 121 tonnes (19 000 salmon) and the sea catch about 110 tonnes (21 000 salmon) in 2007. This together constitutes around 13% of total Baltic salmon catches. About half of the recreational sea catch has been taken by trolling over the last few years, and this fishery has slightly increased in the southern main basin. In 2007 about 37 000 anglers fished for salmon in rivers in Sweden and Finland and approximately 1 500 to 3 000 participated in salmon trolling. Seventy companies in Sweden and at least thirty in Finland offer fishing travel services along salmon rivers and studies have estimated that trolling now provides fifteen to twenty jobs in Bornholm and close to thirty in Sweden.

The total monetary value of recreational salmon fishing in the Baltic Sea cannot be estimated because of lack of data. Apart from licences, anglers also spend large sums on travelling, equipment, food, accommodation, etc and this amount deserves to be considered too. Estimates are available for the River Tornionjoki, showing total expenditure of EUR 2 million in 2007, and for recreational fishers in Denmark and Sweden, who spend approximately EUR 4 million on trolling per year.

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14 Council Regulation (EC) No 2187/2005 of 21 December 2005 for the conservation of fishery resources through technical measures in the Baltic Sea, the Belts and the Sound, amending Regulation (EC) No 1434/98 and repealing Regulation (EC) No 88/98.

2. OTHER THREATS TO BALTIC SALMON STOCKS

2.1. Habitat destruction

Salmon need fast-flowing rivers for part of their life cycle. Unfortunately, this type of habitat has been drastically reduced all over the Baltic region as a result of human activities. When rivers are harnessed for hydro-power development, reservoirs, turbines and dams are built, migration routes for salmon are blocked and the flows are changed. Log driving has been another important reason for levelling and changing large stretches of rapids in the northern Baltic rivers which has further depleted the habitats suitable for salmon.

2.2. Poor water quality in rivers

Levels of nutrients from farmland and communities have risen in many Baltic rivers as primary production has increased and the breaking-down of this and other added organic matter has depleted oxygen in many systems.

Salmon are usually regarded as a good indicator of water quality because they are very sensitive to pollutants, acidification and low oxygen levels. At pH of 6.3 or lower salmon is endangered by the change in water chemistry. Therefore large-scale liming to increase the pH has been carried out i.e. in Sweden since 1979. Problems with direct toxic sewage, mainly from pulp mills and mines, are also a cause for concern in many rivers.

2.3. Genetic loss and restocking

There are two major threats to the genetic diversity of Baltic salmon stocks:

– the loss of genetic material and characteristics because of population extinction or reduction,
– the mixing of genetic material between wild salmon and reared salmon and, in some rivers, with sea trout.

The genetic loss results in the erosion of the capability to adapt to local environmental conditions and to changes in the environment, such as climate change.

As a consequence of the re-stocking target in the old IBSFC Salmon Action Plan, Member States have for many years been releasing salmon fry, parr and smolt in rivers with extinct salmon populations. There has also been considerable “enhancement releases” into rivers with weak populations. In some Baltic countries hydro-power companies have been ordered by the courts to release salmon smolt to compensate for obstructing migratory waterways. As a result of all these activities, 6 to 7 million smolts are currently released in the Baltic region every year, which is almost three times the natural production of smolts. The potential impact of these releases on the genetic robustness of wild salmon populations is unknown, but is of great concern[5].

2.4. Post-smolt survival at sea

Post-smolt survival has been gradually decreasing over the last 10 to 15 years. The lowest estimated survival rate so far is for 2005 when survival rate was less than 10% for reared smolts and around 15% for wild smolts, which is about half the rate that prevailed in the early 1990s[12].

The reasons behind the decrease in post-smolt survival are still unclear. Post-smolt survival rate has been shown as negatively correlated with seal and smolt abundance, and positively correlated with abundance of 0+ herring[3]. One consequence of this phenomenon is that, the numbers of salmon recruiting to the fishery has not increased during the last few years, despite the increase in wild smolt production and stable numbers of released smolts.

2.5. M74 syndrome

Amongst other diseases, M74 deserves particular attention. The M74 syndrome affects mixed and wild stocks of Baltic salmon and can result in high mortality rates in fry at the yolk-sac stage. From 1992 to 1996 more than 50% of all young salmon died from this syndrome but since then the prevalence has decreased to a low level in recent years. The factors influencing the development of M74 are poorly understood and future mortality rates attributable to M74 therefore cannot be predicted. M74 mortality has however varied over the years and sudden changes in the incidence of the syndrome are likely to occur in the future[3].

2.6. Dioxin

The overall levels of dioxin and related substances increase with the age of the salmon. In the Baltic Sea aged salmon are generally above the EU threshold. Finland and Sweden have derogations allowing national use of the salmon[15] until 2011, while Estonia, Latvia, Lithuania and Poland have also applied for derogations from the EU regulations on dioxin[6] In Denmark and Latvia, salmon above certain weight limits may not be marketed (Denmark: 5.5 kg gutted weight; Latvia: 6.0 kg ungutted weight). Depending on the available markets, authorisation to land and prices for fish with high dioxin content, fishermen change their fishing behaviour and pressure, and this indirectly influences the state of the stocks.

3. RESULTS FROM STUDIES EVALUATING THE PREVIOUS SAP AND ADVISING ON THE NEW MANAGEMENT PLAN

3.1. Scientific study

As part of its preparatory work for a new salmon management plan, the Commission asked ICES to evaluate the previous SAP and give advice on a new management plan[5]. Further background information can be found in the Report of the Workshop on the Baltic Salmon Management Plan[12]. The key findings of the ICES evaluation of the previous SAP can be summarised as follows:

- The SAP has been partially successful in achieving its objective of restoring natural smolt production in salmon rivers to 50% of their potential by 2010.
- Even though it is difficult to assess if the Baltic salmon stocks are within "safe genetic limits," concern is expressed that the large number of released reared salmon could be a problem for rivers with depleted populations.

15 Council Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs (Text with EEA relevance).

- TAC recommendations from ICES have been consistent with the smolt production target, but the TAC agreed has often been higher. In recent years, the TAC has not been fully utilised.
- Limits on the number of trap nets in coastal waters are considered ineffective since catches per trap net vary substantially and limits lead to reduction of traps in the least productive sites.
- Closed periods are considered efficient to protect migrating spawners.
- Neither adipose fin-clipping nor establishment of terminal fishing areas have been effective tools to increase selective exploitation of reared salmon, and thus reduce pressure on natural production of salmon, because they have not been implemented everywhere.
- The ban on drift-net fishing has reduced fishing mortality.

The key points in the ICES recommendations for the future management plan can be summarised as follows:

- The current target of smolt production of 50% of the potential production should be increased to at least 75% if the objective is to restore salmon stocks to the Maximum Sustainable Yield[16] level.
- Fishery management measures for populations in small and weak rivers (small rivers that have not seen the same increase in smolt production as elsewhere) will need local management plans that use local habitat/restoration/improvement efforts to bring the population in the river into line with both international and national fisheries management objectives.
- Suitable objectives should be set to address the genetic status of salmon populations. Pending further studies, a preliminary genetic reference point of 500 wild spawners per generation could be applied to meta-population units (which include salmon populations from several genetically connected rivers).
- The option of managing salmon primarily by means of measures in the open sea should be rejected. Management measures should be applied to all fisheries (open sea, coastal, river, commercial and recreational) in a consistent manner.
- An appropriate monitoring scheme should be implemented to guide management and measure performance.
- Future management should include an integrated approach that addresses factors controlling the dynamics of salmon populations throughout their life cycle, the multitude of economic and social benefits that can be derived from salmon and the key human-related activities that affect salmon, including fishing, habitat alteration and hatcheries.
- Control and enforcement to avoid Illegal, Unregulated and Unreported fishing (IUU), both commercial and recreational, must be part of the future plan if it is to be effective. In that context, misreporting of salmon as sea trout should be prevented.
- The estimates of potential smolt production in Baltic salmon rivers are well founded and suitable for management purposes.

Additional information from the ICES Salmon Working Group's report[12] concludes that use of circle hooks might result in increased survival of caught and released salmon in the Baltic Sea. This would reduce mortality of undersized or, possibly, wild salmon released in certain areas.

16 SEC(2006) 868, Implementing sustainability in EU fisheries through maximum sustainable yield

3.2. Socio-economic assessment

A socio-economic assessment of the impact of a new salmon management plan has been carried out, on Commission request[6]. The main results from the assessment of the previous SAP are set out in point 1.4 and the key elements of the social and economic assessment for a new management plan are as follows:

- The bio-economic analysis showed that reducing fishing effort in commercial fisheries leads to lower profits in commercial fisheries, a higher level of protection for weak stocks and greater abundance of salmon in rivers. The proportional decrease in the total profits applies to every country, but only countries with recreational fisheries will benefit from this effort reduction. Increases in salmon in rivers are likely to lead to an increase in the number of recreational fishermen and probably stimulate the regional economy.
- In the River Tornionjoki area, a study concerning the 2007 angler population suggested that recreational fishermen were willing to pay € 290 000 a year for a management plan that would enhance the catch in rivers. The study revealed that even though the respondents would like to have limits on commercial catches at sea, they did not support banning sea fishing completely. Anglers were also willing to pay for improved employment prospects in the river valleys.
- The sociological assessment revealed that all stakeholder groups considered that the establishment of a new management plan was important in order to continue the recovery process started by the SAP. Both the commercial and recreational sectors have high hopes of salmon fishing as a way to make a livelihood and keep sparsely populated regions alive.
- When offered a choice between four management options, most stakeholders in the sociological study regarded the option when TACs was set on both river and sea catches, with lower production targets for weak rivers, as the preferred one. This option was seen as a good compromise between the commercial and recreational sectors and might have a positive impact on interaction and trust between the parties involved and on confidence in overall fisheries management.
- The socio-economic report proposes in its conclusion that management objectives should be related to adult salmon returning to their native rivers instead of or together with management objectives based on juvenile salmon production. It also states that regional or even river specific management options would be preferable over traditional TAC regulation.
- With a probable decrease in off-shore commercial salmon fishing, more salmon are available to be caught by recreational fisheries. This could lead to relatively higher fishing mortality for recreational fisheries than at present. Consequently, management of recreational fisheries will become more important and both biological and socio-economic monitoring would be needed. The potential core indicators for this kind of monitoring are the number of recreational fishermen, the number of licences sold, catches and the number of companies offering fishing services.

4. QUESTIONS TO SUPPORT DEVELOPMENT OF A NEW SALMON MANAGEMENT PLAN

Based on the above mentioned elements and on input from the Baltic Sea Regional Advisory Council[17] (BSRAC), the Commission has prepared a questionnaire with the

17 Baltic Sea Regional Advisory Council, March 2007. Recommendation on a salmon management plan for the Baltic sea

aim of gathering comments on different policy options from Member States and stakeholders.

You are invited to answer to all or part of the questionnaire as well as giving general comments depending on your interest and experience. The answers should ideally be numbered and must be sent to DG MARE (mare-baltic-salmon-consultation@ec.europa.eu by 1 May 2009 at the latest.

4.1. General objectives

In line with existing policies and advice from the BSRAC the general objectives of any new management plan could be that:

- Wild salmon in the Baltic Sea and its rivers shall be managed and protected within safe biological limits, safeguarding the genetic diversity of the different stocks; and contributing to the objectives for the Habitats Directive[18].
- Commercial and recreational fishermen in the Baltic Sea and its rivers shall be able to use the fishing possibilities resulting from a sustainable management of the Baltic salmon stocks.
- Science and research shall be further developed on salmon and sea trout in cooperation with the stakeholders.
- The achievement of the objectives pursued should not create excessive and disproportionate administrative burdens.

1) Which respective importance would you give to each of these objectives (very important/important/ not so important/ not important/no opinion)?

2) Would you suggest any additional objectives?

4.2. Harvest control rules, including total allowable catches (TAC)

The Commission acknowledges the advice from ICES to set TACs for all catches of salmon in marine and river areas, including recreational fisheries. The TACs could be based on harvest control rules linked to development of the stocks feeding in the TAC subdivisions. In that case, the Commission would ask ICES to suggest suitable harvest rules for such mixed-stock fisheries. As the current TAC is only partly utilised (42% in Subdivisions 22 to 31 for 2007), the Commission believes that the current TAC level should be able to cover fisheries employed by some Member States in rivers.

3a) What is your opinion on having a global TAC including both catches from rivers and at sea?

3b) If you oppose to a global TAC, state your preferred alternative options for limiting fisheries.

4.3. Technical measures

Regulation 2187/2005[19] sets out a number of technical measures that affect salmon, such as minimum landing sizes, time closures, drift-net ban, etc.

18 Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

4) Should the plan keep the existing technical measures and/or set up additional measures?

4.4. Production target

There are two ways of setting production targets for wild salmon in the Baltic region: setting a target on smolt production or on spawning stock. The preferred option by ICES is to set the target on the smolt production. This option has already been operational in the Baltic fisheries for the last ten years, resulting in good statistics and it is also regarded as the more robust target[12]. A smolt production target can easily be converted into a spawning stock target which Member States can use for operational purposes and harvest control.

ICES propose to set a target of at least 75% of the estimated potential smolt production capacity in each river. The time frame was not defined by ICES but the BSRAC proposes to reach this target by 2020. This target would also correspond to the EU maximum sustainable yield target[16]. Aside from that, the target agreed by EU, Baltic Sea Member States and the Russian Federation in the HELCOM Baltic Sea Action plan[9] is to reach production of wild salmon of at least 80% of the best estimate of potential production by 2015.

5) What is your opinion on the proposed targets and timeframes?

4.4.1. Special target for weak rivers

The Commission recognises that there are big variations between Baltic salmon rivers in terms of restoring their smolt production. ICES and the Baltic Sea RAC advise that "weak rivers", where a production target of 75% is not realistic within the same timeframe, should be subject to intermediate targets of 50% of the estimated potential smolt production capacity in each river and with river-specific measures. The HELCOM inventory of all Baltic salmon rivers could form the basis for a classification of all rivers by ICES. The weak rivers will be identified and the cause for the lack of response to previous measures should be investigated on a case by case basis. Intermediate individual targets and timeframes for these rivers could be proposed by ICES and adopted by the Commission.

6) What is your opinion on setting intermediate targets on weak rivers and on how should we treat these rivers?

4.5. Measures to differentiate between harvests of reared and wild salmon

It has been difficult for ICES to assess the success of the adipose fin-clipping programme and of terminal fishing areas, as required by the SAP. Fin-clipping for reared smolt and parr is used to segregate between reared and wild salmon, and was expected to contribute to decreasing the fishing pressure on wild salmon. The Commission considers that measures to limit fishing pressure on wild salmon in mixed-stocks fisheries are necessary to protect salmon from weak rivers. If a programme for mandatory adipose fin-clipping would form part of the new management plan, fishing methods that allow salmon to be released alive would have to be used for targeted salmon fisheries in these areas.

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19 Council Regulation (EC) No 2187/2005 of 21 December 2005 for the conservation of fishery resources through technical measures in the Baltic Sea, the Belts and the Sound, amending Regulation (EC) No 1434/98 and repealing Regulation (EC) No 88/98.

Examples of such gear include fish traps, longlines and hooks. Coastal areas where salmon from weak rivers would be likely to be caught would also have to be identified.

As part of the old SAP some Member States have established measures to limit the fishing on wild salmon in coastal areas where wild and reared salmon coexist. Because wild salmon tends to enter the river earlier than reared salmon, the opening of the season is delayed in order to allow as many wild salmon possible to enter the river. Because of the spatial and temporal differences of this migration, such measures should better be taken on a regional scale and on an annual basis.

7) Should the plan include measures to promote fishing on reared salmon instead of wild and which measure would you regard as the most appropriate?

8) In case of a fin-clipping program, how and on what basis should the areas for mandatory release of wild salmon be identified?

9) Which other management tools would you propose to decrease fishing pressure on populations from weak rivers?

4.6. Safeguarding genetic diversity

In order to safeguard the genetic diversity of the Baltic salmon stocks and build resilience against future threats and challenges, the Commission considers it important to preserve the specific genetic information of particular river populations. Here are some general questions on genetic diversity:

10) Aside from the measures and targets proposed below, would you recommend any other measure to safeguard the genetic diversity?

Here are some suggestions for targets and measures to safeguard the genetic diversity of Baltic salmon, followed by further questions:

4.6.1. Set a minimum number of spawners

ICES suggests that meta-population units (which include salmon populations from several genetically connected rivers) should be identified as soon as possible in order to set genetic targets on numbers of wild spawners per generation. .

11) What is your opinion on setting a target on minimum numbers of wild spawners per meta population unit or per river in the management plan?

4.6.2. Limit the numbers of reared salmon

The Commission acknowledges that a large number of reared salmon in rivers with depleted salmon stocks is a threat to their wild population because of the competition for food and space and mixing of genes. Straying to other rivers is also a concern. One way to tackle this would be to phase out voluntary releases of reared salmon in these rivers. This could not affect releases carried out as compensatory measures ordered by national court rulings. An alternative could be to set a limit on the ratio between released smolt and wild salmon smolt production per country.

12) What is your opinion on the measures to limit the number of released reared salmon suggested above?

4.6.3. Rules or recommendations for releases of reared salmon

In order to limit the effect of genetic drift during breeding and ensure successful release with proper natural selection, the plan could include rules or recommendations for releases of reared salmon. Such rules or recommendations could encompass the origin of released salmon, the age and quality of released salmon and where salmon should be allowed to be released. The Helcom Baltic sea action plan[9] supports that appropriate breeding practices should be further developed to safeguard the genetic variability of native wild stocks.

13) Do you support having rules or recommendations for releases of salmon included in the plan?

14) What rules or recommendation would you recommend?

4.7. Measures to improve habitats and water quality

In order to fulfil the objectives of the plan, fisheries measures must go hand in hand with measures to improve habitats and water quality. Such measures could be taken by Member States to fulfil the objectives of the salmon management plan, the Water Framework Directive[20] and the Habitats Directive and could contain removing of man-made obstacles that hinder migration, building fish ladders, improving and/or restoring riparian zones, improving habitats in both spawning and parr-rearing areas and improving the water quality in terms of pH, oxygen levels and effluents.

15) Should recommendations on measures to improve the habitat and water quality in rivers form part of the management plan?

4.8. Implementation plans

The scheme could encompass the setting up of national implementation plans for each river to fulfil the objectives and targets set in the management plan. Such implementation plans could be based on river-specific risk assessments and the measures would also ideally be consistent with the objectives of the Water Framework Directive and the Habitats Directive. However, in line with general objectives, attention should be paid in setting up, monitoring and coordinating of the management plans not to create excessive and disproportionate administrative burdens.

16) Should implementation plans be part of the management plan?

17) Should there be coordination of such plans and, if so, who should be responsible for it?

4.9. Support group

One possible way of coordinating implementation of the management plan at national level could be in the form of a support group. Such a group could be a forum for best practice and good ideas and bring together stakeholders, representatives of the Member States and scientists.

18) Do you agree that the management plan should include the setting up of such a surveillance group and if so, who should host the meetings and administrate the work?

20 Council Directive 2000/60/EC of 23 October 2000 establishing a framework for Community action in the field of water policy

4.10. Monitoring and reporting

Currently Member States are requested to monitor, control and report salmon catches in coastal and river fisheries and to report to ICES every year for the purpose of setting the TACs. If a salmon management plan covering rivers was adopted, it would be up to Member States to monitor implementation of the plan and the state of the populations in the different rivers.

ICES suggests that the system of index rivers already in place for the SAP should be maintained for monitoring and more detailed research. The list of rivers should probably also be enlarged. The monitoring could cover habitat improvement in the wider sense plus population estimates per river based on:

1. smolt production;
2. numbers of female spawners;
3. parr density in rivers.

Under the Habitats Directive, Member States have the obligation to report on the statues of protected species with the next reporting exercises in 2014 and 2020. The Commission suggests that reporting on national implementation of a possible future salmon management plan could be sent to the Commission in alignment with these reporting obligation, i.e. every six years. The Commission could develop a reporting format to help Member States to report on implementation of the plan and the situation in the rivers covered by it.

19) What is your best/worst practice when it comes to monitoring in salmon rivers?

4.11. Control and the problem of differentiating sea trout from salmon

Council Regulation 2847/93[21] covers controls and reporting for salmon in the Baltic Sea. A new Control Regulation is under way and is expected to be adopted this year. If the new salmon management plan was to cover river fisheries and recreational fisheries, these catches would also have to be monitored and reported by Member States.

Even though separation of sea trout and salmon is mandatory under EC Regulation, clearly many salmon are currently misreported as sea trout[6]. Separation of the two species is essential in order to measure the mortality rate which is the foundation for management of fish stocks, and the Commission would therefore emphasise the need to distinguish between salmon and sea trout in all catch reports. Currently there is no TAC set for sea trout. However, as it appear that many sea trout populations are unsustainably harvested and also migrating far away from coastal areas, this could open the question on developing international cooperation when managing these stocks .

20a) What is your experience of separation of salmon and sea trout, both on a practical and management scale?

20b) Could you recommend a best practice?

21) Would you support a future inclusion of sea trout into a management plan if this is found advisable from a scientific view?

21 Council Regulation (EEC) No 2847/93 of 12 October 1993 establishing a control system applicable to the common fisheries policy.

4.12. Research

During its work on this consultation paper the Commission identified a number of areas where more research is needed and that could form part of the management plan or support implementation and updating of the plan:

- The reason for the decreased post-smolt survival at sea should be investigated.
- Meta-population units should be identified for genetic targets.
- Migration routes should be mapped.
- Knowledge on recreational catches and effort for both salmon and sea trout should be enhanced.

22) What other research areas would you propose?