EUROPEAN COMMISSION

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COMMISSION STAFF WORKING PAPER

Impact Assessment

Accompanying the document

Proposal for a
REGULATION (EU) No …/… OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

establishing a multiannual plan for the Baltic salmon stock and the fisheries exploiting that stock
IMPACT ASSESSMENT

Agenda planning: 2008/MARE/035

This report commits only the Commission departments involved in preparing it and in no way prejudges the final form of any decision to be taken by the Commission.

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Lead DG: DG MARE
Other departments involved: DG ENV, DG EMPL, DG REGIO, DG ECFIN, DG TRADE and the Secretariat-General
Agenda planning/WP reference: 2008/MARE/035

1. PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

1.1. Organisation and timing

This impact assessment concerns a proposal for a Council Regulation establishing a long-term management system for the salmon stock in the Baltic Sea and for fishing the stock. The proposal is provided for in 'Agenda Planning' (2008/MARE/035) and in the 2009 Annual Management Plan of the Directorate-General for Maritime Affairs and Fisheries under the specific objective 'Conservation and management of fish resources'. The Salmon Action Plan (SAP)[1] developed by the International Baltic Sea Fisheries Commission (IBSFC)[2], expired in 2010 but had been, in theory, already obsolete in 2005, when the IBSFC ceased to exist. Since then Member States, the Baltic Sea Regional Advisory Council (BSRAC) and stakeholders have asked the Commission to come up with a proposal for a new multiannual plan to replace the SAP.

In order to support the work with an impact assessment of any future multiannual plan, an Impact Assessment Steering Group (IASG) was set up in December 2008. It includes representatives from six Directorates-General, namely DG ENV, DG EMPL, DG REGIO, DG ECFIN, DG TRADE and the Secretariat-General. This draft assessment has been discussed by the group and DG ENV has been closely involved in formulating the proposal. A glossary explaining all the terms used in the proposal can be found in Annex I.

1.2. Consultation and expertise

This impact assessment was prepared by DG MARE, based on advice from two external sources of expertise — the International Council for the Exploration of the Sea (ICES) on the environmental parameters[3] and the Finnish Game and Fisheries Research Institute on the social and economic assessments of the possible policy options[4]. The Scientific, Technical and Economic Committee for Fisheries (STECF) has also evaluated the two reports[5] and confirmed their main conclusions. A summary of the reports and the STECF advice can be found in Annex II.

Meetings to present the consultation process were held with relevant representative bodies, namely the BSRAC and river sport fishing associations. In February 2009, an open consultation[6] was launched on the DG MARE homepage and via 'Your Voice in Europe'. A

[1] IBSFC Resultion IV, Salmon Action Plan 1997-2010, adopted during the Extraordinary Session, February 1997. http://ec.europa.eu/fisheries/cfp/governance/consultations/baltic_salmon/action_plan_en.pdf
[2] The IBSFC was a forum which brought together Russia and the current Baltic EU Member States, not all of which were EU Member States at that time.
[3] 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.
[4] Finnish Game and Fisheries Research Institute, 2008. Data analysis to support the development of a Baltic Sea Salmon Action Plan, SI2.491891, FISH/2007/03 — Lot 6: http://ec.europa.eu/fisheries/publications/studies_reports_en.htm#1.
[5] Report on the 31st plenary meeting of the Scientific, Technical and Economic Committee for Fisheries: (PLEN-09-02), 13-17 July 2009, Copenhagen.
[6] http://ec.europa.eu/fisheries/cfp/governance/consultations/consultation_baltic_salmon_en.htm.

total of 45 written contributions were submitted by 8 public bodies, 24 organisations and 13 citizens. All the contributions and a summary can be found on DG MARE's website[7]. A short summary can also be found in Annex III.

Fisheries and environmental administrations from the Baltic Sea Member States, key stakeholders from the BSRAC, the European Anglers Association and experts were invited to a consultation meeting on 28 April 2009 in Brussels. The meeting discussed some of the crucial components of the plan. The main conclusions from the meeting can be found in Annex III.

The main conclusions from the consultation process on which all the Member States, scientists and almost all stakeholders could agree were:

- There is strong support for development of an EU multiannual plan.
- Any such plan should include the whole life-cycle of salmon and all factors influencing the species.
- The main aim should be to safeguard all river stocks.
- All user groups should have access to the resource.

The Commission's minimum standards for consultations have been met. The environmental, social and economic advice, the results of the open consultation process, the conclusions from the consultation meeting, the outcome of the discussions in the IASG and the recommendations from the BSRAC[8] all significantly contributed to the analysis of the policy options and of the different policy measures mentioned in this formal impact assessment.

1.3. Changes to the working document following the IA Board's opinion

This version of the impact assessment takes into account the opinion given by the Commission's Impact Assessment Board on 17 July 2009. In particular:

- The baseline scenario has been expanded with a more thorough description of the policy context in which the long-term plan will be established. In this context, transposition and compliance issues are highlighted.
- The main problems that the new initiative should address have been more clearly highlighted.
- More background information on the state of the salmon stocks and relevant characteristics of the sector has been added.
- The level (EU/Member State) at which drivers and problems need to be addressed has been clarified and the subsidiarity and proportionality issues are now highlighted.
- A description of the success and shortcomings of the former management plan (the Salmon Action Plan) has been added.
- The policy options section now includes discussion and screening of high-level options (e.g. integrated v. non-integrated approach) and identifies suboptions through a 3 step approach.

[7] http://ec.europa.eu/fisheries/cfp/governance/consultations/baltic_salmon/contributions_en.htm.

[8] BSRAC recommendation on a salmon management plan for the Baltic Sea – March 2007 and May 2009. http://www.bsrac.org/ooizzCMS/DA/statementsandrecommendations

- Relevant information available in documents referred to in the assessment (e.g. two scientific studies and the outcome of the consultation) has been added.

2. PROBLEM DEFINITION

2.1. Context and current management

Salmon is an anadromous species, which spends its juvenile and adult phases in the sea, but spawns in rivers (See Annex IV). The Baltic salmon (*Salmo salar*, L.) stock is geographically but also genetically distinct from North Atlantic salmon. Historically it is known to have been present in about one hundred Baltic rivers (see Annex V), before overfishing, habitat deterioration (including pollution) and other pressures reduced the number of rivers with native self-reproducing populations to around thirty by the end of the twentieth century (Category 1 in Annex V).

The salmon stock in the Baltic Sea was managed by the International Baltic Sea Fisheries Commission (IBSFC) from 1974 until 2005 when the EU took over the management. In 1997, following a serious decline in the salmon stock the IBSFC adopted the Salmon Action Plan (SAP)[1] which expired in 2010. The objective of the SAP was to enable wild Baltic salmon to recover, to maintain the genetic diversity of the river stocks, to re-establish salmon populations in potential salmon rivers and to keep the level of fishing as high as possible. The main tool used by IBSFC was the establishment of comparatively low total allowable catches (TAC) for commercial fishing at sea and special measures for harvesting reared salmon. Coastal States were also requested to adopt national measures, such as closed seasons, closed areas or improvements to river habitats and water quality, in order to safeguard the stocks and supplement the measures taken by the IBSFC.

During the period of the SAP, there has been a drastic drop both in TAC levels, catches and profits, which are not only due to the plan but also to other factors such as the phasing out of offshore drift nets, damages from seal, elevated dioxin levels in salmon etc[3]. The reduced catch levels together with a reduced mortality rate of the disease M74 has had a positive impact on many of the river stocks, mainly in the Gulf of Bothnia and the Main Basin. However, some of the river stocks (mainly in the Gulf of Finland) are still outside safe biological limits and for some rivers the situation has even worsened. This is mainly attributed to environmental problems in inland waters and a high post smolt mortality rate at sea. Strengthening and carrying the work of the SAP forward is seen by both Member States and stakeholders as essential for the future of the wild Baltic salmon. The Commission, with its exclusive competence for the entire salmon life cycle, is the only actor able to take this role.

Since 2005, when the IBSFC ceased to exist and the SAP in theory became obsolete, the European Union has been managing marine salmon fishing by setting TACs on an annual basis, combined with technical measures such as closed seasons and minimum landing size. Scientific advices for level of TAC have been provided by ICES and STECF and are still based on the targets set in the SAP. In inland waters the species and its habitat are addressed through the Habitats Directive (HD)[9] and the Water Framework Directive (WFD)[10] (see also Legal Framework).

[9] Directive 92/43/EEC of the European Parliament and of the Council of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

The only non-EU country concerned with management of Baltic salmon is the Russian Federation. A recent agreement between the European Union and the Government of the Russian Federation on cooperation in fisheries and the conservation of the living marine resources in the Baltic Sea provides for future agreements setting TACs for salmon.

2.2. Main problems

The Baltic salmon stock suffer from a range of problems and threats of which some are due to natural causes or unfavourable situations in the rivers and which can not be fully addressed with this initiative. However the following are the main problems that need to be addressed for the successful management of the wild Baltic salmon stock at sea:

- Some wild salmon populations are outside safe biological limits (see State of the stock). Without a new management system in place, there will be a lack of long term agreed objectives for setting annual fishing opportunities to avoid that decisions are made in an *ad hoc* manner. Also, mixed stock fishing is still of concern for weak river stocks and must be addressed at EU level.

- Rearing and stocking of Baltic salmon is a widespread activity in the region with more than 2 times as many reared as wild salmon smolt leaving the Baltic rivers each year. There is a risk that these reared salmon negatively influence the genetic diversity of the wild salmon stock. Safeguarding genetic diversity that would ensure resilience to different external threats to the stock is a priority.

- There is too little wild salmon to fish. The production capacity of the rivers is not fully utilised.

2.3. State of the stock

For Baltic salmon, ICES has established six assessment units (AU) based on the environmental and genetic characteristics of the stocks (see Figure 1). They are established for scientific purposes and are not suitable for setting of TAC since all stocks are fished together in the Main Basin and in the coastal mixed stock fishery. For fishermen to be able to distinguish salmon from the different river stocks and assessment units, on-board genetic testing of each fish would be necessary.

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[10] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

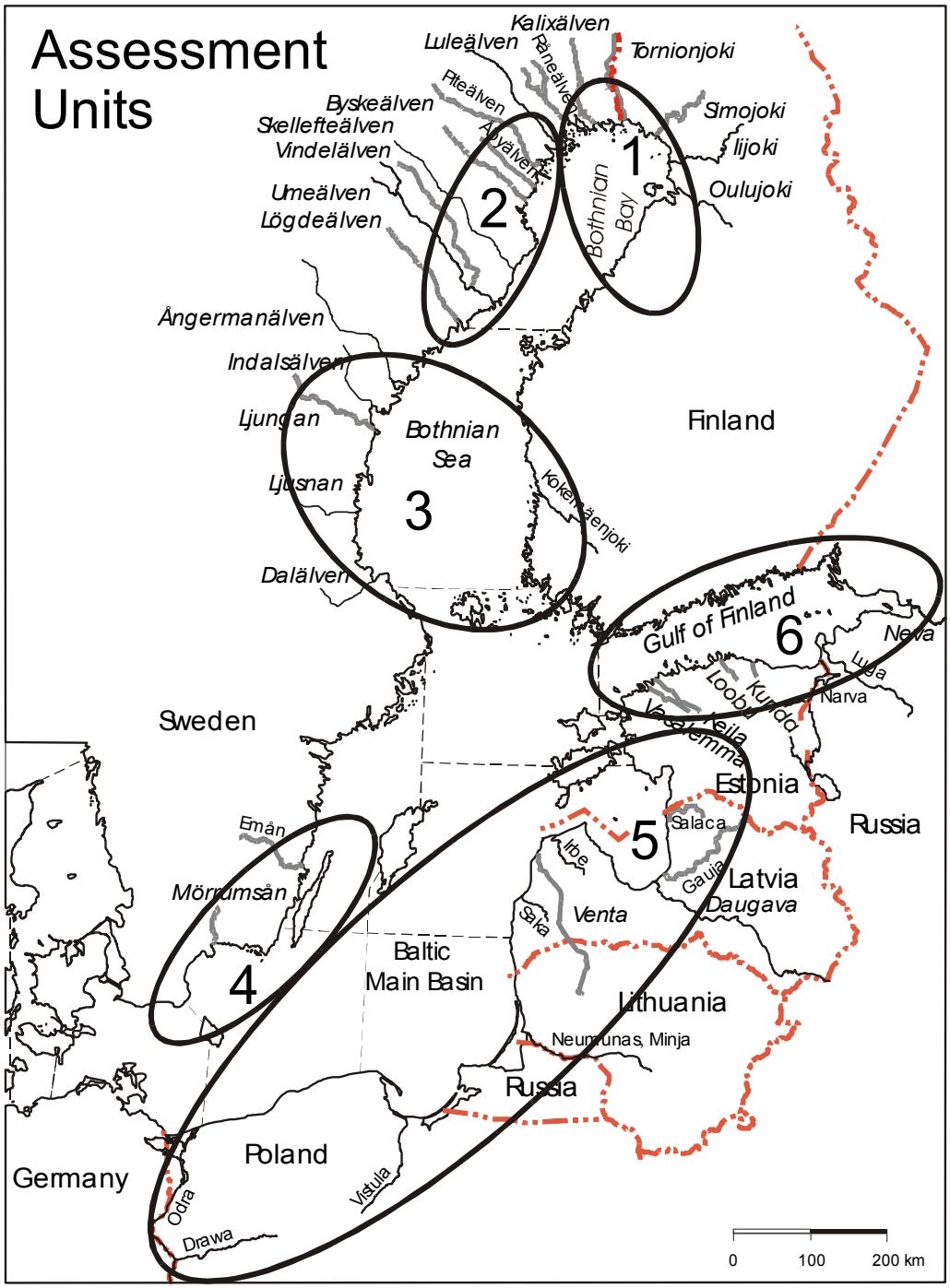


Figure 1: Subdivision of salmon stocks in the Baltic Sea into six scientific assessment units, based on the environmental and genetic characteristics of the stocks[11]

ICES assesses the state of the stocks in each salmon river and for each AU every year based on the production of smolt. Table 1 summarises the assessment for 2008 (except for the Gulf of Finland) and shows that the probability of achieving the established smolt production targets by 2010 differs both between and within the different AUs.

[11] ICES advice 8.4.14 (2009) Salmon in the main Basin and the Gulf of Bothnia.

	Prob to reach 50%				Prob to reach 75%			
	V.likely	Likely	Uncert.	Unlikely	V.likely	Likely	Uncert.	Unlikely
Unit 1								
Tornionjoki	X						X	
Simojoki		X					X	
Kalixälven	X					X		
Råneälven		X					X	
Unit 2								
Piteälven	X					X		
Åbyälven	X						X	
Byskeälven	X					X		
Rickleån				X				X
Sävarån			X				X	
Ume/Vindelälven	X					X		
Öreälven				X				X
Lögdeälven			X				X	
Unit 3								
Ljungan		X					X	
Unit 4								
Emån				X				X
Mörrumsån		X					X	
Unit 5								
Pärnu				X				X
Salaca	X					X		
Vitrupe	X					X		
Peterupe		X					X	
Gauja		X					X	
Daugava			X					X
Irbe	X					X		
Venta	X					X		
Saka			X				X	
Uzava	X					X		
Barta	X					X		
Nemunas				X				X

Table 1: Status of the Gulf of Bothnia and Main Basin stocks in terms of their probability of achieving 50 % and 75 % of their smolt production capacity by 2010. Stocks are considered very likely to achieve this objective in cases where the probability is higher than 90 %. They are likely to achieve the objective in cases where the probability is between 70 % and 90 % and unlikely in cases where the probability is lower than 30 %. If the probability of achieving the objective lies between 30 % and 70 %, it is considered uncertain whether they will achieve the target in 2010[11].

The strong recent recovery of smolt production in the wild salmon populations of AU 1 indicates high productivity in these rivers. Similar but less pronounced population dynamics are estimated for the river stocks in AU 2 and 3. Stocks of AU 4 and 5 have not seen the same increase in smolt production and in some of these rivers smolt abundance has even decreased since the start of the SAP in 1997 and some are outside safe biological limits. Despite the decreased harvest rates in the sea fishery this trend has not been reversed which suggests low productivity of these stocks. The most likely reasons for this low productivity in the southern stocks is unfavourable habitat and water conditions in the rivers and/or regional differences in survival of post-smolts at sea.[14]

The condition of the wild stocks in the Gulf of Finland (AU 6) is poor[12]. The three wild salmon rivers in Estonia are small and their production potential is low. Natural reproduction is also low in seven other rivers where enhancement releases have been carried out during the last ten years in this area.

For the Baltic salmon wild river stocks as a whole, the potential smolt production capacity has tripled during the last decade and the rivers of the units 1–5 are now estimated to be able to produce about 3.5 million (2.6–5.1 million) smolts. [13, 14].

2.4. Catches

2.4.1.1. Commercial fishery

In the Baltic Sea, commercial salmon fishing takes place in the Main Basin (offshore fishing) and along the coasts of the Gulf of Bothnia, the Gulf of Finland and, to some extent, in the Gulf of Riga. The commercial salmon fishing season in the Main Basin runs from October to April. In the coastal areas of the Gulf of Bothnia the fishing season is shorter, mainly in June and July when salmon migrate to their home rivers. Until recently offshore catches have been taken mainly by driftnets in the Main Basin, but some also by longlines. Coastal catches are taken mainly by trapnets in the Gulf of Bothnia and Gulf of Finland and, on a smaller scale, also in the Latvian part of the Gulf of Riga[4].

In 2007 the commercial salmon catch in the Baltic Sea was the lowest recorded since 1980 (see Figure 2). 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 has moved from offshore fishing to the coast (see Figure 2).

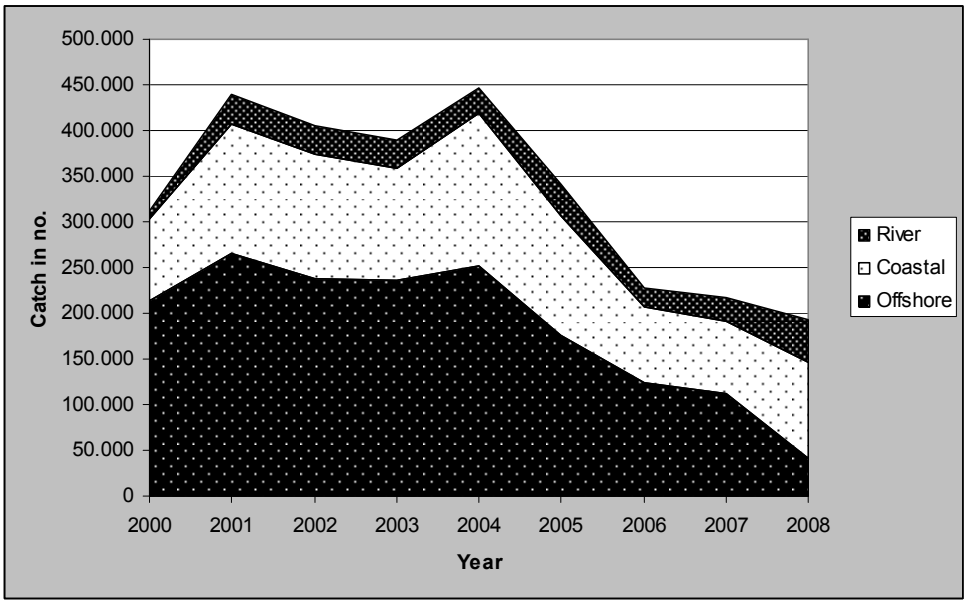


Figure 2: Trends in Baltic salmon catches, river coastal and offshore, 2000-2008[14]

[12] ICES advise 8.4.15 (2009) Salmon in Subdivision 32 (Gulf of Finland)
[13] ICES advice 2.1.4.10, 2004. Revision, where appropriate, of the estimate of smolt production potential in wild Salmon rivers.

In 1997 about 88 % of the catch was taken offshore and in 2007 about 51 %. In 2008, after driftnets were totally phased out in the Baltic Sea, offshore catches accounted for only 22 % of the total catch. This reduction in offshore catches was mirrored by a increased number of salmon returning to the northernmost rivers, which increased by about 50 % in 2007 compared with 2006, followed by a further increase in 2008. As a consequence, catches in some rivers more than doubled in 2008 compared with 2007 and were almost as high as in the record years 1996 and 1997. Overall 24 % of the Baltic salmon catch was taken in rivers in 2008[14].

TAC regulations have been in force since 1993 in the Baltic Sea, but restricted fishing in only some of the years (see Figure 3). Since 2005 the TAC has not restricted salmon fishing in any of the Baltic countries. In 2008 the nominal commercial catch was at a historic low of 35 % of the TAC in the Baltic Main Basin and the Gulf of Bothnia, but in the Gulf of Finland over 100 % of the TAC was taken.

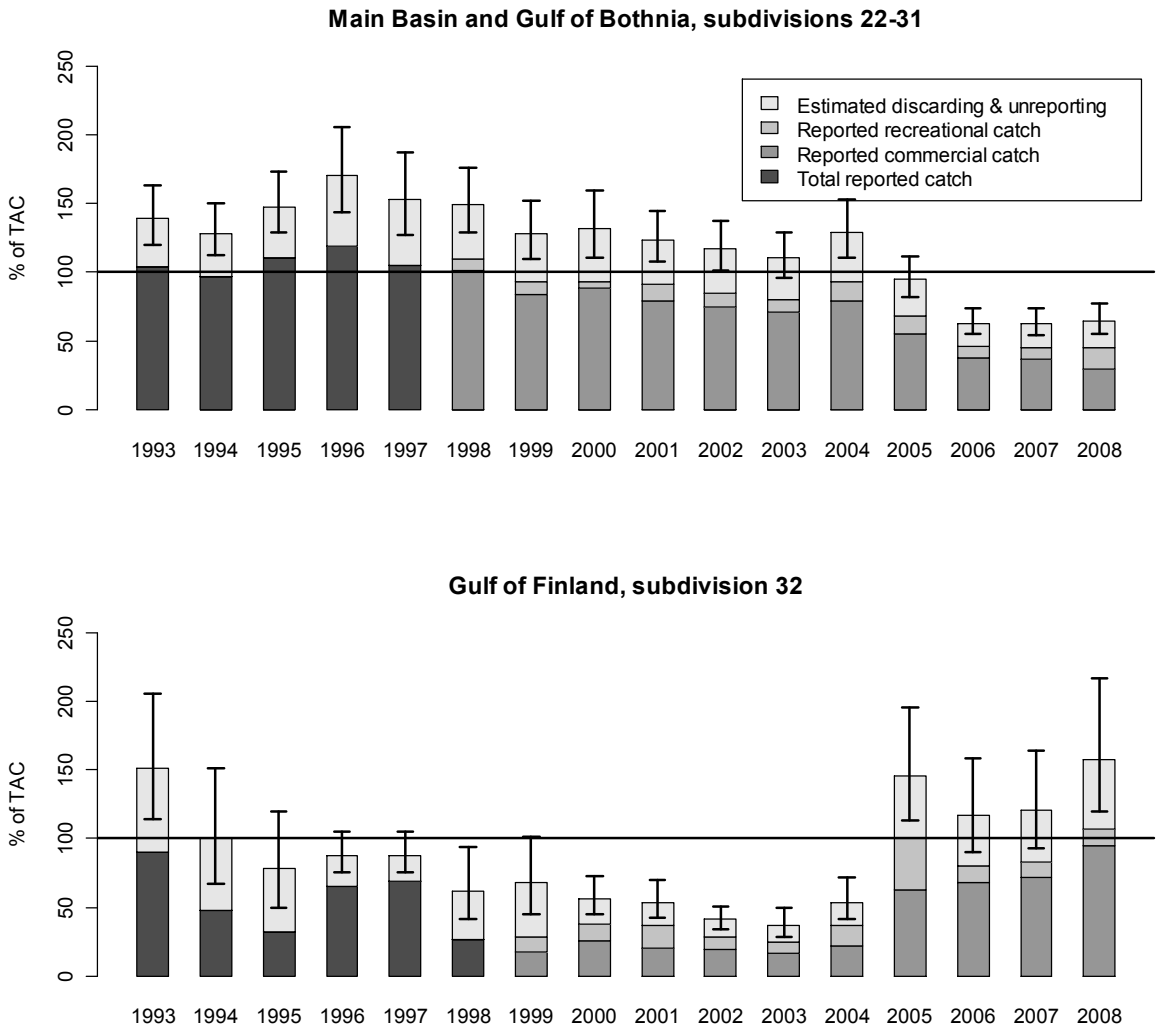


Figure 3: Catches of salmon in % of TAC, for 1993–1997 (1993–1998 in the Gulf of Finland) without division of catches into commercial and recreational[14]

During the last decade reared salmon catches have decreased in relation to wild salmon catches and now constitutes less than 30% in catch samples from Aland Sea, Bothnian Sea and Main Basin (Figure 4). This is in spite of the fact that from 1996 and onwards the number

of released salmon has remained the same. This situation is a result of steadily increased numbers of wild salmon smolt and an elevated post-smolt mortality of reared salmon smolts[14].

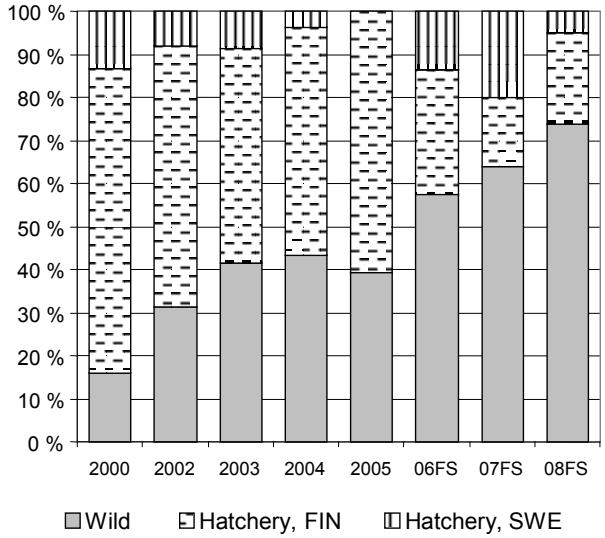


Figure 4: Stock group proportions in salmon catch samples from Åland Sea, Bothnian Bay and Main Basin[14]

2.4.1.2. Recreational fishery

Catch estimates for recreational fishing are uncertain and not available for every country. However, ICES estimates that it accounted for around 35% of the total Baltic salmon catch in 2008, compared with 20% from 2004 to 2007 and 9.5% in 1994[14]. Recreational catches also made up a considerable and growing share of salmon sea fishing, with an estimated 18% of the total reported catches in coastal waters and at sea in 2008.

2.4.1.3. Russian Federation

In 2008 Russian fishermen caught less than 1% of the total sea catch of salmon and about 50% of this came from offshore fishing grounds in the Main Basin. A couple of hundred salmon were caught as by-catch in the Gulf of Finland and around 500 spawners were caught in rivers during brood stock fishing[14].

2.5. Economic and social value of Baltic salmon

2.5.1.1. Commercial fishery

More or less all commercial fishing for salmon in the Baltic Sea is by small and medium-sized enterprises (SMEs). Hence all further information in this assessment on the impact related to commercial fishermen refers to SMEs.

Four countries take 90% of the Baltic commercial salmon catch: Sweden, Finland, Poland and Denmark in that order of magnitude[2]. It is not possible to single out a specific salmon fleet, since salmon is often fished together with other species such as sea trout, cod and, to a lesser extent, flounder. However, according to the report by the ICES Salmon Working Group[14], eight active[15] and eight less active[16] vessels were fishing for salmon offshore in the

[14] ICES CM 2009/ACOM:05: Report of the Baltic Salmon and Trout Assessment Working Group 2009 (WGBAST), 24–31 March 2009, Oulu, Finland.

Main Basin in 2008. Each of these boats employed three or four people. This can be compared with 1999 when 57 active and 212 less active vessels were fishing for salmon. Commercial coastal salmon fishing employed 340 fishermen in 2007 in Sweden and Finland. Vessels used are mainly below 12 m in length and statistics from Sweden show that a substantial part of the coastal vessels are also below 10 m[17]. In Finland the number of salmon coastal fishermen has roughly halved since 1997[4]. Due to the mixed species character of this fishery, the economic dependency of salmon has not been possible to establish.

The profitability of commercial salmon fishing decreased during the period covered by the SAP (see Annex VI). In 2007, the total value of the Baltic salmon catch was about EUR 2.7 million and made up about 0.5 % of the total catch value of all species in Poland, Denmark, Sweden and Finland[4]. There are many reasons for this decrease and current low profitability in the commercial fishery. Historically, offshore salmon fishing has been particularly profitable when it has been possible to combine driftnet fishing for salmon with fishing for cod. As cod quotas have been very low and the season for profitable salmon longline fishing is very short, combined salmon and cod fishing has become less profitable or even uneconomic. In the case of coastal and offshore fishing in the Gulf of Bothnia and Gulf of Finland, damage caused by seals to catch and gear has also created economic problems for fishermen. The minimum estimate for the direct observed losses in Finland and Sweden is, altogether, 67 tonnes (13 000 salmon) with a value of EUR 245 000. Another factor that has reduced profitability is the regulation on dioxin content in fish which has restricted salmon fishing in Denmark and Latvia. However, a new Danish decision to allow exports of salmon with high dioxin content to non-EU countries is foreseen to change this situation.

The total salmon market (supply of salmon, sea trout and rainbow trout) in Poland, Denmark, Sweden and Finland was about 100 000 tonnes in 2005[4]. The share of wild-caught salmon was about 1 %. Wild-caught salmon has established a special niche in the market and commands a higher price than farmed salmon[4].

2.5.1.2. Recreational fishery

Marine recreational fisheries mean non-commercial fishing activities exploiting marine living aquatic resources for recreation, tourism or sport. European law also clearly states that marketing of such catches is prohibited.[32] For the Baltic salmon however, recreational fisheries also take place in inland waters and can be divided into fishermen using nets and traps and fishermen fishing with rods (anglers). In 2007 about 37 000 anglers fished for salmon in rivers in Sweden and Finland and approximately 2 000 participated in salmon trolling. Seventy companies in Sweden and at least thirty in Finland offer fishing travel services along salmon rivers. There are also operators offering services for recreational fishermen at sea (vessel, equipment and guidance) on a commercial basis. Studies have estimated that these operators currently provide fifteen to twenty jobs in Bornholm and close to thirty in Sweden.[4]

The total monetary value of recreational salmon fishing in certain countries or areas of the Baltic Sea has been estimated in a number of studies. One regional estimate for recreational salmon fishing for the River Tornionjoki, is a total expenditure at EUR 2 million in 2007[4]. Another recent study by the Finnish Game and Fisheries Research Institute estimated the value of recreational fishing in two Finnish rivers, the Tornionjoki and Simonijoki, at EUR

[15] Fishing for more than 40 days per year.
[16] Fishing for between 1 and 39 days per year.
[17] 2005, Swedish board of Fisheries. Facts about Swedish fisheries.

3.2 million per year. In Denmark and Sweden, one study found that recreational fishermen spend approximately EUR 4 million per year on salmon trolling[4].

Comparison between the value of commercial, and recreational fishing is difficult as the value attached to the fishery differ considerably between them. For commercial fishermen, the value of the fishing mainly lies in the market value of the fish, for some fishermen, the value of fishing mainly lies in the salmon they catch as food, and for anglers, the value may lie in the experience of catching the fish. Anglers are, however, inclined to spend more money on services such as fishing licences, travel, restaurants and accommodation than other recreational fishermen and commercial fishermen. Good sport fishing facilities (just like any other tourist attractions) can also draw foreigners to the country and thus contribute not only to the regional economy but also to the national economy as a whole.

2.5.1.3. Other user groups

Salmon has strong symbolic value for many people and protection of the species is a concern not only for fishermen but also for citizens and communities. Examples of this commitment include the many projects and organisations set up for this purpose around current and potential salmon rivers.

2.6. Underlying drivers

The Baltic salmon stock is influenced by many different pressures, of which most but not all are directly connected to human activities. Some of the drivers mentioned can not be addressed by this initiative but by other legal frameworks and by voluntary actions. It is also not possible to demonstrate the exact contribution made by each driver to the problems or in each river. In addition, their shares of the blame have probably changed over the years.

2.6.1. Environmental deterioration

Salmon need fast-flowing rivers for part of their life-cycle. This type of habitat has been drastically reduced all over the Baltic region as a result of human activities over the last hundred years. Log driving has been an important historical reason for levelling and changing large stretches of rapids in the northern Baltic rivers which has depleted the habitats suitable for salmon. More recently, hydro-power development has taken its toll on these habitats, as reservoirs, turbines and dams have blocked migration routes and destroyed spawning and nursery areas. Along some rivers, fish ladders have improved the situation for migration, but they are only valuable if they lead the fish to suitable spawning and nursery areas upstream and allow for downstream migration of juveniles.

Salmon are also very sensitive to pollutants, low oxygen levels and acidification. The recent increase in nutrient releases from agriculture, forestry and communities and the breaking-down of the consequent increased primary production and other added organic matter have depleted oxygen levels in many river systems around the Baltic Sea. The Baltic area has also suffered from acidification and some Member States are still conducting large-scale liming to increase the pH in rivers and lakes to safeguard salmonid stocks. Problems with direct discharges of toxic sewage are also still a cause for concern in some rivers.

2.6.2. Fishing

2.6.2.1. Mixed-stock fisheries

Fishing would not count as an underlying driver of the problem *per se* if it were kept to a sustainable level for all the river stocks and populations comprising the Baltic salmon stock. However, in the Baltic Sea almost all river stocks migrate to the Main Basin to feed and are caught there or during migration in 'mixed-stock fisheries' (MSF) with salmon both from river stocks with favourable conservation status and rivers stocks outside safe biological limits. Unless management measures in an MSF ensure a high probability of meeting conservation limits in rivers or at least the possibility of effectively rebuilding weaker stocks or populations, this could have an undesirable and irreversible impact. ICES has hence repeatedly advised that conservation of salmon would be best achieved if fishing were to target stocks within precautionary limits and that fishing in estuaries and rivers is the most likely to do this[3].
Among the MSF, the offshore MSF in the Main Basin is of greatest concern as it targets all stocks including the weak stocks of Assessment units 5 and 6. As for MSF which occur within the coastal zone of Finland and Sweden, it is of concern for the weak stocks in AUs 1, 2, 4 and possibly 6.

2.6.2.2. Poaching and by-catches

In some Baltic countries, poaching along rivers is considered a major problem for the recovery of weak stocks[18]. As long as this activity persists, reducing catches at sea will not improve the status of these stocks and this has to be addressed nationally.

By-catches of juvenile salmon occur to a limited extent in longline fishing, but also in bottom and pelagic trawling. This inevitably reduces the numbers of adult salmon left either to spawn or to be fished.

2.6.3. Low post-smolt survival at sea

Post-smolt survival, i.e. the survival of young fish at sea until they reach fishable size, has been gradually decreasing over the last 10 to 15 years and is currently around 10% for reared smolts and around 15% for wild smolts. The reasons for the decrease in post-smolt survival are still unclear, but it has been found to be negatively correlated with seal abundance and with smolt abundance and positively correlated with abundance of juvenile herring[14]. One consequence of this phenomenon is that, despite the increase in wild smolt production and stable numbers of released smolts, the number of salmon recruiting to the fishery has not increased during the last few years.

2.6.4. M74 syndrome and other diseases

M74 syndrome is a disease that 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 fallen to a low level. A link has been established between the syndrome and a deficiency of thiamine, but the factors influencing the development of M74 are poorly understood. Future mortality rates

[18] ICES advice 8.4.15 (2007): Salmon in the Gulf of Finland (subdivision 32).

attributable to M74 cannot be predicted and sudden changes in the incidence of the syndrome are likely to occur[3].

Other diseases and parasites are also known to affect Atlantic salmon, but so far none of these has influenced the Baltic salmon stock to a large extent. The risk of introducing new problems with the introduction of non native species and stocks in relation to aquaculture should however be carefully considered for future management.

2.7. Threats to the stock

2.7.1. Stocking of reared salmon and genetic loss

Stocking (releases of reared fish into the wild) of salmon in the Baltic area is extensive with 5.6 million reared smolts released to Baltic rivers each year to be compared with the current production of 2.5 million wild smolt. Stocking in the Baltic is either for the purpose of fishing or for re-establishing/recovering wild salmon populations. Sometimes stocking is perceived to do both but for efficient recovery/reestablishment, fishing should not be allowed[3]. The lion share of stocking is done through so called compensatory releases by hydro-power companies which have been obliged to compensate fishermen for the obstructing of migratory waterways and habitats for salmon. These stocking constitutes almost 2 million smolt each per year for Sweden and Finland, and for Latvia it reached 0.82 million smolts in 2008[14].

Potential consequences of stocking with reared salmon include depression of the survival and abundance of indigenous populations and straying of stocked fish into nearby rivers. The risk of straying is higher with small distances to other rivers and for salmon stocked at sea as their homing instinct is not as pronounced. The potential genetic risks associated with stocking and the subsequent interactions with wild stocks include the loss of genetic integrity in indigenous stocks. This loss results in erosion of the genetic capability to face changing local environmental conditions and also to bigger changes in the environment, such as climate change. Other threat to the genetic diversity of Baltic salmon stock is the loss of genetic information due to population extinction.

2.7.2. Climate change

The impact of climate change on the Baltic region is likely to include higher temperatures, along with increased precipitation and more frequent and severe floods, particularly in the winter[19]. The result is likely to be an increase in the mean annual surface temperature of the Baltic Sea by between 2 and 4°C and a decrease in salinity by between 10 and 50% during this century. Since the egg incubation periods, smolt run and survival of wild salmon in the Baltic Sea and its rivers depend on temperature; these scenarios are likely to have a negative influence on Baltic salmon stock. The increase in the sea water temperature and decrease in salinity could also have an impact on primary production and, consequently, on top predators such as salmon and even make the Baltic Sea unsuitable for salmon which depend heavily on cool waters. Thriving freshwater species could also alter competition for resources.

[19] Reist, J.D., Wrona, F.J., Prowse, T.D., Power, M., Dempson, J.B., King, J.R. and Beamish, R.J. (2006): 'An Overview of Effects of Climate Change on Selected Arctic Freshwater and Anadromous Fishes'.

2.8. Legal frameworks

A number of legal and self regulating frameworks influence management of the Baltic salmon river stocks (see also Table 2). Management of the factors influencing the species and its habitat is particularly complex, as it involves powers shared between the EU and Member States, has to deal with transboundary issues between Member States and, at national level, faces some historical overlap between different national ministries.

2.8.1. The United Nations Convention on the Law of the Sea

Article 66 of the United Nations Convention on the Law of the Sea (UNCLOS)[20] stipulates that 'States in whose rivers anadromous stocks originate shall have the primary interest in and responsibility for such stocks'. Many countries have such an interest in and responsibility for Baltic salmon, but Sweden and Finland are the countries that produce by far the highest numbers of wild salmon smolts.

2.8.2. The Common Fisheries Policy

Article 3(1)(d) in the Treaty of the functioning of the European Union[21] gives exclusive competence to the European Union in the area of conservation of marine biological resources under the Common Fisheries Policy (CFP). On top of that Council Regulation (EC) No 2371/2002 of 20 December 2002 on the Conservation and Sustainable Exploitation of Fisheries Resources under the Common Fisheries Policy[22] imposes an obligation on the Council to adopt multiannual plans as far as necessary to restore and maintain stocks within safe biological limits (Article 5 and 6). (It has to be noted that in the context of the upcoming reform of the CFP some provisions of this draft proposal are subject to future changes.) Salmon is also covered by the Agreement between the European Union and the Government of the Russian Federation on cooperation in fisheries and the conservation of the living marine resources in the Baltic Sea.

2.8.3. The Habitats Directive

The Habitats Directive (HD)[9] places a general obligation on Baltic EU countries to restore salmon to or maintain salmon at a favourable conservation status. Such status would mean that the population dynamics of the species indicate that it is maintaining itself on a long-term basis, that its natural range would neither be reduced nor be likely to be reduced and that there would be, and would probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis. The Directive lays down that the species may be fished only when its conservation status is favourable. It also requires the EU countries concerned (except Finland) to designate special areas of conservation for the species.

2.8.4. The Water Framework Directive

The composition, abundance and age structure of fish fauna is one of the biological elements taken into consideration for classification of the ecological status of rivers, lakes and transitional waters under the Water Framework Directive (WFD)[10] which aims at maintaining and improving the aquatic environment in the European Union. Under this Directive, Member States have to achieve the objective of good water status and good ecological statues by 2015.

[20] United Nations Convention on the Law of the Sea, Montego Bay, 10 December 1982.
[21] OJ C 115/47 08.05.2008
[22] Council Regulation (EC) No 2371/2002 of 20 December 2002 on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy (the 'Basic Regulation').

Heavily modified water bodies (as is the case for some dammed salmon rivers) are however subject to the less stringent objective of 'good ecological potential'. Member States have to define and implement the necessary measures within river basin management plans, tackling the main anthropogenic pressures affecting the quality of their water bodies. These river basin management plans may be supplemented by more detailed programmes and management plans focusing on particular aspects of water management and addressing specific sectors or issues such as salmon.
The WFD provisions and management mechanism relevant for management of salmon are in particular:

- salmon should be part of the biological quality element 'fish' that is included in the definition of good ecological statues.
- achieving good ecological statues includes restoring continuity in rivers that are used by migratory species such as salmon,
- the environmental analysis that serves as the basis for WFD river basin planning (Art 5) should provide comprehensive information on obstacles for migration.
- by drawing on the legal powers of the competent authority in the river basin when implementing a salmon multiannual plan.

2.8.5. The Marine Strategy Framework Directive

The aim of the Marine Strategy Framework Directive (MSFD)[23] is to achieve good environmental status in the EU's marine waters by 2021 and to protect the resource base on which marine-related economic and social activities depend. The MSFD establishes European marine regions based on geographical and environmental criteria. Each Member State, in cooperation with other Member States and non-EU countries within the same marine region, is required to develop strategies for its marine waters. These shall include a detailed assessment of the state of the environment, define 'good environmental status' at regional level and establish clear environmental targets and monitoring programmes. The conservation statues of commercial fish stocks are considered descriptors for determining good environmental status in marine waters.

2.8.6. HELCOM Baltic Sea Action Plan

The Baltic Marine Environment Protection Commission (HELCOM)[24] defined objectives and action for the salmon in the HELCOM Baltic Sea Action Plan (BSAP)[25] in 2007. Under this plan the main objective for Baltic salmon is to achieve 80% of the potential wild smolt production in Baltic salmon rivers by 2015 (50% in weak rivers). The contracting parties also agreed to restore spawning sites and migration routes, to conserve at least ten endangered wild salmon rivers (by 2010) and to reintroduce salmon in four potential salmon rivers (by 2009). The recently adopted European Union Strategy for the Baltic Sea Region[26] underlines that the

[23] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy

[24] Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992 (entered into force on 17 January 2000): http://www.helcom.fi/Convention/en_GB/text/. Contracting parties are all the Baltic Sea countries, including the Russian Federation, and the European Community.

[25] Adopted on 15 November 2007 in Krakow, Poland, by the HELCOM extraordinary ministerial meeting: http://www.helcom.fi/BSAP/en_GB/intro/.

[26] COM(2009) 248 final. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions concerning the European Union Strategy for the Baltic Sea Region.

Common Fisheries Policy (CFP) should keep working on establishing an ecosystem-based management approach in the Baltic Sea to support the Baltic ecosystem, taking into account the BSAP.

Area / Legal framework	Inland waters	Coastal waters	Marine waters
Habitat Directive	Salmon habitat protection to reach good conservation statues.	Salmon habitat protection to reach good conservation statues.	Salmon habitat protection to reach good conservation statues.
Water Framework Directive	Good river water quality (ecology and habitats) by 2015	Good coastal water quality (ecology) by 2015	-
Marine Strategy Framework Directive	-	Ecosystem protection of marine waters by 2021	Ecosystem protection of marine waters by 2021
HELCOM Baltic Sea Action Plan	Reach 80% of the potential wild smolt production in Baltic salmon rivers by 2015 (50% in weak rivers). Restore habitat to conserve at least ten endangered wild salmon rivers by 2010. Reintroduce salmon in four potential salmon rivers by 2009.	Reach 80% of the potential wild smolt production in Baltic salmon rivers by 2015 (50% in weak rivers).	-Reach 80% of the potential wild smolt production in Baltic salmon rivers by 2015 (50% in weak rivers).
UNCLOS Law of the sea	-	Sharing of management responsibility between countries of origin	Sharing of management responsibility between countries of origin
Common Fisheries Policy	-	Annual marine TAC Minimum landing size Closed offshore seasons	Annual marine TAC Minimum landing size Closed offshore seasons
National measures, voluntary or as requested through EU law.	Catch restrictions Rearing and stocking Improvement of salmon habitat	Allocation of EU fishing rights	Allocation of EU fishing rights

Table 2: Summary of different legal and self regulatory frameworks currently affecting the Baltic salmon stock.

2.9. Grounds for EU action

2.9.1. Proportionality, subsidiarity and legal basis

The salmon stock in the Baltic Sea consist of many different river stocks that all migrate to the Main Basin and are found in waters of all Member Stats bordering the Sea. Actions taken by Member States separately will hence not be sufficient to guaranty the sustainable exploitation of the stock and EU action is necessary as required by the Basic Regulation.

The legal basis for this initiative is Article 43(2) in the Treaty of the functioning of the European Union. The proposal would fall under the exclusive powers of the EU and so as a general principle the subsidiarity principle would not apply. However for some concrete measures where subsidiarity may be an issue (i.e. for coastal measures only influencing national fishermen) this will be mentioned in the analyses of impacts.

2.10. Scope of the initiative

The main gaps that are not addressed by the current legal frameworks and which were all dealt with in the SAP are:

- Conservation reference points
  Conservation reference points are biological or fishery management indicators that define the point at which precautionary action must be taken to safeguard a fish stock. As stated in the Basic Regulation[22] multiannual plans should include such reference points which could be expressed as population size, long term yield, fishing mortality and or stability of catches. In the case of the SAP, the conservation reference point was set as a target for the population size expressed as smolt production from rivers.
- Harvest control system for fisheries at sea
  Harvest control system describes how harvest is intended to be controlled by management in relation to the state of some indicator of stock status. It formalizes and summarizes a management strategy and give better possibilities for the sector to adopt its strategies to the fishing possibilities.
- Relationship between reared and wild salmon at sea
  This issue was addressed by the SAP which had specific measures to promote harvesting of reared salmon at sea.
- Stocking in rivers
  The SAP gave some guidelines for stocking procedures in rivers and at sea for the protection of the genetic diversity and for the benefit of marine fishing.
- Restocking programs
  The SAP contained a program for restocking river with extirpated salmon populations as a conservation measure for the benefit of the whole Baltic stock.
- Research
  Many of the drivers and problems affecting the Baltic salmon, such as diseases, can not be addressed with any other mean than research.

3. OBJECTIVES

3.1. General objectives

The general objective for the European Union and its Member States as regards Baltic salmon is to ensure that the conservation status of the entire Baltic stock, i.e. all populations, is favourable and above safe biological limits to ‘provide for sustainable exploitation of living

aquatic resources and of aquaculture in the context of sustainable development, taking account of the environmental, economic and social aspects in a balanced manner', as stated in Article 2 of the Basic Regulation[22].

The plan should also contribute to the Plan of Implementation agreed by the World Summit on Sustainable Development in Johannesburg in 2002[27]. It would therefore be based on an ecosystem approach to fisheries management[28], as required by the Basic Regulation, and also designed to exploit the stocks concerned up to their maximum sustainable yield[29, 30].

The Commission would also like to emphasise that the full set of drivers and threats to the Baltic salmon cannot be addressed with this initiative but require that Member States comply with the relevant provisions of community environmental legislation (HD, WFD and MSFD). At the same time, these Directives must be fully respected when implementing any new salmon management system.

3.2. Specific objectives

The specific objectives suggested for a possible new management system have been influenced by objectives recommended by the BSRAC in March 2007[8]. Some of these objectives have also been taken as the basis for the environmental, social and economic advice and for the consultation process. Bearing in mind the importance of wide agreement on the specific objectives and that almost all contributors to the consultation process attached high importance to these; the Commission proposes that the plan shall:

a) the Baltic salmon stock is exploited in a sustainable way according to the principle of maximum sustainable yield;

b) the genetic integrity and diversity of the Baltic salmon stock is safeguarded.

4. POLICY OPTIONS

The option section will be divided into 2 parts. The first will cover the presentation and also screening and summary of the three high level options. The second part will describe and visualise the different choices and steps to take to identify the final suboptions.

4.1. Presentation and screening of high level options

4.1.1. Option 1 — No EU multiannual plan (baseline scenario)

The first option is the current management system consisting of the components already in place in the Baltic Sea region (see also Table 2) and includes:

[27] Johannesburg Plan of Implementation: www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm.

[28] SEC(2001) 1696: Commission staff working paper 'The ecosystem approach to fisheries management (EAFM): possibilities and priorities for international cooperation'.

[29] COM(2006) 360: Communication from the Commission to the Council and the European Parliament 'Implementing sustainability in EU fisheries through maximum sustainable yield'.

[30] SEC(2006) 868: Commission staff working document accompanying the Communication from the Commission to the Council and the European Parliament 'Implementing sustainability in EU fisheries through maximum sustainable yield' — Technical background to the Commission Communication 'Implementing sustainability in EU fisheries through maximum sustainable yield: a strategy for growth and employment'.

- Annual marine total allowable catch.
  The TAC currently covers 2 areas of the Baltic, the Gulf of Finland and the rest of the Baltic. The scientific advices have so far been based on the conservation reference points in the SAP but these are due in 2010. The TAC covers marine commercial catches.
- Technical measures at sea.
  The technical measures currently in place through the CFP covers a summer closure for the offshore fishery and a minimum landing size.
- Member States voluntary actions and implementation of current environmental legal frameworks expected to influence the Baltic salmon stock.
  Measures in the rivers and coastal areas include seasonal and area closures, fin-clipping programmes, habitat and water quality improvements, restocking activities, etc. These measures are sometimes based on the objectives in the SAP.

This option is the baseline scenario and the screening of impacts describes how the stock, drivers and threats are expected to evolve over time following implementation of the existing legal frameworks at EU level (CFP, HD, WFD and MSFD), intergovernmental level (HELCOM BSAP and UNCLOS) and national level.

Environmental impact

The main reason that some rivers have not been able to recover in spite of the SAP being in place for 10 years is probably unfavourable conditions for reproduction in the rivers[14]. In the baseline scenario the future production of salmon in rivers rely on the implementation of the Water Framework Directive as the main driver for improving the ecological statues of inland water by 2015.

The baseline scenario also includes the implementation of the Habitat Directive in Member States. So far this Directive has however, although in force for more than 15 years, proven to be more challenging than expected for Member States. Slow definition and implementation of relevant measures might have contributed to the current unfavourable salmon situation in some countries. As the new MSFD is at a very early stage of implementation in all Member States and the effect on salmon is difficult to foresee.

Some objectives for salmon, many reflecting the objectives in the SAP, are included in the HELCOM BSAP (see Table 2). Contracting parties have agreed to comply with these but without a complementary harvest control system to accompany the objectives, they are not likely to be reached within the timeframe set.

None of the existing legal frameworks take into account rearing and stocking of salmon for management and development of the stock which may jeopardise the genetic diversity of the wild salmon stock. Also, the lack of objectives at EU level leaves evaluation of the current situation and the basis for giving scientific advice in limbo. Some of the drivers and threats to the stock, such as M74, post-smolt mortality and climate change, also could not be addressed without a multiannual plan and further research in the field.

Economic and social impact

One of the objectives of the SAP was to maximise the level of commercial fishing. Putting the spotlight on commercial fishermen unfortunately aggravated some of the conflicts between some user groups. Neither commercial nor recreational fishermen feel that they have benefited from the increased production of wild salmon[4]. Without a multiannual plan with

clear objectives stating that the resources should be shared between user groups, this situation might not improve.

The option does not cater for the development of the full potential of the wild river stocks. The lack of harvest control rules also neither provides the sector with sufficient predictability of catches nor allows it to adapt its strategies in order to become profitable.

4.1.2. Option 2 — Marine multiannual plan

The second option corresponds to a normal multiannual plan as set out in the Basic Regulation. The option would include Member States measures as stated in Option 1 but would add features on marine management of salmon fisheries such as:

- Multiannual harvest control system.
  The system would include conservation reference points and harvest control rules for setting of marine TAC.
- Technical measures
  There is a multitude of measures which could be included such as minimum hook sizes, area and seasonal closures, maximum number of hooks and traps etc.)
- A research programme
  Many of the drivers to the problem may not be addressed by any other means than research.

Environmental impact

Option 2, like option 1, relies entirely on swift and successful implementation of the environmental legal frameworks for the management in inland waters. The inclusion of conservation reference points and a harvest control system will however give scientist a more solid basis for advice and managers and decision makers a better ground for ensuring sustainable use of the resource. The option should also lead to an increase of the stock as the situation in rivers will likely improve with a suitable harvest control system. However, as this option does not take into account the effect of reared and stocked salmon on wild salmon, genetic diversity of the stock could be lost. Also, without guidelines and support for stocking at EU level, the full production potential of wild salmon may not be achieved.

Economic and social impact

In the short term, the main economic advantage of having a multiannual plan is that it will include a harvest control system which will ensure a sustainable use of the resource and create predictability for the commercial sector which will increase profits. Agreeing on conservation reference points for management of the species will also reduce the administrative burden and make it easier to lay down yearly catch regulations. In the long term and as more salmon is produced and also allowed to migrate up the rivers, new job opportunities in both the recreational and commercial sectors are foreseen to develop.

4.1.3. Option 3 — Integrated multiannual plan

Option 3 is in many aspects a continuation of the SAP. As the CFP has a specific stock focus for management, issues which has a direct impact on the management of the species as sea, such as stocking will be included in this option. It would encompass the management measures as described in option 2 and also possible additions such as:

- The definition of a conservation reference point for the species, taking into account the whole life cycle of the species.
- A harvest control system taking into account the compensatory releases of reared salmon

The current system with more than 2 times as many reared as wild smolt swimming out to the Baltic Sea every year may be addressed.
- A restocking programme for rivers with extinct salmon populations
- Guidelines for stocking of salmon

Environmental impact

Option 3 is the only option which, together with swift and successful implementation of the environmental legal frameworks, would address all the drivers and threats to the species. The obvious positive impact of this option is that it would take into account all the factors governing the dynamics of the rivers stocks throughout their life-cycle. In the long term this option could produce good conservation status for all the stocks, safeguard the genetic diversity of all the stocks and maximise the potential for wild salmon production in the Baltic region. The best current estimate is that wild salmon in the Baltic region can produce 3.45 million smolts but, as the river habitats and migration routes improve, this figure will continue to rise.

By addressing rearing and stocking, a large part of the Baltic salmon stock is not left out of the management system and possible negative impact on the wild river stocks can be mitigated. The inclusion of a restocking program is seen as a conservation measures for the stock and should increase the number of self reproducing salmon rivers in the Baltic Sea for the benefit of the species and users.

Economic and social impact

As for Option 2, the main social and economic advantages of having a plan with a suitable harvest control system and rules, is a possible increase in profits due to enhanced predictability of catches both for the commercial and recreational sectors. As more salmon is produced and also allowed to migrate up the rivers, new job opportunities are also foreseen to develop. The strong support among stakeholders for this option would guarantee a strong commitment to the plan and its success.

4.1.4. Summary

Table 3 summarises the pre-screening of the three options proposed in regards to their economic, social and environmental impact. It also offers a summary of the likely impact of the three different options on achievement of the specific objectives, based on the arguments presented above and in comparison to the baseline scenario (Option 1). Conclusions are also added.

	Option 1 — No EU multiannual plan	**Option 2 — Marine multiannual plan**	**Option 3 — Integrated multiannual plan**
Economic impact	* Overall low economic profits as the full production potential may not be reached	* Harvest control rules bring predictability and increase profits *Overall low economic profits as	* Harvest control rules bring predictability and increase profits * Development of the full potential of the wild river stocks give higher

		the full production potential may not be reached	profitability in commercial and recreational fisheries
Social impact	* Risk of continues distrust between different user groups		* Closer coordination between implementation of fishing and environmental policies * Strong commitment among Member States and stakeholders while continuing the work started by the SAP
Environmental impact	* Genetic risk to the stock as it does not cover reared salmon and stocking *Some drivers such as diseases are not addressed	* Genetic risk to the stock as it does not cover reared salmon and stocking	* Common agreed objectives and conservation reference points for salmon throughout its whole life-cycle * Together with the environmental legal frameworks, could address all drivers and threats to salmon, which could lead to stronger river stocks and retain genetic diversity
Contribute to the favourable conservation status of the Baltic salmon stock and provide for exploitation at sea of wild river stocks within safe biological limits and according to their maximum sustainable yield.	+/-	+	+
Contribute to the safeguarding of the genetic diversity of the Baltic salmon stock.	+/-	+/-	+
Enable both commercial and recreational fishermen in the Baltic Sea and its rivers to exploit the Baltic salmon stock in a sustainable way.	+/-	+	+
Conclusion	**Discarded**	**Discarded**	**Selected**

Table 3: Social, economic and environmental impact of the three different policy options and likely future performance of the three options on the specific objectives with conclusions.
+/- = no or slow change; + = likely to reach; - = unlikely to reach

Based on the arguments set out above and the likely achievement of the objectives, options 1 and 2 has been discarded.

4.2. Presentation of suboptions

In the case of option 3 — the integrated multiannual plan — there are in essence three key choices to make in order to identify the suitable suboption to address all the drivers and threats to the stock (see Figure 5).

1. The first choice concerns the issue of stocking of reared salmon. As the situation is now most of the smolts swimming out to the Baltic Sea every year are compensatory releases and these are explicitly targeted at some places when they return to their home river. The choice between a Baltic salmon stock with mainly reared or mainly wild salmon is a question of intentions and principles. Should the management system be based on a slow

but steady improvement of the natural environment and river stocks or should fisheries be kept high through the steady refilling of reared fish to the system?

2. The second choice to make is which harvest control system to use. There are many components in a harvest control system but for salmon, which is fished not only at sea but also in rivers and by many different user groups, the question of which fisheries that should be part of a TAC system is crucial. The main choice to make is between:
   - An overall TAC that would embrace all catches, including recreational and river catches
   - A marine TAC for commercial and possibly recreational marine catches
   - A TAC for offshore commercial catches outside 4 or 12 nautical miles (nm) from the baseline.
3. The third choice concerns all the other policy measures that could form part of an integrated management plan. For a extensive list of these measures see Table 7.

A flowchart to visualise the three different choices to make is included below.

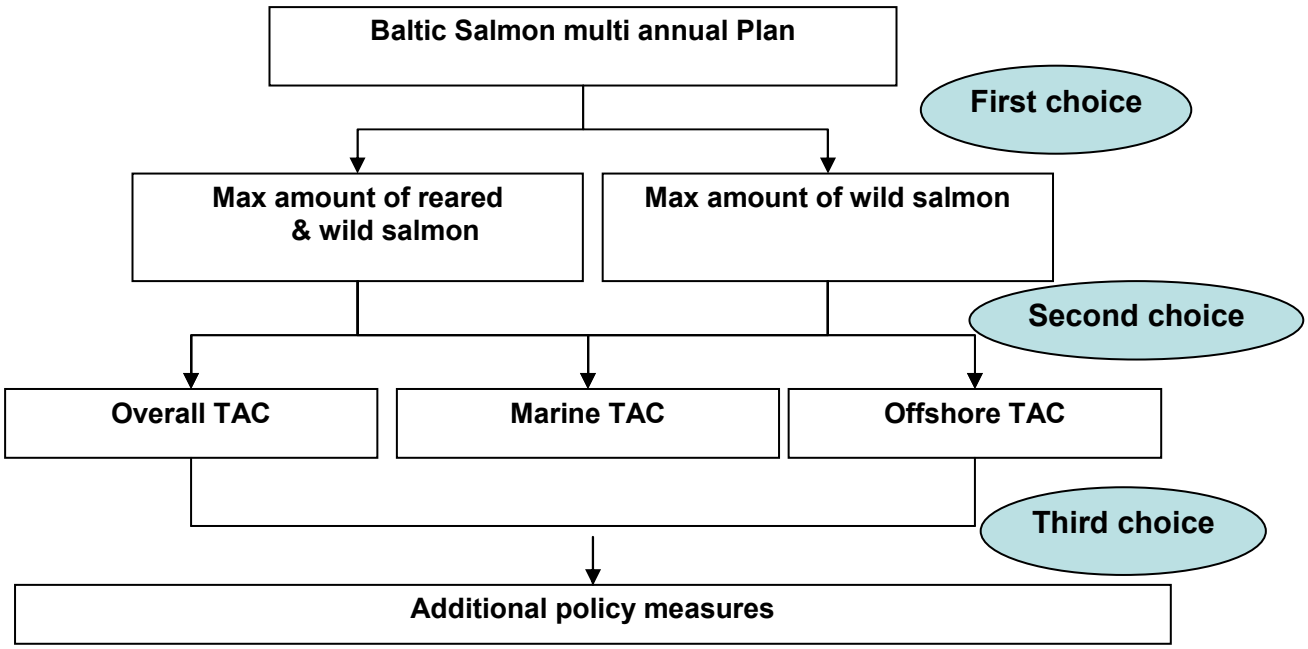


Figure 5: Flowchart to visualize the three choices to be made to identify the suboption that will be most likely to fulfil the objectives of the plan.

5. IMPACT ANALYSIS

The likely economic, social and environmental impact of the three different choices will be analysed in three steps.

5.1. Step 1 – Should compensatory releases of salmon be phased out?

The large amount of reared salmon released to Baltic rivers each year are mainly conducted by hydro-power companies compensating fishermen for their loss of salmon catches as a result of damming of salmon rivers. Characteristics of all compensatory releases are that they:

- Constitute a genetic threat to the wild salmon river stocks, the bigger threat the closer to a wild salmon river.
- Keep the fishing pressure high also on wild and weak stocks as they need to be fished in order not to stray to other rivers and can not be separated from the wild salmon
- Constitute around 30% of the catches even though the releases are more than double the amount of wild production of smolt.

Naturally, reduction of releases should cover neither enhancement releases, which are conservation measures with the aim of safeguarding the genetic diversity of weak river stocks, nor releases that are part of a restocking programme.

Environmental impact

The main positive environmental impact of reducing the numbers of reared salmon in the sea would be to safeguard the wild river stocks from competition and genetic pollution. If compensation to fishermen could instead be steered towards improving river capacity for natural salmon production, this would also lead to more wild salmon and stronger stocks. From an ecosystem approach, improvement of the situation in rivers would benefit also other migratory species. In the case of rivers that cannot be improved to hold natural spawning stocks, these measures could possibly instead benefit nearby river systems.

Economic impact

The economic impact of reducing the number of compensatory releases to the system could be a short-term loss of fishing opportunities for both recreational and commercial fishermen. Considering the decreasing share of reared salmon in the overall catch (see Figure 4), this impact is however likely to be minor, except in some areas. Doing the change in a slow pace would also allow for wild salmon to substitute the catch of reared salmon in the long run. With a greater number of salmon being able to migrate up the river valleys, this could also support regional economies.

Social impact

The social impact is mainly for those fishermen, both commercial and recreational, that are explicitly targeting reared salmon. There may also be a loss of job and know-how at rearing facilities, no quantification of such effects is however available.

5.1.1.1. Summary of analysis Step 1

The main arguments for and against a system that would favour the phasing out of compensatory releases in favour of a more wild salmon dominated system are summed up below.

	Negative impact	**Positive impact**
Environmental		*Lower risk of genetic pollution and competition from reared salmon. *Possible financial resources made available for improving river capacity for natural salmon production. *More wild salmon and stronger river stocks. *Possible improvement for other migratory species

Economic	*Risk of loss of fishing opportunities for fisheries targeting mainly reared salmon. *Risk of overall reduction in the number of fish (reared + wild) to catch.	* More wild salmon to catch, both at sea and in rivers. *Possible increase in tourism opportunities along rivers.
Social	*Risk of loss of job and know how at rearing facilities.	

Table 4: The main arguments for and against a system that would favour the phasing out of compensatory releases in favour of a more wild salmon dominated system.

In conclusion there are many advantages connected with the slow abandoning of a system dependent on reared salmon, both in terms of environmental and socio- economic impacts. The 2 systems will also be compared in relation to their impact on some key issues in Table 7.

5.2. Step 2 – Which harvest control system should we have?

5.2.1.1. Overall TAC

Environmental impact

Setting an overall TAC including river catches is the only option that leaves the European Union competence of setting the limit for the actual total catch. Currently, 35% of the total fishing mortality is caught outside the framework of the TAC and this figure is expected to increase. As the TAC would correspond to the true total catch, it would be a useful regulatory instrument for the catch management of the stock. Taking into account the whole life cycle of the species would also be in line with the ecosystem approach. STECF however considers that "fishing possibilities in the rivers should be set on the basis of stock specific conditions reflecting the state of the stock and should not be part of the overall TAC."[31]

Social and administrational impact

From a social point of view setting a TAC for all fisheries could also possibly enhance trust between different user groups if Member States were able to split the fishing possibilities between their national user groups in a fair manner. In the current situation, commercial fishermen feel discriminated against because recreational fisheries are not subject to the same catch limitations and control as they but still some of them use the same gears.

The idea of an overall TAC is however dividing stakeholders in 2 different camps where some contributors, including most Member States, are negative to the installation of an overall TAC as a principle and because control would be unpractical. Some Member States would possibly support an overall TAC if it would include a change of relative stability, mirroring the current catches. On the other hand, the BSRAC is supportive of the idea with an overall TAC only if the allocation key remains unchanged.

The system would probably create little extra administration for Member States since monitoring of all catches will be necessary in any case and many wild salmon rivers are likely to have a system for setting maximum catches already. However, from a EU perspective, controlling river catches might not be feasible and the European Union should refrain from laying down regulations that cannot be enforced.

[31] 32nd Plenary meeting report of the Scientific, Technical and Economic Committee for fisheries (PLEN-09-03). Plenary meeting 9-13 NOVEMBER 2009, Brussels

Economic impact
Without changing the reallocation key, an overall TAC would strike against those Member States that are currently taking a big share of their total catch outside the current marine TAC system as recreational and river fishing. However, considering that none of these countries are currently taken their share of the quota, this effect is considered to be limited.

5.2.1.2. Marine TAC

Environmental impact
A marine TAC, as we have today, only limits commercial sea catches and by excluding the increasingly important river and recreational catches in the TAC, the TAC will become less and less useful as a catch regulator for the stock. However, setting an overall limit to marine salmon commercial catches at EU level is foreseen in the basic regulation and would at least safeguard the stock against sudden increase of commercial exploitation at sea.

Social and administrational impact
Contrary to the objectives of the old SAP, where mainly sea fishing was to be maximised, the new multiannual plan emphasises that all user groups should be able to use the resources. However, the Commission deems that the decision on whether salmon should be caught at sea or in rivers and by which user groups should be taken at national level. The Commission is however also aware that even though the European Union can not intervene in this national reallocation of fishing opportunities, the decision on catches at sea and the conservation limits reference points set in the plan may still influence river catches. In the case of a marine TAC, Member States must therefore make sure that their national share of the common resource is split in a fair manner, possibly by allocating some of national quota for the sea fishery to the river fisheries.

Including all recreational fisheries at sea in the same reporting system as commercial catches may be scientifically motivated but would pose a big implication for individuals to adhere and national authorities to control. The Commission would instead favour a system where only recreational fisheries conducted on a commercial basis, i.e. trolling vessels offering paying customers transport, guidance and equipment, would be subject to certain reporting obligations. From an administrational point of view this should not pose big difficulties as the sector is small and already registered. From a social point of view it would reduce potential conflicts between the different kinds of commercial operators and also between Member States as they would be part of the same quota system and be subject to equal treatment.

Economic impact
The current allocation system may not enable the maximum use of the resource as those fisheries where fish could be caught without jeopardising the statues of weak rivers may become limited by the TAC and national quota. To make better use of the resource, Member States would either need to use the possibility to switch quotas between them or steer catches to the productive rivers.

Keeping a system with only sea catches in the catch reporting system may benefit those Member States with productive rivers.

5.2.1.3. Offshore TAC

Setting an offshore TAC for fisheries outside 4 or 12 nm from the baseline would regulate the part of fishing mortality that can be regulated solely at EU level. Other policy measures, such as national quotas, closed areas and seasons, can regulate catching opportunities in coastal and inland waters with the aim of achieving the conservation reference point and good conservation status for all river stocks, as called for both by the multiannual plan and by the HD. A variation of this harvest control system which would have the same pros and cons is to have a maximum uptake level of the TAC in the offshore areas.

Environmental impact

With an offshore TAC Member States may be incentivized to steer catches closer to the coast and to improve the situation in their own rivers. They would also be encourages to restock potential salmon rivers to increase fishing opportunities for their national fishermen. On the other hand, one of the main purposes of setting a TAC would be lost with this choice as only a small proportion of the catches would be regulated at EU level. By not setting a maximum marine commercial fishing mortality for the stock this system may include a risk of sudden increases of commercial catches in coastal areas.

Economic impact

The main negative economic impact of this measure may be the loss of potential future profit for offshore fishermen and a discrimination against those Member States whose fisheries are currently mainly offshore. However, considering that none of the countries are currently taken their share of the quota and that only 22% of the TAC is taken offshore (2008), this effect is considered to be limited.

The main positive long term impact is for those Member States with productive rivers that may allow for higher catches than an EU TAC system which is limited by the historical allocation of catching opportunities and may not reflect future catching opportunities.

Social and administrational impact

The system would leave Member States considerable freedom to decide on their own fisheries in the coastal zone, i.e. who should catch and where, and would be in line with both the subsidiarity and the proportionality principles. However, as some river stocks migrate through the coastal waters of other Member States, such a system may aggravate conflicts between Member States.

The question of control would also need to be solved at Member State level before such a TAC system could be operational. There is currently no system in place for Member States properly to control where the landed fish were caught unless they were fished by a vessel longer than 12 m and hence equipped with a vessel monitoring system[32]. However, considering that the restriction would only include a few offshore long lining vessels, it would be possible to equip these and in this way be able to control where they took their catch. This would in that case also be eligible for funding from the European Union. As the system would not considerably affect the current catching possibilities the impact on employment is limited.

[32] Council Regulation (EC) 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, establishing an EU control system for fisheries

5.2.1.4. Summary of analysis of step 2

The main environmental, social, management and economic impacts for the different harvest control systems are summed up below.

	Overall TAC	**Marine TAC**	**Offshore TAC**
Manage-ment impact	* Difficult for MSs to control. * Difficult for EU to enforce.	* Possible for MSs to control. * Possible for EU to enforce.	* TAC only addresses allocation of offshore MSF between MS. * Not possible for MS to control without some changes to the control system.
Environ-mental impact	*TAC useful to regulate total salmon fishing mortality.	* TAC useful to regulate marine fishing mortality * MSs responsibility to ensure protection for wild salmon river stocks. * Incentive for MSS to restore their rivers and reintroduce salmon for river and coastal fishing.	* TAC useful to limit offshore MSF, but not to regulate total fishing mortality. * MS responsibility to ensure protection for wild salmon river stocks. * Incentive for MS to restore their rivers and reintroduce salmon for river and coastal fishing.
Economic impact	* Overall reduction of the fishing opportunities for MSs with a lot of river and/or recreational fishing.	* No EU limit on river catches, benefiting MSs with productive rivers.	* Increases fishing opportunities for MS with productive rivers and high shares of coastal, river and recreational fishing.
Social impact	* TAC useful for allocation of all catches between MSs * Enhance trust between different user groups.	* TAC useful to regulate marine allocation between MSs. *Big responsibility for MSs to ensure fair allocation of fishing opportunities.	*Big responsibility for MSs to ensure fair allocation of fishing opportunities.

Table 5: Summary of impacts for the 3 different TAC systems.

In conclusion there are many pros and cons for all three systems. The impact of adopting the three different TAC systems on some key issues is highlighted in Table 6 under Chapter 6 below.

5.3. Step 3 — Which other policy measures should form part of a multiannual plan?

Step 3 will analyse the additional policy measures and solutions available for a multiannual plan which have been identified either by the scientific advice or in the consultation process. Some of the measures or options presented will be discarded rapidly for obvious reasons, while others will be analysed in greater depth. For a presentation of all the possible policy measures and solutions which have been analysed see Table 6.

5.3.1. Technical measures

Existing EU technical measures for salmon limit the fishing seasons off-shore and set the minimum landing size[33]. The minimum landing size has proven to be an effective technical measure to safeguard juvenile salmon and has strong support from science and stakeholders. It will thus not be evaluated here.

Closed seasons

There are currently two systems of closed seasons affecting salmon. One is a summer ban set by the EU which covers fishing beyond 4 nm from the baseline and excludes trapnets. The reason for this ban was initially to reduce the offshore fishing pressure on migrating spawners.

The other closed season system is regulated at national level by the obligation in the SAP to safeguard returning spawners. ICES and the STECF clearly advise that this system is working well from an environmental point of view and should be maintained in any new multiannual plan. Some contributors to the consultation process however argued that in some countries the system works selectively on early spawners and should be changed to recurring closed periods spanning the whole fishing season. The positive environmental impact would include a also protection of late spawners, especially in big rivers where there might be different populations with different migratory patterns. The negative environmental impact would be that the bigger proportions of wild salmon and old females which migrate early — the original scientific reason behind choosing to close the early migrating period — would not be protected as well as they are now. Hence, a supplementary period in addition to the early closed season could be proposed for rivers where there is reason to believe that late spawners need specific protection. This would naturally have a negative economic and social impact on some coastal fishing. In the name of subsidiarity, the timing of such seasonal closures should be decided at regional or Member State level also in the future.

Minimum hook size

The positive environmental impact of setting a minimum hook size for longline fishing would be to reduce by-catches of juvenile salmon. This would preserve more adult salmon for fishing or spawning and will in the long run have a positive economic impact. The negative short-term economic and social impact includes the change of hooks for the longline fishing sector. The measure would also require micro-management to control gear. From a management point of view, the same effect can be achieved by combining a general policy to reduce discards with a minimum landing size.

Area closures

ICES, STECF and also many stakeholders regard area closures combined with strict control as the preferred management measures to protect weak salmon populations. The positive environmental impact of closed areas is that the measure can target specific river stocks that need protection, i.e. all wild river stocks that have not reached 50% of their potential smolt production by 2010. One difficulty with this measure is that scientific investigation has shown that, in estuaries and even the lower stretches of rivers, salmon from other rivers would also come in to feed. In the name of subsidiarity, the whereabouts of such area closures should be decided at regional or Member State level.

[33] 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.

5.3.2. Harvest control system

Total allowable catch areas

Setting an overall, marine or offshore TAC was discussed under step 2. For setting the areas for a TAC, whether overall or marine, there are, however, also two possible solutions:

- one TAC for the Gulf of Finland and one for the rest of the Baltic Sea (the current situation);
- one TAC for the whole of the Baltic Sea.

According to the latest report from the ICES Salmon Working Group, the current system with two TAC areas has a major flaw because salmon from the Gulf of Finland migrate to the Main Basin and vice versa[14]. Hence, the scientific basis for this divide is weak. Recommendations for ICES's own future work also state that salmon from the Gulf of Finland will be assessed together with salmon from the Main Basin and the Gulf of Bothnia. Changing the system from two TAC areas to one TAC area will mean that the allocation key will need to be changed but this will not lead to any substantial change in fishing opportunities for the different countries so the social and economic impacts should be limited. On the other hand, considering the very low statues of many of the salmon river stocks in the Gulf of Finland, there might be unwise to allow for more countries to fish in the area. Keeping this separation would also allow managers, both at EU and national level, to specifically limit catches in this area. Also, the fact that the Russian federation has different shares of the total TAC in the different areas may complicate the reallocation of quotas if the areas were to be merged

Harvest control rules

Harvest control rules (HCR) stipulate how the harvest will be controlled by management in relation to some indicator of stock status, such as size. It formalizes and summarizes a management strategy and can contain a maximum deviation of the TAC from previous year in order to ensure consistency between years and create predictability for the sector.

The Commission deem that the harvest rate set at European level should be based on the whole Baltic stock and in the name of subsidiarity leave the fine-tuning of harvest rates for each river stock to Member States. If other measures are correctly implemented, fishing mortality rate (F) should be higher for strong stocks and reared salmon released for the sole purpose of fishing and considerably lower for weak stocks and re-stocked salmon. In the STECF simulation of development of the different river stocks with different harvest rates, STECF has recommended a close to zero harvest rate for the weakest stocks to reach the smolt production targets within the given timeframe[31,34].

As scientific advice has not been able to foresee the future development of the fisheries resulting from the implementation of the plan, it has not been able to foresee the effect of setting specific F for the whole stock on the different river stocks. However, ICES has advised reducing the TAC for many years both in the Main Basin and in the Gulf of Finland to the current level of harvest rate which would give possibility to recover all wild river stocks reaching smolt production levels roughly corresponding to MSY[14]. This is hence the intention of the Commission.

[34] 2009. Scientific, Technical and Economic committee for fisheries, opinion by written procedure. Advice on harvest control rules or the long term management of Baltic salmon.

In 2009 and 2010 the total amount of fishable salmon that were on the feeding ground for their second, third or fourth winter is estimated to around 1.7 million salmon (Figure 6)[14].

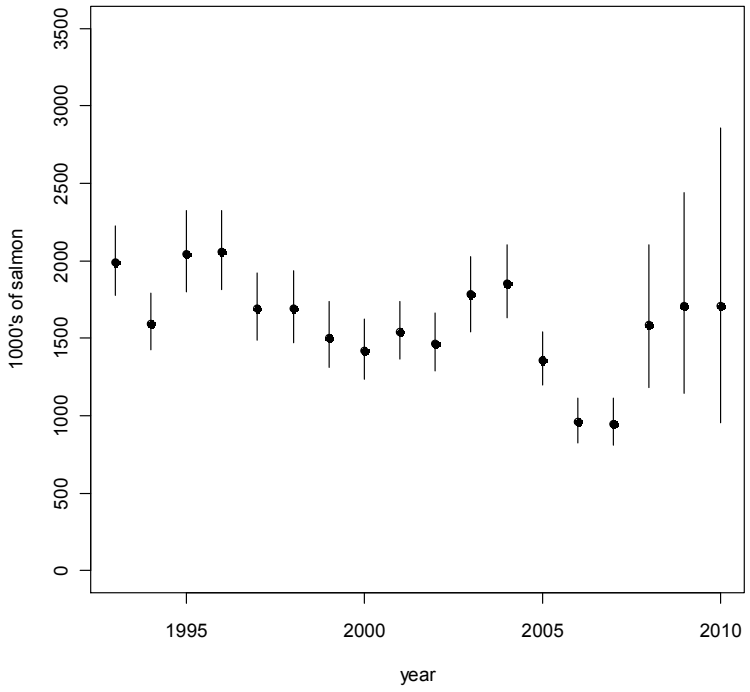


Figure 6: The number of salmon (wild and reared) of catchable size in the Baltic Sea in the beginning of the year, before offshore main fishing season. The numbers stem from the Baltic Salmon and Trout Assessment Working Group 2009 (WGBAST), taking into account changes proposed in Annex 3.

The commercial reported catch in 2009 from this stock was around 150 000 corresponding to an F of 0.1. The TAC in the main basin (310 000) however corresponded to a significantly higher F of 0.2 but only 45% of the TAC was utilised. Assuming that discarding and unreported catches will stay in the same range an F of 0.1 would likely result in a wild salmon stock size that produces the maximum sustainable yield in accordance with the targets and timeframes proposed.

By letting F stay constant and relate it to the development of the whole stock, TAC will be able to increase when the amount of fishable fish at sea increases or vice versa. One of the problems connected with this system would be a situation when some rivers stocks substantially increase their smolt production whereas other, weak river stocks, decrease theirs. For such situation it would be crucial that Member States take their responsibility and steer potential increases in catches to the strong stocks. For the situation when the overall biomass becomes critically low, there will also have to be a safety clause for setting a lower TAC. The system also does not foresee an increase in the number of reared salmon in the system as the decrease of this part of the stock would be one of the prerequisite of a future plan.

The current F does not correspond to the current level of TAC. There are many reasons for this situation (seals, dioxin, driftnet ban etc). It is however fundamental for the plan that the harvest rate set in the plan corresponds to a TAC that could be taken if the TAC is fully utilised. If the allocation key remains the same, this will also mean that quotas may become restricting for some Member States while others may not be able to utilise their quota. In that case Member States should solve the situation internally by swapping quotas.

Regarding the annual variation in the TAC, STECF could not recommend the inclusion of constraints in TAC variation in the multiannual plan[31]. This is because the fisheries are mainly based on two year classes and so relative large variation in fishing possibilities may occur from year to year pending on the environmental conditions in the rivers, possible outbreaks of M74 and variable post smolt mortality. STECF therefore considers that situations may occur where a ± 15% constraint may result in a TAC allowing too high risks for the weakest stocks.

Effort regulations
Effort regulations can be used to restrict fishing and for specific gear. In the Baltic Sea offshore fisheries, this measure could be used to restrict longlining and hence MSF, by limiting gear days or the number of hooks. The same positive and negative economic and environmental impact as for introducing an offshore TAC (see step 2) could be expected for limiting longline fishing. But even though effort regulations for specific fisheries are easier to control than area limits for TAC uptake, such measures would leave loopholes for emerging gear and, in the end, might not serve their purpose.

5.3.3. Conservation reference points

The Basic Regulation stipulates that multiannual plans must include conservation reference points against which maintenance of the stock can be assessed[22]. Conservation reference points can be expressed as targets or as limit reference points, depending on the level of ambition. One such conservation reference points is the population size. Salmon population size is best assessed river by river. There are two ways of setting the conservation reference points:

1. on smolt production
2. on number of returning spawners

The option preferred by ICES and STECF is to set a conservation reference points based on smolt production. Such a conservation reference points has good support from the BSRAC, Member States and the majority of stakeholders. Also, it has already been operational in the Baltic Sea region for the last ten years under the SAP, resulting in good statistics.

The main reason for setting an additional conservation reference points on the number of returning spawners is to protect the total genetic pool of the spawners in each river. Another potential aim could be to ensure that a sufficient proportion of the adult salmon return to their home river, not only for production of smolt but also for sport fishing and tourism. Since the value of the latter is mainly for the regional economy, the measure should ideally be decided by Member States in order to steer national commercial and recreational fishing pressure to selected areas. Another advantage of setting this target at Member State level is that fishing can be opened instantly once the target is met.

The smolt production target or can be set as a general conservation reference points for all rivers or with intermediate targets for weak rivers. As a general target or limit reference points, ICES and the STECF propose setting at least 75% of the estimated potential smolt production capacity in each river. This limit reference points would also be in line with the EU maximum sustainable yield target[30]. which would lie between 60% and 80%, depending on the river[3]. The maximum sustainable yield target includes such parameters as safe biological limits and should be regarded as a precautionary target. The time-frame for achieving this limit reference points was not defined by ICES. Nevertheless, the BSRAC proposes achieving it by 2020 in rivers with successful salmon production, i.e. which are expected to reach at least 50% of their estimated potential by 2010 and are within safe genetic

limits. However, in the HELCOM Baltic Sea Action Plan (BSAP) contracting parties agreed to reach 80% of potential production by 2015. This is also in line with the Implementation Plan agreed by the World Summit on Sustainable Development at Johannesburg in 2002[27] which states that all stocks should be restored to levels that can produce maximum sustainable yield by 2015. In view of these two agreements, any less ambitious proposal for these stocks would not be acceptable.

There is broad agreement that rivers with weak and threatened salmon populations which might be showing a positive trend in salmon production but are still not expected to achieve at least 50% of their estimated potential by 2010 need intermediate targets, if possible decided at regional level. The positive impact of having intermediate targets for weak rivers is that targets need to be realistic and achievable if stakeholders are to take them on. The BSRAC suggests that these rivers should achieve 50% of potential production by 2020. As above, the BSAP states that weak salmon rivers must achieve 50% of their potential production by 2015. Ultimately, for the reasons stated above, the goal must be that all wild salmon rivers achieve 80% of their potential production, at least by 2020.

5.3.4. Protecting the genetic diversity of wild salmon

For the protection of the genetic diversity of the Baltic salmon stock there are a number of measures that could be considered. The measure to limit the large numbers of reared salmon released into the Baltic Sea every year has been addressed under step 1. But there are also some other measures that could be considered:

Guidelines for stocking practices

The inclusion of recommendations on good practice for stocking in the multiannual plan has strong support from almost all stakeholders and would set a minimum acceptable level of safety precautions when stocking salmon into the wild and help to protect the genetic diversity of the stock. It is clear that many guidelines already exist, both nationally and internationally (i.e. "The Williamsburg Resolution" for the North Atlantic salmon[35]) and also for the SAP. In order not to reinvent the wheel, guidelines in the plan will build on already existing documents but be tailor made for Baltic conditions. Such guidelines have been evaluated by STECF and will form part of the plan.

Fin-clipping programme

The fin-clipping programme for reared salmon was introduced in the old SAP and has been partly applied in the Baltic States. The idea behind a fin-clipping programme is for fishermen to be able to distinguish between wild and reared salmon so that wild salmon can be released while reared salmon are retained. It is mainly relevant to a harvest control system where fisheries would target mainly reared salmon. The negative economic impact of introducing such a system is that as the share of wild salmon has steadily increased also in these fisheries; fishermen would be asked to release a bigger and bigger part of their catch. The system is also only working as long as fishermen can trust that all reared salmon are really fin-clipped. As this is not the case today ICES does not deem it an efficient means to safeguard wild stocks[3]. It is also an expensive measure and not very efficient since not all gear allow for the release of wild salmon (i.e. gillnets and longlines). It is also not clear that caught and released salmon are not injured and will survive in the long run.

[35] NASCO, CNL(06)48 "The Williamsburg Resolution", Annex 4- Guidelines for Stocking Atlantic Salmon III B 4 (a) http://www.nasco.int/pdf/agreements/williamsburg.pdf

Terminal fishing areas
As part of the old SAP, Member States were required to identify terminal fishing areas, where the proportion of wild salmon would be minimal and fishing pressure on reared salmon could be higher. Like fin-clipping, this measure is mainly relevant to a harvest control system where fisheries would target mainly reared salmon. This measure received strong support in the consultation process, also among the contributors who do not support a fin-clipping programme. The idea is that fishing of reared salmon should be concentrated in river mouths and rivers where stocking occurs. However, ICES concludes that this measure has not been very efficient at protecting wild river stocks because the proportion of wild salmon has not been substantially lower in these areas[3].

5.3.5. Restocking

The SAP contained a restocking programme for rivers identified by Member States as potential rivers for reintroduction of salmon. The BSAP and BSRAC support reintroduction of salmon in these rivers. Restocking offers obvious environmental and economic benefits, mainly on the establishment of self sustaining salmon populations giving a higher overall wild salmon production. From a social point of view it can also create a regional commitment to the plan amongst stakeholders and greater public awareness of the salmon issue. It is however also clear that many restocking activities for salmon are unsuccessful. It is therefore extra important to develop a strategic approach to stocking which defines the objectives of the exercise as well as to monitor and assess the result. This measure would be decided by Member States but as it would be included in the multiannual plan it would be eligible for funding from the European Fisheries Fund. As this money will be taken from Member States operational programs, no additional EU funding will be needed and no *ex-ante* evaluation is necessary.

5.3.6. Implementation plan

Safeguarding stocks in weak rivers is the main concern for the Commission and also for almost all stakeholders. For many stakeholders, the development of some sort of implementation/management plan for these rivers is regarded as the natural point of departure.

However, the WFD already provides for mandatory development of river basin management plans, due in 2009 and to be updated in 2015 and 2021. Article 13(5) of the WFD states that 'River basin management plans may be supplemented by the production of more detailed programmes and management plans for sub-basin, sector, issue or water type, to deal with particular aspects of water management.' It is up to Member States to decide whether salmon could be one of these additional issues with the aim to enhance coordination between different authorities at different national levels. The content of such a detailed programme/management plan would also be for Member States to decide but could include:

- a risk analysis to identify the obstacles standing in the way of achieving the objectives for the species;
- identified national measures to overcome the obstacles (fisheries regulations, habitat improvement, building or improving migratory fishways, water quality improvement, tighter control to reduce illegal fishing, limits on stocking, etc.);
- monitoring scheme to fulfil the reporting obligation and follow up the specific objectives of the different regulatory frameworks that concern the species.

An inventory of all salmon rivers conducted through HELCOM with financial resources from the EU will be useful for identifying particular risks and possibilities for salmon.

The Commission does not deem it appropriate to ask Member States to develop duplicate national management plans for these rivers but would recommend them to use the already existing information system and structures for the implementation of the salmon multiannual plan. With consideration to the ecosystem approach, attention should also be given to other migratory species when migratory routes are secured.

5.3.7. Monitoring and Control

The question of control for ensuring compliance with rules is covered by the recently adopted Control Regulation[32] which also contain specific rules for multiannual plans. It also allows for specific provisions in multiannual plans, deemed appropriate for the species, such as requirement for logbook for vessels below 10 m and the content of national control action programmes. DG MARE will follow up and monitor the implementation of fisheries control measures in the Member States. Cross national and coordination of inspection activities is to be established by the Community Fisheries Control Agency.

5.3.8. Research

There are some drivers and risks to Baltic salmon that cannot currently be addressed in any way other than by research. The low post-smolt survival rate, the M74 syndrome and climate change are all typical issues which cannot be handled by human management of the species or its habitat. During the consultation process a wide range of other research areas relevant to salmon were also highlighted[7]. It is therefore clear that, even though salmon is probably one of the best studied fish species today, many questions still remain, e.g. on the best use of the resources, stocking, habitat, genetics, diseases and ecosystem interactions with other species. For future management of the species and efficient implementation of the multiannual plan, research to address these risks and drivers and also good management should be supported by Member States in the form of cooperation and participation in Research Framework Programmes.

6. COMPARING THE OPTIONS

In Table 7 the likely future impact and support for the policy measures and choices that were analysed in Step 1, 2 and 3 on some key issues are compared with each other. The conclusion of the comparison is also included.

Key issues / **Policy measures and alternative solutions**	**Economic and social impact commercial sea fishing**	**Economic and social impact recreational and river fishing**	**Environmental impact on the stocks**	**Administrational impact on Member States**	**Stakeholder and BSRAC support**	**STECF /Scientific support**	**Decision making level**	**Conclusions**
Step 1 = choice of fish to target								
Stock consisting of mainly reared salmon	+/-	+/-	-	+/-	+/-	-	EU/ MS	Discarded
Stock consisting of mainly wild salmon	+/-	+	+	+	+/-	+	EU/ MS	Selected

Step 2 - choice of harvest control system									
Overall TAC		+	-	+	-	+/-	-	EU	Discarded
Marine TAC		+/-	+/-	+/-	+/-	+	+	EU	Selected
Offshore TAC		+/-	+	-	-	+/-	+/-	EU	Discarded
Step 3 – Choice of additional policy measures									
Technical measures	Keep closed season offshore	+/-	+/-	+	+/-	+	+	EU	Selected
	Closed season coast and rivers	+/-	+/-	+	-	+	+	EU/ MS	Selected
	Keep Minimum Landing size	+/-	+/-	+	+/-	+	+	EU	Selected
	Set minimum hook size	-	+/-	+	-	-	+/-	EU	Discarded
	Closed areas coast and rivers	+/-	+/-	+	-	+	+	EU/ MS	Selected
Additional harvest control measures	2 TAC areas for marine or overall catches	+/-	+/-	+	+/-	+/-	+/-	EU	Selected
	1 TAC area for marine or overall catches	+/-	+/-	+/-	-	+/-	+/-	EU	Discarded
	Harvest control rules	+	+	+	+	+	+	EU	Selected
	Effort regime for longlines	-	+/-	+	-	-	+/-	EU	Discarded
Conservation reference targets	Differentiated smolt production targets	+/-	+/-	+	+	+	+	EU	Selected
	One smolt production target	+/-	+/-	-	+/-	+/-	-	EU	Discarded
	Returning spawners target	-	+	+	+/-	+/-	+	MS	Voluntary
Protecting the wild salmon genetic pool	Recommendations on stocking practices	+/-	+/-	-	+	+/-	+	EU	Selected
	Fin clipping program	+	+/-	+/-	-	+/-	-	MS	Voluntary
	Identification of terminal fishing areas	+	+/-	+/-	-	+/-	-	MS	Voluntary
Re-stocking program	With means from European Fisheries Fund	+	+	+	+/-	+	+	EU/ MS	Selected
Implementation plans	As part of WFD	+/-	+/-	+	+	+/-	+	MS	Voluntary
Control	Production	+/-	+/-	+	+/-	+/-	+	EU	Selected

	Catches	+/-	+/-	+	+/-	+/-	+	EU	Selected
Research		+/-	+/-	+	+/-	+	+	MS	Voluntary

Table 6: Likely impact of the different policy measures and alternative solutions analysed in Step 1, 2 and 3 on selected key issues and with conclusions.
+/- = no impact/no change/partly support; + = positive impact/support; - = negative impact/no support

Table 7 presents the package of policy measures that will form part of the legal proposal, selected through Table 7. Some of the measures selected are also already implemented through the Baltic technical measures Regulation. Table 8 also sums up whether the different measures selected address the drivers and threats to the species and their contribution to fulfilling the specific objectives of the multiannual plan. In this respect it is fundamental to realise that the successful management of the species can not be reached by this initiative alone but relies on the successful implementation of the environmental Directives and other frameworks affecting the species.

Policy measures proposed for inclusion in the plan	Drivers				Level	Threats		Objectives		
	Environmental deterioration	Overfishing of weak stocks at sea	M74	Post-smolt survival	Decision level	Genetic loss	Climate change	Contribute to the favourable conservation statues of the Baltic salmon stock and provide for exploitation at sea of the wild salmon stocks within safe biological limits and according to their maximum sustainable yield.	Contribute to the safeguarding of the genetic diversity of the Baltic salmon stock.	Enable both commercial and recreational fishermen in the Baltic Sea able to exploit the salmon stock in a sustainable way
Limit the number of reared salmon		X			EU/ MS	X		X	X	
Marine TAC		X			EU	X		X	X	X
Harvest control rules		X	X	X	EU		X	X	X	X
Closed seasons		X			EU/ MS	X		X	X	X
Closed areas offshore		X			EU	X		X	X	X
Closed areas coastal		X			EU/ MS	X		X	X	X
Minimum landing size					EU			X	X	
Smolt production target	X				EU	X		X	X	
Guidelines on stocking					EU	X		X	X	X
Restocking programme					EU/ MS	X		X	X	X
Control production			X	X	EU/ MS			X	X	X
Control catches		X			EU/ MS			X	X	X

Table 7: Summary of how the selected measures address the different drivers and threats facing the Baltic salmon population and contribute to fulfilling the three specific objectives of the plan. Decision level EU/MS signifies that it will be mandatory for MS to exactly define a general measure taken at EU level or that EU funding can be envisaged. Decision level EU signifies that the measure will be taken at EU level with the usual mandatory implementation at MS level.

It is clear from Table 7 that the selected option will have added value for management of the species in comparison with the current management as it would address the issues identified for the scope of the initiative

- conservation reference points for fisheries;
- harvest control systems;
- relationship between reared and wild salmon;
- stocking guidelines;
- restocking;

Research will be addressed by Member States but promoted and supported by the Commission. If Member Stakes make proper use of the plan for coordinating the legal frameworks covering the species (HD, WFD, BSAP, MSFD, CFP and UNCLOS) the total administrative work should also be reduced.

7. EVALUATION OF THE PLAN

Any multiannual plan must have means to ensure implementation of the mandatory aspects and fulfilment of the objectives. The core indicators for evaluating achievement of the objectives of the Baltic salmon multiannual plan are:

(a) development of the national fishery;
(b) production of parr, smolt and estimated smolt production capacity;
(c) the genetic composition of the stocks;
(d) fisheries measures implemented;
(e) objectives established;
(f) the activity of stocking and restocking of salmon;
(g) national control action plans.

The indicators should be monitored by Member States in six-yearly intervals in order to detect any deficiencies in operation of the plan. Member States reports will be assessed by STECF and ICES and if advice indicates that the plan is not achieving its objectives, a review could be initiated by DG MARE.

ANNEXES

Annex I — Glossary

B

By-catch – the catch of non-target species and undersized fish of the target species. By-catches of commercial species may be kept or discarded along with the non-commercial by-catch.

C

CFP – the Common Fisheries Policy of the European Union (as revised by Council Regulation 3760/92). It provides the framework for management of the EU fishery sector, including all marine fisheries within 200 miles of Member States' baselines.

Conservation reference points - biological or fishery management indicators that define the point at which precautionary action must be taken to safeguard a fish stock.

D

Discards – part of the catch returned to sea as a result of economic, legal or other considerations.

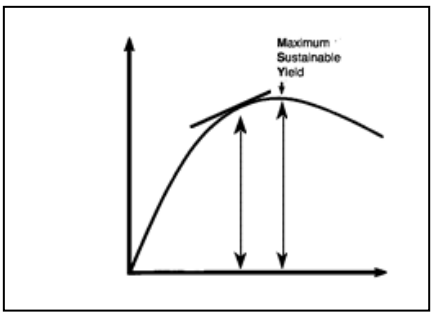
E

Effort – the total quantity of fishing gear in use over a specific period of time. Effort can be expressed in many ways: days away from port, hours trawling, length of driftnet, number of hooks used and so on. At its most basic, it is the total number of boats engaged in a fishery and/or the number of days when they were fishing.

Enhancement release – release of smolt or earlier life stages in wild salmon rivers in order to enhance the existing population.

F

F – formally, the instantaneous rate of fishing mortality (the natural logarithm of the change in abundance due to fishing per unit of time), but more simply, the proportion of the population killed each year by fishing.



A generalised yield-per-recruit (YPR) curve showing the point at which the fishing mortality rate (F) is equivalent to the maximum sustainable yield (Fmsy) and the point at which the slope of the curve is approximately 10% the slope of F=0, i.e. F 0.1.

H

Harvest control system and rule – stipulates how harvest is to be controlled by management in relation to some indicator of stock status. For example, a harvest control rule can describe the various fishing mortality values which will be aimed at for various stock abundance values. It formalises and summarises a management strategy. Constant catch and constant fishing mortality are two types of simple harvest control rules.

I

ICES – the International Council for the Exploration of the Sea founded in 1902. It facilitates and coordinates collaboration, including fish stock assessments, between Member States. It works via numerous working groups under the remit of one or more standing committees.

Index rivers – rivers identified by Member States as part of the SAP for extra monitoring, ideally chosen to represent different assessment units and sizes and types of river.

J

Juvenile – an immature fish, i.e. one that has not reached sexual maturity (but could still be larger than the minimum landing size – MLS).

L

limit reference points – are biological or fishery management indicators that define the point at which precautionary action must be taken to safeguard a fish stock. In order for stocks and fisheries exploiting them to be within safe biological limits, there should be a high probability that: 1 – the spawning stock biomass (SSB = B) is above the threshold where recruitment is impaired; 2 - the fishing mortality (F) is below that which will drive the spawning stock to the biomass threshold, a condition that must be avoided.

M

Maximum sustainable yield - the maximum yield that may be taken from a stock and that can be characterized by an average level of fishing mortality.

Meta-population – a group of spatially separated populations of the same species which interact at some level.

Mixed-stock fishery (MSF) – fishery targeting more than two salmon river stocks.

Monitoring – regular and systematic collection of environmental and biological data by agreed methods and to agreed standards. Monitoring provides information on current status, trends and compliance with declared standards and objectives.

Mortality – the death of organisms due to natural causes, e.g. predation, or to fishing etc. It is usually expressed as an instantaneous rate: the natural logarithm of the ratio between the number of animals surviving to the end of the year and the number at the start of the year.

MSY – maximum sustainable yield: the largest average catch that can be taken continuously from a stock under existing environmental conditions. (For species with fluctuating recruitment, the maximum might be obtained by taking fewer fish in some years than in others.) Also known as 'maximum equilibrium catch'.

O

Offshore fishing – fishing outside 4 nm from the baseline.

Over-fishing – any fishery where the total fishing effort is greater than is required to meet or match a specific management objective, e.g. maximum sustainable yield (MSY).

P

Parr – a young salmon during its first two years of life, when it lives in freshwater.

Potential smolt-production capacity (PSPC) – 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.

Post-smolt survival – the survival of young fish at sea before they reach fishable size.

Potential salmon river – is a river with extirpated wild salmon population(s) and currently no or little natural reproduction and/or releases, and having the potential (not irreversibly

destroyed by man for salmon reproduction) for re-establishment of a self sustaining wild salmon population;
Precautionary approach – a decision to take avoiding action based on the possibility of significant environmental damage, even before there is conclusive evidence that damage will occur. This approach requires fishery managers to pay due regard to the uncertainties of stock assessment and management. They must take appropriate precautionary action if the limit reference points are reached.

Proportionality – a principle that regulates the exercise of powers by the European Union. It states that any layer of government should not take any action that exceeds that which is necessary to achieve the objective of government. When various forms of intervention are available to the Union, it must, where the effect is the same, opt for the approach which leaves the greatest freedom to the Member States and individuals.

R

Reared salmon – salmon which have spent part or all of their life-cycle in captivity.
Restocking – release of smolt or earlier life stages in potential salmon rivers.

S

Safe biological limits – to keep stocks within safe biological limits, there should be a high probability that spawning stocks are above the threshold where recruitment is impaired and fishing mortality is below the level which will drive the spawning stocks to the threshold.
Salmon population – small-scale stable population with interbreeding salmon. One river may contain several separate populations.
Salmon stock – group of fish populations managed as a unit, from one river or many rivers (i.e. Baltic salmon stock).
Sea ranching: releases of large numbers of reared smolts with the intention to fish them commercially when they return to the river or sea area where they were released.
Smolt – a young salmon when it first leaves freshwater and descends to the sea.
STECF – the Scientific, Technical and Economic Committee on Fisheries of the EC (DG MARE). Unlike ICES working groups, which consider stock assessments and management from a scientific perspective only, the STECF is expected to consider the socio-economic implications of modifying or varying scientific, including ICES, advice.
Stocking – the deliberate release of reared salmon into the wild.
Subsidiarity - an organizing principle that matters ought to be handled by the smallest, lowest or least centralized competent authority.
Sustainable fisheries – fisheries with an annual catch, including discards, that does not exceed the surplus production of the stocks (i.e. annual growth plus recruitment less the annual natural mortality). Fisheries can be sustainable at levels of stocks significantly below the stocks that would support the MSY or MEY (maximum economic yield), but only if managers pay full regard to the limit reference points.

T

TAC – total allowable catch: the quantity of fish that can be taken from each stock each year. The figure is agreed by the Fisheries Council of Ministers each December for the following year. EU Member States are allocated a set share of the TAC as their national quota.
Terminal fishing area – area designated for fisheries targeting reared salmon instead of wild or mixed stocks.

W

Weak salmon river stock – salmon river stock which has not been able to achieve the objectives set in the old Salmon Action Plan by 2010 and considered outside safe biological limits.
Weak salmon river – river with a wild salmon population outside safe biological limits
Wild salmon – offspring of natural spawning salmon, which has spent its entire life in the wild.
Wild salmon population – small-scale stable population with interbreeding wild salmon
Wild salmon river – habitat where wild salmon populations reproduce successfully and where no or very limited releases of reared salmon have taken or are taking place.

Annex II — Summary of scientific advice

ICES environmental assessment of the SAP with STECF comments[5]

ICES concluded that:

- The SAP has been partially successful in achieving its objective of recovering natural smolt production of salmon rivers to 50% of their potential by 2010. Natural smolt production in all of the salmon rivers in Bothnia Bay (assessment unit 1 in the Gulf of Bothnia) is likely to achieve or exceed 50% of its potential by 2010. Some of the rivers in the remainder of the Baltic Sea are unlikely to achieve the objective of 50%. None of the rivers of the Gulf of Finland are likely to achieve the objective.
- There is insufficient scientific information upon which to determine if populations are within "safe genetic limits," but there are genetics concerns in light of the large hatchery production relative to natural production in rivers with depleted salmon stocks.
- While the production of salmon populations of small rivers (length less than 100 km) is usually more variable and more susceptible to natural and human-caused perturbations, there does not seem to be a general reason for the SAP to perform poorly with respect to some of these rivers. Specific factors that adversely affect salmon can be identified for some rivers.
- It is too early to fully evaluate the efforts to re-establish salmon populations, as at least one generation without releases is needed. However, to date there is little evidence of success.
- TAC recommendations from ICES have been consistent with the objective of achieving a smolt production at 50% of its potential by 2010. However, the agreed TAC has often been higher, and especially so in the last few years. Reported landings have been substantially lower than the TAC in recent years.
- The effectiveness of other salmon management measures varies. The ban on driftnet fishing has reduced fishing mortality. Limits on the number of trapnets in coastal waters are considered ineffective, while time period closures are effective. Neither adipose finclipping nor the establishment of terminal fishing areas have been important tools to increase the selective exploitation of reared salmon, and thus reduce pressure on natural production of salmon. The effectiveness of adipose finclipping of reared salmon for management is questionable since it has not been implemented for all reared fish.

STECF comments:

STECF agrees with ICES evaluation of the SAP. STECF notes that the positive development in smolt production especially in the Bothnia Bay, which accounts for a substantial proportion of total smolt production, has taken place despite low post smolt survival in recent years. This is mainly a result of reduced exploitation on adult salmon. About half of the Baltic wild salmon rivers are small rivers. In general, little or no improvement is in smolt production has been observed in these rivers. Local conditions in the rivers seem to be of particular importance and STECF underlines the need to combine general measures with specific river based measures addressing the local conditions.

ICES advice on a future multiannual plan for salmon with STECF comments[5]

ICES proposes that the future Baltic Sea salmon multiannual plan shall define a "wild salmon population" as follows: Wild salmon populations are self-sustaining populations with no or only very limited releases of reared fish.

In response to future multiannual plan for salmon, ICES advises as follows:

- The SAP (as adopted by the IBSFC) has several key weaknesses and it should not be continued in its current form. In particular, the current target of smolt production of 50% of its potential should be increased to at least 75% if a goal of the plan is to recover salmon populations to the MSY level. In addition, there should be suitable objectives to address the genetic status of salmon populations.
- Another weakness of the SAP is that it primarily influences management measures for open sea fisheries. The option of managing primarily through measures in the open sea should be rejected since the life cycle of salmon depends on natural and human related factors that occur in river, coastal, and open sea environments.
- Future management should include an integrated approach that addresses factors controlling the dynamics of salmon populations throughout their life cycle and the multitude of economic and social benefits that may be derived from salmon.
- Future management of salmon should address the key human related activities that affect salmon, including fishing, habitat alteration, and hatcheries. The role of diseases, predation, and climate change (natural and/or human caused) should be taken into account in the design of future management measures relative to objectives. Management measures for fisheries should be applied to all fisheries (open sea, coastal, in rivers, commercial, and recreational) in a consistent manner. An appropriate monitoring scheme should be implemented to guide management and measure its performance.
- An integrated approach to future management of salmon should include river-specific elements to address the recovery needs of weak populations in small rivers. In addition to controls on fishing, these efforts should address habitat problems. A case-by-case approach will probably be necessary.

STECF comments:

The estimated production of smolt at MSY varies among rivers from about 60% to 80% of the potential smolt production. STECF therefore agrees with ICES advice that a smolt production of 75% of the potential smolt production is an appropriate target reference point consistent with MSY if applied on a river by river basis.

STECF agrees with ICES that future management should address all key human activities that affect salmon and that it in addition to general management measures that apply to all stocks, it is necessary to develop river-specific elements in the plan. To address the needs for both general and river-specific elements, STECF suggest that the future multiannual plan be constructed as a framework plan supplemented by river or group of rivers-specific management plans. The framework plan should address issues affecting all stocks, such as limitations on the open sea fisheries, stocking practice and control. The river/rivers-specific plans should address river-specific issues including concrete stocking plans as well as coastal issues of relevance for the rivers.

Summary of socio- economic assessment of the SAP with STECF comments[4,]

The analysis is based on existing data as well as a survey and modelling work.

- 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 multiannual plan that would enhance the catch in rivers. 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.

- All stakeholder groups considered that the establishment of a new multiannual 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.

- 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.

- Conclusion from the assessment state 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. Regional or even river specific management options would be preferable over traditional TAC regulation.

STECF comments:

STECF considers that the study is a valuable contribution for an improved understanding of the interaction between biology, market and the socioeconomic consequences and the findings are informative. However some aspects could have been analysed in more detail. The conflicts among the different catching sectors are complex and the subject of an on-going debate. The management measures for the fishery in the rivers (recreational) is pending political decisions. Furthermore the socioeconomic consequences of the incoming salmon plan are to a large extent dependent of the development of the following sub-markets:

· Commercial price of salmon and the costs in the commercial fishery,
· Trolling fishery (recreational fishery) in the southern Baltic,
· Recreational fishery (sport-fishery) along the coast and in the rivers,

The semi-commercial fishery along the coast with fixed gears

The study has not tried to make any market analysis including the consequences of a market ban attributed to the dioxin content.

Annex III – Summary of stakeholder consultation

Summary of written answers to open consultation paper[36]

There was general agreement among the contributors that a plan is essential to create a common and holistic view of objectives and of the necessary action. The contributors also embraced the objectives and proposed additional ones.

- TAC and quotas

Many contributors were against establishing an overall TAC because it would create considerable administration, the EU is not responsible for inland fisheries and the allocation would require a change of relative stability. An overall TAC is also not believed to safeguard weak stocks. Many contributors would instead like to have specific TACs for rivers, set at national level, or at least reporting on all catches from rivers. Some were in favour of an overall TAC, on condition that the new TAC would be higher so that the national quota allocation for sea fishermen would not be reduced. Some argue that if the TAC is to be efficient, it needs to be reduced.

- Technical measures

There was general agreement to keep the current technical measures. Many contributors raised the issue of a driftnet ban, which most regarded as very important for conservation of salmon. Some argued that it should be introduced as a permanent measure to safeguard salmon (currently in place to safeguard harbour porpoises), while others would like to replace it by closed areas to protect salmon. Many also proposed additional measures, e.g. that fishing should be allowed only for human consumption or for selling within the EU, closed areas, rules on longlines, on the number and size of hooks, etc. Some of the contributors who regard fin-clipping as a good management tool suggested a ban on gear that does not allow live releases. As regards the closed season, some contributors argued that the current pattern with a closed early season works selectively on early spawners and should be changed to recurrent closed periods across the whole fishing season. This could be especially important in river systems with different subpopulations.

- Targets and timeframes

Many contributors agreed on the proposed target of 75% of the potential production with a timeframe up to 2020. Some thought it was too ambitious, others that it was too weak and should be 100%. Some thought there should be no general target at all and others said that targets need to take account of changes between years. Many believed that setting an intermediate target is a good idea and most contributors considered that river-specific targets should be set at regional or national level.

- Rearing, releases and genetic diversity

Most contributors believed that there is a need to separate harvests of wild and reared salmon to protect the wild stocks. Some, however, argued that in many coastal areas only reared

[36] Longer summary can be found on DG MARE webpagehttp://ec.europa.eu/fisheries/cfp/governance/consultations/baltic_salmon/contributions_en.html

salmon are caught, so there is no need for this separation. There is an apparent divide between contributors who believe that a fin-clipping programme will solve many of these questions and those who do not. The different opinions are evenly spread between Member States, commercial and recreational fishermen and river interest groups. The two energy companies which contributed to this consultation were very much against a fin-clipping programme, which they considered labour-intensive and very expensive, and raised the issue of the contradictory and controversial benefits of the programme for animal welfare. Many opponents of fin-clipping argued that released salmon are injured and usually do not survive in the long run. Some in the pro-clipping camp argued that, even though it might not be efficient for management, it would increase knowledge of migration patterns, etc.
Some contributors, also among those who were against a fin-clipping programme, supported the idea of terminal fishing areas and that fishing of reared salmon should be concentrated in river mouths and rivers where stocking occurs. These areas should be decided by Member States.

Many contributors mentioned limitation of mixed-stock fishing and in weak rivers and adjacent areas in order to decrease fishing pressure on weak populations. In the opinion of some contributors, the rate of selective fishing of reared salmon stocks should be increased and/or stocking levels should be adjusted downwards to minimise ecological and genetic interaction with wild stocks.

Setting genetic targets with minimum numbers of spawners received very strong support. Most believed that they should be set river by river in order not to risk extinction in one of the many rivers for a meta-population. There was strong support for including measures or targets in the plan to limit the number of released salmon. Many contributors argued that habitat restoration and improved access to habitats to increase natural production should be given higher priority than supplementary releases of reared fish. Some argued that supplementary releases should be phased out completely. Some contributors also argued that court rulings should be updated and include compensatory measures other than releases. Some totally opposed top-down restrictions on stocking. Most contributors strongly supported including in the plan rules or recommendations on stocking practices.

- Inland waters

Almost all contributors stressed that this part of the plan was essential. A few believed it unnecessary, since inland measures to protect salmon were already mandatory under the Habitats Directive and the Water Framework Directive. Others saw inclusion of such a target as cost-efficient because it would coordinate the measures and enable Member States to achieve several goals at the same time. Many stressed the need for funding and that the specific measures should be decided at local and regional levels. There was concern that the EU might support construction of hydro-power plants in wild salmon rivers with the aid of other regional or renewable energy funds.

- Implementing the plan

Inclusion of specific national/regional implementation plans for the new multiannual plan received very strong support from the contributors.

- Monitoring

There was strong support for the current monitoring system. Some contributors mentioned that counting spawners could be very expensive and demanding, especially if it was of high enough quality to distinguish between males, females and grilse. Many said that all river

landings should be reported, that the index river system should be maintained and that other aspects of monitoring (habitat improvements, protected areas, etc.) should be developed.
Separation of salmon and sea trout was not really a problem. Many claimed that this was mainly a management problem and mainly in certain countries. Some contributors thought it was a good idea to include sea trout in a future salmon multiannual plan or in a separate plan. Others thought that this was a national responsibility, which could also be solved by bilateral agreements.

- Research

The research areas proposed in the consultation paper all received strong support and many others were also suggested.

Main conclusions from the consultation meeting with stakeholders

- Most Member States did not support an overall TAC. Most participants agreed that the emphasis of the plan should be on recovering weak stocks and should include measures to be taken in inland waters.

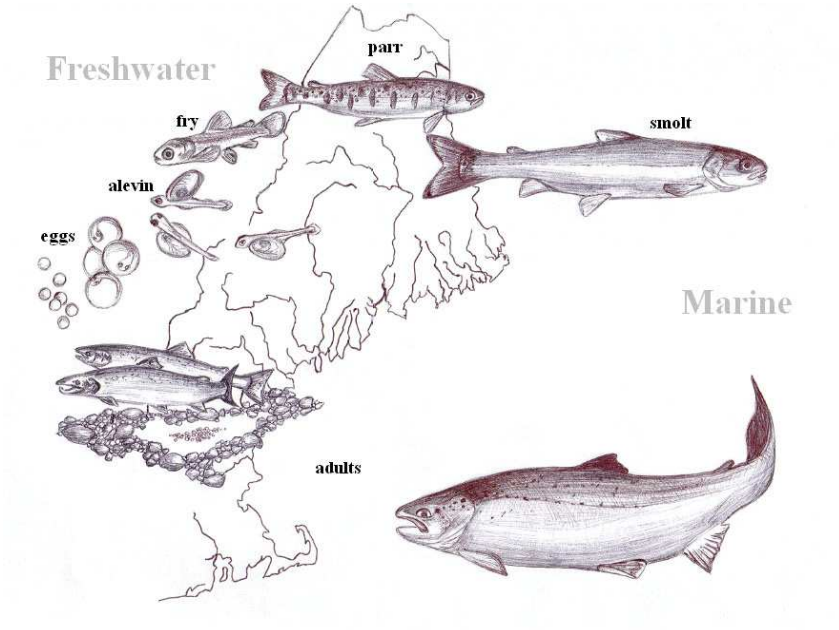
- There was general agreement on the suggested target of 75 % of potential production. The target should be lower for weak rivers with different time-frames for different rivers. Some stakeholders supported targets for returning spawners, others did not.

- Some Member States supported rules on best practice for releases. There should be no restocking in rivers with wild salmon. There was no agreement on use of fin-clipping.

- There was strong support amongst Member States for regionalisation of the implementation phase.

- Most participants emphasised that the plan should embrace the needs of both commercial and recreational fishermen.

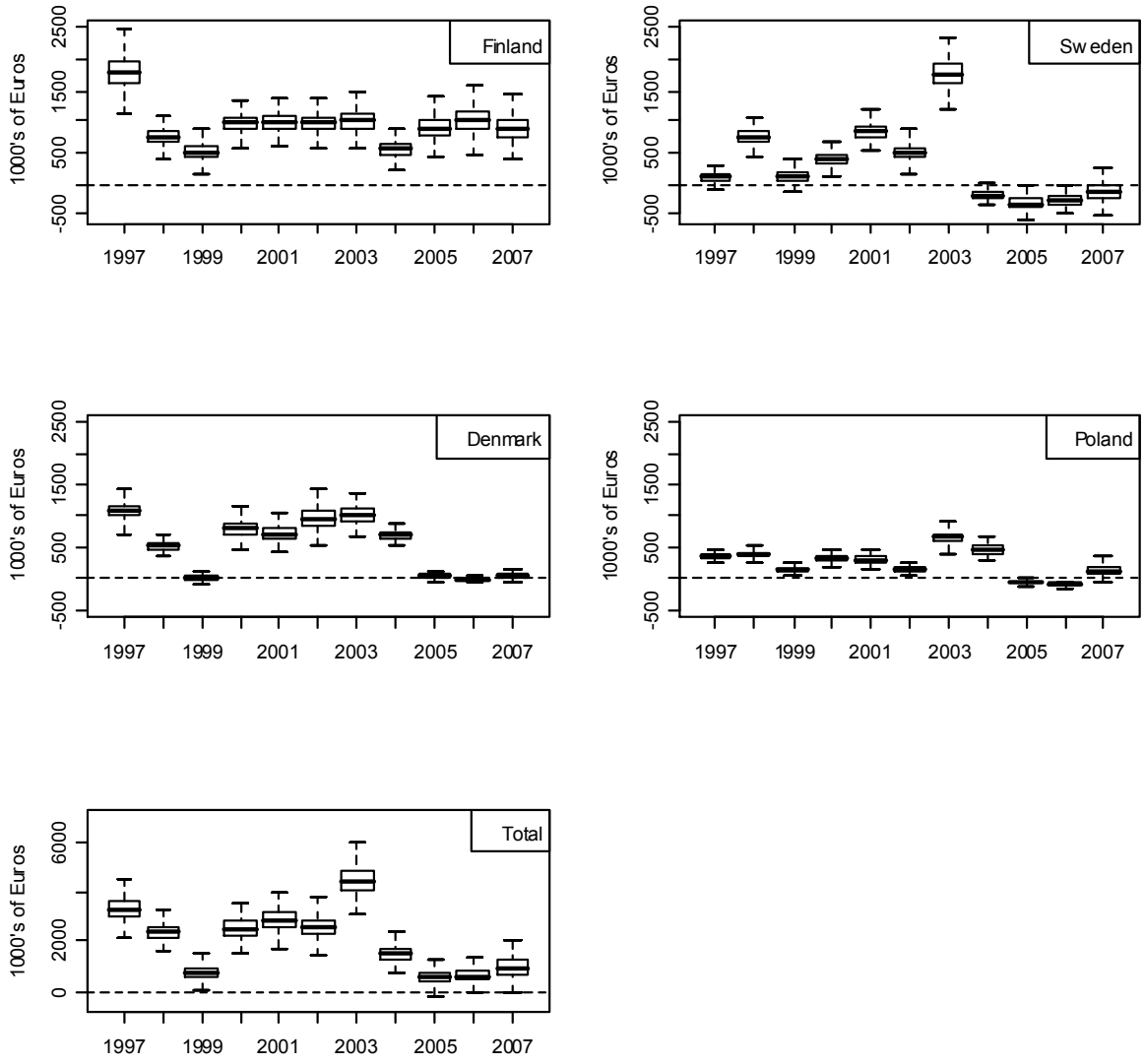
Annex IV — Life cycle of Atlantic salmon



Annex V — Map of salmon rivers in the Baltic region

Map from the 1999 Salmon Action Plan with 89 Baltic salmon rivers divided into three categories:
(1) rivers with wild salmon production (bold);
(2) rivers with released salmon **(normal);**
(3) rivers with extirpated salmon populations and with potential for establishment of salmon **(underlined).**
Some of the rivers marked in bold are now considered to have unsafe or unknown numbers of salmon.

Annex VI – Table on profits in the commercial salmon fishery



Profits from commercial Baltic salmon fishing in Finland, Sweden, Denmark and Poland and total for 1997-2007. Note the different values along the y-axis for the total profits compared with the country-by-country profits[4]