Council

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EU-Germany: Report of Implementation Plan for Meeting Objectives of NASCO Resolutions and Agreements.

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1. Introduction

This report to NASCO of an Implementation Plan is a first attempt to describe various activities throughout Germany to manage the reintroduction of Atlantic Salmon into German rivers. The report is divided into two sections. The first section provides an overview of the current situation with regard to the status of Atlantic Salmon and general management aspects. The second section highlights the situation with regard to each of the main river systems.

1.1 General overview

The sad news is: all German stocks of Atlantic Salmon are irrecoverably lost and genetically extinguished since around 1950. The encouraging news is: alongside with habitat restoration activities attempts to reintroduce Atlantic Salmon started in 1978. However, today's reality is that a number of important habitats have been restored successfully, but so far no self-sustaining population of Atlantic Salmon has been established.

The main German river systems that used to support important stocks of Atlantic Salmon in Europe are the Rhine, Ems, Weser, Elbe and some smaller rivers that flow into the North Sea. In particular the Rhine used to be one of the main salmon rivers in Europe. Parallel to the industrialisation in the 19th century, intense river regulations and straightening of waterways were carried out, dams, weirs and hydropower plants were build. Also water pollution increased dramatically. For example, river regulations between 1817 and 1876 reduced the length of the river Rhine between Basel and Mannheim by 25 %, resulting in the degradation and loss of spawning habitats for salmon. The situation was similar in other river systems. One example is the river Elbe. Starting at the end of the 19th century the number of dams and hydropower plants increased considerably. Tributaries like the Mulde which harboured the main spawning grounds of Saxony were completely blocked by dam structures. As a result spawning grounds and potential juvenile habitats could not be reached by salmon returning from the sea. Finally all Elbe stocks were extinguished by the middle of the 20th century. The poor status of environment and not at last the „Sandoz catastrophe" in 1986, when the river Rhine was heavily polluted in an accident of the Sandoz chemical plant, lead to increased activities in Germany and other countries along the Rhine to combat water pollution. In this respect, considerable progress has been made since that time and the diversity of the aquatic fauna has increased again. However, important impacts such as river regulations cannot be fully reversed. Population densities of Atlantic Salmon in the range of historic values seem therefore unrealistic to achieve. Since Atlantic Salmon need sound environmental conditions to exist, the presence of a self sustaining population of Atlantic Salmon in a river system is regarded as an excellent indicator for intact river systems and clean water. This is why the Atlantic Salmon is widely regarded as a "flagship" species acting as a symbol for the initiation of different restoration programmes, that aim at restoring habitats and enhancing the establishment of self-sustaining populations of migratory fish species.

1.2 Objective

The aim of all current activities is the reintroduction and establishment of self-sustaining populations of Atlantic Salmon in the river systems of Germany which contained salmon populations in former times. In the long run a sustainable use of salmon for fishing purposes may be envisaged.

Prior and parallel to the reintroduction activities former salmon habitats are restored. The restoration of habitats as well as the opening of migratory pathways are carried out within the Water Framework Directive of the European Union (WFD) and meet major points of the *NASCO Plan of Action for the Application of the Precautionary Approach to the Protection and Restoration of Atlantic Salmon Habitat*.

1.3 Nature and extent of resource

All stocks of Atlantic Salmon once originating from German river systems are extinguished. Reintroduction of salmon started by various - mostly private and often uncoordinated - initiatives from 1978 onwards using different stocks from Ireland, Sweden, France, Denmark, Spain and Scotland. Although natural reproduction occurs, the monitoring of returning salmon clearly shows that populations are not stable and stocking needs to be continued for many years to come.

The introduction of salmon from other European habitats aims at restoring salmon populations that are as closely adapted to the receiving habitats as possible. It has no negative impact on the genetic basis of native stocks since all formerly existing native stocks are irreversibly extinguished. Thus the introduction of salmon is not in contradiction with the Williamsburg Resolution.

1.4 Overview of fisheries

There is no commercial fishery for Atlantic Salmon in Germany. Recreational fishing for salmon is prohibited in most areas or restricted in other areas (Table 1). Some illegal fishery and occasional by-catch in commercial net fisheries for other species cannot be excluded, but this is not easy to quantify. International initiatives have been started to prevent catch of salmon returning to their spawning grounds in German rivers.

1.5 Management entities involved in fishery regulation and habitat protection/restoration

Germany is a federation consisting of 16 federal states, each with its own constitution, parliament and government. The legal responsibility for regulating fisheries in inland and coastal waters is assumed by the federal states (Bundesländer). The responsibility and financing of salmon protection and reintroduction programmes is distributed among different stakeholders, both private and public.

Table 1: State of salmon protection by fisheries legislation of the federal states (Bundesländer)

Federal state (Bundesland)	**Protection measures**	**Illegal catch / By-catch** (only information received)
Baden-Wuerttemberg	Catch prohibited throughout the year	
Bavaria	Catch prohibited throughout the year	Level of eventual illegal catches is unknown
Berlin	Catch prohibited throughout the year	
Brandenburg	closed season (1 October – 31 March); minimum length: 60 cm	Level of eventual illegal catches is unknown
Bremen	closed season (15 October – 15 February); minimum length: 50 cm	
Hamburg	minimum length: 35 cm	
Hesse	Catch prohibited throughout the year	
Mecklenburg-Western Pomerania	closed season (1 September – 31 March); minimum length: 60 cm	
Lower Saxony	closed season (15 October – 15 March); minimum length: 50 cm	By-catch of smolts in netfisheries (Hamen) may be a problem; to reduce by-catch fishing gear has to be controlled once in 24 h
North Rhine-Westfalia	Catch prohibited throughout the year	
Rhineland-Palatinate	Catch prohibited throughout the year	
Saarland	no protection measures	
Saxony	closed season (1 October – 30 April); minimum length: 50 cm	Level of eventual illegal catches is unknown but estimated to be negligible
Saxony-Anhalt	closed season (1 October – 31 March);	
Schleswig-Holstein	closed season (1 October - 31 March); minimum length: 60 cm	
Thuringia	Catch prohibited throughout the year	

A: The river Rhine and its tributaries

A.1 Introduction: Habitat, Management and Stakeholders

The river Rhine has its spring in Switzerland and flows through or adjoins to Austria, Liechtenstein, France, Germany, Luxemburg and the Netherlands. In Germany the Rhine and its tributaries pass the federal states of Baden-Wuertemberg, Bavaria, Hesse, Rhineland-Palatinate and North Rhine-Westfalia. The Rhine has a total length of 1.320 km of which 870 km are in Germany. The whole drainage area is 185.300 km^2 of which 104.660 km^2 are in Germany.

The states listed above are associated in the "International Commission for the Protection of the Rhine" (ICPR). In 1987 the ICPR started the „Rhine Action Programme" or in short „Salmon 2000". Starting in 2000 the programme is succeeded by the programme „Rhine 2020" on the sustainable development of the river. Among other objectives the programme „Rhine 2020" puts the requirements of the Water Framework Directive (WFD) as well as the Flora-Fauna-Habitat Directive (FFH) of the European Union into concrete terms.

Stakeholders and technical managers of the projects are the federal states and anglers or fisheries associations. The projects are partly co-financed by the European Fisheries Fund, the federal states (originating from the budget for nature conservation, fisheries and water management) as well as third-party funds and contributions from NGOs.

A.2 Status of stocks

Atlantic Salmon in the Rhine was totally extinguished by the end of the 1950ies.

The Rhine and its tributaries from Lake Constance (Bodensee) to the North Sea comprise altogether of a spawning area of 73,1 ha and juvenile habitats of about 726,3 ha. Stocking was carried out with salmon originating from different sources (see table 1). Between 1999 and 2003 the river system was stocked with approx. 11.3 million alevins or parr, of which 9.3 million were stocked in Germany. Monitoring stations are installed in Gambsheim (Rhine), Iffezheim (Rhine), Koblenz (Mosel), Troisdorf (Agger), Buisdorf (Sieg) and Auermühle (Dhünn).

Table 2: Origin of strains of Atlantic Salmon used for stocking the Rhine, 1999-2003 (ICPR)

Rhine region	**Origin of salmon eggs**	**Returnees**
Germany/North Rhine-Westfalia	Ireland, Sweden	Yes
Germany/Rhineland-Palatinate	France Sweden, Denmark, Ireland, Spain, Scotland	Yes
Germany/Hesse	France, Denmark, Sweden (since 2004 Ätran/Sweden)	Yes
Germany/Bavaria	Ireland, Sweden, France	No
Germany/Baden- Wuertemberg	Ireland, Sweden, France	Yes
Luxemburg	France	Yes (Moselle estuary)
France	France, Sweden	Yes
Switzerland	France	

The restocking of salmon can be regarded as tentatively successful. The percentage of restocking with eggs gained from returning adults is continuously rising. The first life stages before migration to the sea are in some cases already within save biological limits. Loss in later life stages is still too high, so that the number of returning salmon is too low to keep populations above save biological limits. Table 3 lists tributaries with stocking activities in the Rhine system.

Table 3: Tributaries to the Rhine stocked with Atlantic Salmon, 1999-2003 (ICPR, LÖBF)

Rhine region	**Rhine Tributary**
Germany/North Rhine-Westfalia	Sieg Wupper Dhünn Rur (Meuse)[1] Ruhr
Germany/Rhineland Palatinate	Sieg Ahr Saynbach Mosel/ Kyll, Prümm Lahn/ Mühlbach
Germany/Hesse	Lahn/ Dill,Weil Wisper Main / Kinzig
Germany/Bavaria	Main
Germany/Baden-Wuertemberg	Saalbach Pfinz Alb Murg Rench Kinzig
Luxemburg	Sauer
France	Rhine Ill
Switzerland	Rhine

)[1] North Rhine-Westfalia participates in cooperation with Belgium and the Netherlands in restocking programmes of the Meuse/Maas system. Restocking is done with egg material from France. The Rhine delta and the Meuse/Maas delta are connected.

A.3 Threats to stocks and current management measures

Loss of migrating salmon:

The primary obstacle that needs to be addressed is to improve the possibility for a free passage, mainly through the Rhine delta (particularly the Haringvliet Dam in the Netherlands). Secondly free migration of adult salmon to their spawning areas has to be enabled in most of the tributaries which are currently stocked. Due to the use of hydropower plants without sufficient fish protection installations losses of smolts during downstream migration (turbine mortality) are a fact in many tributaries. Fish protection at hydropower plants therefore is one of the major challenges.

Illegal catch and bycatch:
Another problem - though difficult to quantify - is the alleged illegal catch and by-catch of salmon in the Rhine delta (the Netherlands). The amount of loss due to these factors is assumed to be significant. This problem is currently addressed by a project financed by the Netherlands. Since the amount of returnees is hardly stable, these losses have to be reduced, if a population that is independent from the import of eggs should be achieved.

Habitat problems:
Although habitats were improved in a way that it is now theoretically possible to establish self sustaining stocks, water quality and habitat structures have to be further improved and filtration needs to be reduced. A number of research projects have been carried out to seek guidance, how to best improve the habitat quality in selected tributaries with a potential capacity as spawning habitats. Measures are proposed to optimize the restoration of rivers to their natural state and for the disposal of obstacles. Nevertheless in terms of the WFD the Rhine has to be regarded as "heavily modified" due to non-reversible river regulations. Even under optimal conditions the expected maximum number of salmon achievable in future will be less than one tenth of the size of the original population.

A 4. Management approach

Salmon stocking and habitat restoration in the Rhine is coordinated in the project "Rhine Salmon 2020" which is a sub-programme of the „Rhine 2020" action plan coordinated by the ICPR. (http://iksr.de/fileadmin/user_upload/documents/rz_engl_lachs2020_net.pdf). The hope is to achieve stable wild salmon populations in the Rhine by 2020. The monitoring of salmon at the monitoring stations listed under A.2 above will be continued in accordance with the work programme ("Rhine salmon 2020").

Since restocking still needs to be supported with eggs bought from abroad, gene-banks with material gained from returning salmon are being established and so called "landlocks" are held. In future, the coordination of salmon releases into the Rhine system will be improved. Fish of different stocks will no longer be cross-bred in artificial reproduction. Currently the number of returning salmon is hardly stable and an enhancement is not expected in the short term. Nevertheless, the aim for the period of the next 3 to 5 years is to become independent from the import of eggs and to restock exclusively with the offspring of returning salmon and landlocks which could then be regarded as a new "Rhine Salmon" population.

Habitat restoration and improvement of water quality is mainly carried out by implementation of the WFD and under the ICPR action programme "Rhine 2020". However, these measures are not always directed towards the demands of Salmonids and therefore can be insufficient to meet all requirements for the reintroduction of Atlantic Salmon. Consequently North Rhine–Westfalia accomplished a study about possible measures to restore its rivers to providing suitable spawning habitats for salmon. Guidelines have been developed based on this study according to which a number of measures will continue to be taken in future (Leitfaden zur wasserwirtschaftlich ökologischen Sanierung von Salmonidenlaichgewässern in NRW, Oktober 2006, ISBN 3-98-10063-6-4).

B: The river Ems and its tributaries

B.1 Introduction: Habitat, Management and Stakeholders

The river Ems has a length of 370 km and flows through the federal states of North Rhine-Westfalia and Lower Saxony. The drainage area is 17.934 km^2.

The first re-introduction of salmon took place in 1978. Re-introduction is mainly financed and organised by NGOs such as anglers' or fishermen's associations. Their activities are coordinated by the fisheries association "Landesfischereiverband Weser-Ems e.V. - Sportfischerverband". The main introduction areas are the tributaries Leda-Jümme, Hase and the upper reaches of the Ems.

B.2 Status of stocks

The original stocks were extinguished in the middle of the last century. After improvement of the water quality the first re-introduction activities started in 1978. The origin of salmon used for stocking is presented in Table 4. Although rare numbers of returnees are registered in all introduction areas, natural reproduction still cannot be validated.

Table 4: Origin of strains of Atlantic Salmon for stocking the Ems river system

Tributary/part of river	Strain	State of development
Hase	Ätran (Sweden)	smolt, pre-smolt
Leda-Jümme	Burrishoole (Ireland), Ätran	smolt
Upper Ems	Namsen (Norway), Connon (Scotland), Burrishoole (Ireland), Nissan (Sweden)	egg, fry

B.3 Threats to stocks and current management measures

Loss of migrating salmon
One problem is assumed to be illegal catch and by-catch by netfishing for other species in the tide area of the river. By-catch of smolts and returning adults need to be curbed.

Habitat problems:
The river is heavily modified. Measures for the extension and deepening of the river for shipping purposes have been destroying fish habitats. The sanding up of gravel areas has been destroying versatile spawning grounds. An improvement of migratory pathways is necessary. Although the number of fishpasses increases, some potential spawning grounds are still blocked by dams.

B.4 Management approach

The main emphasis of management activities lies in habitat restoration, reduction of filtration and improvement of pathways for migratory species at least in the lower part of the river. Due to an economically important shipyard at the upper part of the Ems an improvement cannot be expected in the short or medium term.

C: The river Weser and its tributaries

C.1 Introduction: Habitat, Management and Stakeholders

Together with its headstreams Werra and Fulda the river Weser has a total length of 744 km and flows through the federal states of Thuringia (Werra), Hesse, North Rhine-Westfalia, Lower Saxony and the Hanseatic City of Bremen.
River management and salmon re-introduction is coordinated by a working group on migratory fish ("AK Wanderfische") attached to the "Flussgebietsgemeinschaft Weser" (FGG Weser), a consortium of the respective administrations of the federal states listed above. The action programme 2000-2010 aims at improving water quality and habitat structures to a degree that salmon can built up self sustaining populations within the following decades. Stakeholders are the federal states, angling associations and other private entities. In Lower Saxony re-introduction is financed and executed on a private basis by fisheries associations ("Landesfischereiverband Weser Ems e.V." and "Landessportfischerverband Niedersachsen e.V.").

C.2 Status of stocks

The Weser once was an important salmon river in Germany. Due to salty waste water from industries located at the Werra and weir and dam building salmon was extinguished by 1930.
In 1995 re-introduction of migratory fish started and is coordinated by the "AK Wanderfische". Stocking efforts are made mainly with eggs imported from abroad. The Danish Skjerna strain has been used for restocking the lowlands of the river whilst the Swedish Ätran strain has been used for stocking the low mountain range of the river (Table 5). Although the amount is still low, restocking with eggs taken from returning adult salmon is also carried out.

Table 5: Origin of strains of Atlantic Salmon for stocking the Weser river system

Tributary	**Strain**
Oker	Burrishoole (Ireland), Ätran (Sweden)
Leine	Delphi (Ireland), Ätran, Lagan (Sweden)
Ochtum	Namsen (Norway), Skjerna (Denmark), Ätran
Wümme	Ätran, Skjerna
Hunte	Ätran, Lagan

C.3 Threats to stocks and current management measures

The current management measures are focusing on the improvement of the water quality and habitat structure and are embedded in the implementation of the WFD. Industrial waste from potash mining has been the reason for a very poor water quality. Following the closure of the factories after the reunification of Germany, the water quality improved considerably, but still is far from being optimal.

Due to dams and weirs a free passage of migratory fish is still not possible. Often fishpasses were badly constructed, with the flowing rate of attraction water being too low for fish to find the entrance to the pass. In particular the Eder dam is completely blocking the entrance to the most important natural spawning habitats. Up to now, suitable habitats for spawning and juveniles are found in the Hunte.

C.4 Management approach

Restocking of the river system is continued and the percentage of eggs gained from returnees should be further increased.

Improvement of fish passages due to the disposal of obstacles and building of suitable fishpasses is envisaged for further development measures. This factor is regarded to be absolutely necessary for the establishment of stable salmon populations.

North Rhine-Westfalia lists in the study mentioned in A4 the Weser as a priority river for eel and plans to establish fish ladders at two locations (Petershagen and Schlüsselburg). It will also continue salmon monitoring in the time period 2007-2010. The adjacent federal states will coordinate their activities.

D: The river Elbe and its tributaries

D.1 Introduction: Habitat, Management and Stakeholders

The river Elbe has a total length of 1091 km. It arises from the Czech Republic, flows at a length of 727 km through Germany and flows into the North Sea in Lower Saxony. The size of the drainage area is 148.268 km^2 of which 97.175 km^2 are located in Germany. The Elbe and its tributaries are distributed over the federal states of Saxony, Saxony-Anhalt, Mecklenburg-Western Pomerania, Brandenburg, Lower Saxony, the Hanseatic City of Hamburg and Schleswig-Holstein. The Elbe was until the 19^{th} century the second important salmon river after the Rhine in Germany and the most important in the Czech Republic. The programme "Elbelachs 2000" is coordinated by the state of Saxony and aims at the establishment of a stable, self sustaining salmon population in the Elbe and selected tributaries. The programme is financed by the state of Saxony and partly by anglers' associations. The programme was joined by the anglers' association of North Bohemia (Czech Republic). It is envisaged that stakeholders of the German federal states of Brandenburg, Saxony-Anhalt and Thuringia would follow.

D.2 Status of stocks

The last Elbe Salmon was caught in 1947. After that the Elbe stock was extinguished. As soon as 1976 Lower Saxony started first trials for restocking its rivers Oste and Luhe. In both rivers returning adults are monitored continuously. Their number is higher than expected in relation to the introduced material. In 1995 the first frys and parr were released in the Elbe tributary Polenz. Restocking started with salmon from the Swedish Lagan river and the Irish rivers Shanon, Delphi and Costello. For further restocking only the Lagan strain was used. In 2000 it was possible for the first time to gain eggs from returning adults. For the whole river system the use of foreign eggs still outnumbers the eggs gained from returning adults. Nonetheless the amount of the latter increases. Between 1995 and 2006 the river system Elbe was stocked with 6.5 million fry and parr, form which 4.0 million were stocked in Germany.

Table 6: Origin of strains of Atlantic Salmon for stocking the Elbe river system

Elbe region	Tributary	Strains of origin	First year of stocking	State of development	Returnees
Germany/ Schleswig-Holstein	Stör	Lagan (Sweden)	1980	Fry/Parr	Yes
Germany/ Lower Saxony	Luhe/Ilmenau Oste Ilmenau Seeve Schwinge	Lagan Lagan Namsen (Norway) Lagan Lagan/Ätran Lagan/Ätran	1983 1983	Fry Fry/Parr	Yes Yes
Germany/ Brandenburg	Stepenitz and Tributaries Pulsnitz (Schwarze Elster)	Shannon, Burrishoole (Ireland), Lagan, Ätran (Sweden), Skjerna (Denmark) Burrishoole, Shannon (Ireland), Lagan (Sweden)	1999 2004	Fry/Parr Parr	Yes No
Germany/ Saxony	Kirnitzsch Lachsbach und Polenz/Sebnitz Wesenitz Müglitz Chemnitz (Mulde) Pulsnitz	Lagan Lagan Costello, Shannon, Delphi (Ireland) Lagan Lagan Lagan Lagan	1999 1995 2001 2002 2003	Fry Fry Fry Fry Fry	Yes Yes Yes No Yes (Mulde)
Czech Republic	Kamenice (Kamnitz) Ploučnice (Polzenbach) Egernebenflüsse	Lagan	1997	Fry	Yes (Elbe)

Table 7: Numbers of fry and parr of Atlantic Salmon stocked in the Elbe tributaries (strains: Shannon, Delphi, Costello, Lagan, Lachsbach)

Year	Elbe tributary							
	Lachs-bach	**Polenz**	**Sebnitz**	**Kirnitzsch**	**Wesenitz**	**Müglitz**	**Chemnitz**	***Total***
1995	50,000	130,000	42,000	0	0	0	0	222,000
1996	40,000	165,000	160,000	0	0	0	0	365,000
1997	40,000	130,000	127,000	0	0	0	0	297,000
1998	40,000	80,000	126,000	0	0	0	0	246,000
1999	80,000	0	220,000	20,000	0	0	0	320,000
2000	40,000	74,500	119,000	0	0	0	0	233,500
2001	50,000	42,000	125,000	0	60,000	0	0	277,000
2002	30,000	130,000	70,000	30,000	50,000	50,000	0	360,000
2003	30,000	116,500	60,000	44,000	44,000	88,000	0	382,500
2004	0	80,000	100,000	20,000	40,000	20,000	100,000	360,000
2005	0	67,700	80,000	0	50,000	50,000	100,000	347,700
2006	0	40,000	30,000	0	10,000	10,000	50,000	140,000
Total	400,000	1,055,700	1,259,000	114,000	254,000	218,000	250,000	3,550,700

Since 1997 the North Bohemian Anglers' Association takes active part in restocking of tributaries of the upper Elbe via a support programme of the European Union (Interreg). Fry was introduced in the Kamnitz (Kamenice), the Pulsenbach (Ploučnice) and in the Eger-(Ohře-)drainage area. Eggs were imported from Sweden (Lagan) for the Czech Republic and Saxony and hatched in Saxony. It is assumed that about 2.2 million eyed ovars were released in Bohemia.

Table 8: Salmon brood provided by Saxony for Czech Elbe tributaries

Year	**Eggs**	**Fry/Parr**	**Total**
1997/98		45,000	45,000
1998/99		70,000	70,000
1999/00		150,000	150,000
2000/01	205,000	100,000	305,000
2001/02	150,000	113,000	263,000
2002/03	180,000	100,000	280,000
2003/04	180,000	100,000	280,000
2004/05	200,000	160,000	360,000
2005/06	70,000	110,000	180,000
2006/07	200,000	100,000	300,000
Total	1,185,000	1,048,000	2,233,000

In the middle Elbe restocking is carried out by the anglers' association of Brandenburg under scientific supervision of the Institute for Inland Fisheries e.V. Potsdam-Sacrow (rivers Stepenitz and Pulsnitz of Brandenburg) with fry from Lagan and to a minor part with parr from Skjerna.

Table 9: Numbers of fry and parr for stocking of the middle Elbe (Brandenburg)

Year	Stepenitz	Pulsnitz
1999	50,000	0
2000	70,000	0
2001	40,000	0
2002	50,000	0
2003	50,000	0
2004	50,000	31,100
2005	50,000	30,000
2006	50,000	30,000
Total	410,000	91,100

Table 10: Number of fry and parr for stocking of the lower Elbe in Schleswig-Holstein, Lower Saxony and Mecklenburg-Western Pomerania.

Years	Area	Fry	Parr
1981-2006	southern Elbe	488,400	
1980-2006	northern Elbe (Störe/Brahme), including1994-1997 Mecklenburg-Western Pomerania	911,000	146,000
Total		1,299,400	146,000

D.3 Threats to stocks and current management measures

Poor water quality, river regulation and dam building are regarded to be the main causes for salmon extinction in the river Elbe. The water quality improved significantly, so that Salmonids can repopulate the river system today. Some spawning habitats were restored and fishpasses were installed. However, even if all restoration measures envisaged were executed, the historic population density could not be achieved.

Restocking programmes in Saxony and the Czech Republic will be continued and probably intensified.

In Saxony the Ministry for Environment and Agriculture initiated a programme whereby the administration for water management, fisheries and nature conservation is determining the priority for rivers to provide a free passage for migratory fish.

Highest priority has the passage of the combined Mulde/Zwickauer Mulde/Chemnitz draining area, which would enable salmon to reach the spawning habitats in the Ore Mountains.

Due to a reduction in the number of returning spawners in the last years the interest in continuing programmes for migratory fish seems to have decreased, although the existing programmes are still carried on.

Schleswig-Holstein is continuing its long-standing programs. The restoration of rivers is ongoing, aiming at making accessible spawning habitats that are currently silted up.

Specific problems:

2002, the year of the high water catastrophe, was the last year with a good rate of returning salmon. Since then the numbers have decreased. The reasons are unknown with some speculations:

1. Dam structures shouldn't be the reason, because the only Elbe weir (Gesthacht) has got a fishpass. Although the programmes will suffer a setback if the envisaged building of a new barrage in the Czech Republic is realised.
2. A direct correlation between decline of salmon in the North Atlantic and the number of returning spawners is assumed.
3. Oxygen shortage in the waterway of the Elbe in summer may lead returnees to the watersides, where they are vulnerable to fishing nets.
4. Gillnet fishery may be a problem that is not yet quantified.
5. Possible influence of climate change has to be taken into account.

E: Waters flowing directly to the North Sea

E.1 Introduction: Habitat, Management and Stakeholders

For some smaller rivers in the state of Schleswig-Holstein, namely Treene, Eider and Stör, historic data about catch and reproduction of Atlantic Salmon are existent. Salmon was not very frequent in these rivers even in former times because all the waters are smaller than typical salmon habitats. But also these populations were extinguished by 1900.

Five years ago a reintroduction programme for the Schafflunder Mühlenstrom was started by the local anglers' association that is financed by the state as a pilot project. In the river Stör salmon is stocked by the anglers' association of Schleswig-Holstein without public financial support at the moment. Up to now there are no stocking activities in the Eider because habitat conditions are not yet suitable.

E.2 Status of stocks

It is known that salmon lived and reproduced in the smaller rivers mentioned above. Nonetheless it is under discussion whether distinct populations existed or the rivers were populated from time to time by misdirected individuals from the Elbe strain or bigger Danish rivers.

In the Schafflunder Mühlenstrom the Danish Skjerna strain is used for stocking purposes. Although the project started only 5 years ago, first single returning salmon were registered and provided some material for further stocking. A medium-term aim is to get independent from importing eggs from abroad. Until now the habitat conditions are still poor and the chances to meet the objective are uncertain.

The Stör is stocked with the Swedish Ätran strain. For both Stör and Schafflunder Mühlenstrom the establishment of self-sustaining stocks are a long term objective.

E.3 Threats to stocks and current management measures

In the course of river regulations the impact of sediment load increased and destroyed spawning habitats as well as habitats for juveniles.
Some parts of the waters are protected by the FFH Directive. The further prospects for habitat improvement are enhanced with regard to the implementation of the FFH and the WFD directives.

E.4 Management approach

Salmon restocking is carried on by the local anglers' association. Financing of the reintroduction programme in the Schafflunder Mühlenstrom is secured for the next 3 – 5 years. Stocking activities go hand in hand with the implementation of the FFH and WFD Directives.

Outlook for further development of the Implementation Plan

The status of habitat improvement and re-introduction of Atlantic Salmon differs between the river systems. Further reports on the implementation plan will be divided into sections for each of the river systems listed above.

In order to support the reports on the implementation plan and to establish an inventory of rivers for the protection and restoration of salmon habitat according to the *NASCO Plan of Action for the Application of the Precautionary Approach to the Protection and Restoration of Atlantic Salmon Habitat* a periodical input into NASCO's Atlantic Salmon Rivers database will be established.

Due to the federal structure of Germany and due to the vast number of stakeholders the restocking programmes are heterogeneous and an improved coordination of programmes as well as a regular, eventually institutionalised sharing and exchange of information on habitat issues and best management practice is desirable. Plans to achieve this are currently being discussed. This would also involve a broader dissemination of information about NASCO's resolutions and activities.