

## **NEA(09)3**

### ***Informal Consultation Meeting on Norwegian Coastal Salmon Fisheries***

Under the 'Next Steps' process, each Party or jurisdiction submitted to NASCO an Implementation Plan outlining the actions to be taken to implement NASCO's agreements, resolutions and guidelines. Two of these plans, those of the Russian Federation and EU-Finland, had referred to the interception of salmon originating in their rivers in coastal salmon fisheries in Norway. There had been some prior discussions on this issue between the Parties concerned and, at the invitation of Norway, an informal consultation meeting was held in Oslo, Norway on 26 February 2009. This was not an inter-sessional meeting of the Commission but provided an opportunity for consultations prior to Norway finalising its fishery regulations for 2009. Representatives of Norway and the Russian Federation attended the meeting. The two Parties present agreed that the report of the meeting should be made available to the North-East Atlantic Commission for information and this is attached.

Secretary  
Edinburgh  
7 April 2009

*Informal Meeting on Norwegian Coastal Salmon Fisheries*

*Thon Hotel Opera, Oslo*

*26 February 2009*

**1. Introduction**

The informal meeting was an initiative from Norway with the intention to inform and consult other Parties. The NASCO Secretary had facilitated this initiative and had consulted the other Parties in the North-East Atlantic Commission as well as the Chairman about it. They had welcomed the initiative. The Parties present asked the NASCO Secretary to chair the meeting. He referred to the fact that as part of its “Next Steps” process NASCO Parties had submitted Implementation Plans in 2007 showing how they were implementing NASCO’s Agreements and Guidelines. Two of these plans, those of Russia and Finland, had referred to interception of fish originating in their rivers in Norwegian coastal salmon fisheries. There had been prior discussions about this between the Parties concerned.

**2. Presentation by Norway on Salmon Migration and Proposal on Fisheries Regulations**

Norway made two presentations. The first (Annex 1) provided all available information on interception of Atlantic salmon of foreign origin in Norwegian fisheries. There was direct evidence from tagging studies of interception of Russian-origin fish and also, at a lower level, of Finnish salmon. Interceptions at very low levels of Swedish and UK salmon had also been recorded.

Norway also presented a paper (Annex 2) which summarised their proposals for regulating salmon fisheries in 2009. These proposals involved maintaining the increased restrictions in fishing season and number of fishing days and timing that had been brought in for 2008. Norway explained the process which involved consultations with stakeholders and the Sami Parliament. This present informal meeting was a part of that process.

**3. Presentation by Russia**

The Russian Federation made two presentations. The first described the state of their salmon stocks and the regulations in force. They referred to the need to reduce the interceptions of their salmon and to obtain current data on interception levels. The Joint Environmental Commission between Russia and Norway had agreed a project to study the migration of wild salmon in the Barents Sea. Russia welcomed the opportunity to participate in this informal meeting.

The Russian Federation also presented an overview (Annex 3) which contains some data published in the Russian literature on Atlantic salmon tagged in the Norwegian Sea and recaptured in Russian “home waters” and also data on tags recovered in oceanic and coastal areas from salmon tagged in Russia. The tagging experiments showed that Atlantic salmon from Russian rivers made their feeding migrations in the Norwegian Sea and returned to their native rivers through Norwegian coastal waters.

#### **4. Presentation by EU-Finland**

There were no presentations from the European Commission or from Finland who were unable to be represented but who both expressed their interest in the outcome of the meeting.

#### **5. Discussion and Conclusions**

The meeting discussed all the matters raised by the papers submitted and other relevant issues. The following facts and conclusions were developed:

There is direct evidence of salmon of Russian origin being caught in marine mixed-stock fisheries in northern Norway. This is on the basis of tagging experiments conducted prior to 1974. These catches originate from Murmansk region and from rivers in Russia as far east as the River Pechora.

The Barents Sea Atlantic salmon stock complex of the Murmansk region, which is closest to the Norwegian marine fisheries, has been close to the Conservation Limit (CL) for the last three decades. A number of individual river stocks are below their CLs.

The ICES advice to NASCO for 2008, CNL(08)7, states that reductions in exploitation are required for as many Northern European stocks as possible, to increase the probability of the stock complex meeting its CL. Furthermore, due to the different status of individual stocks within the stock complex, mixed-stock fisheries present particular threats to stock status.

Coastal fisheries for salmon in the Barents Sea in Russia have been closed. There remains a small scale mixed-stock coastal fishery for salmon in the White Sea, but the effort has been reduced in the last decade. The overall exploitation rate for Atlantic salmon stocks in Russia has been considerably reduced over the last two decades.

NASCO has called for all Parties to produce Implementation Plans to demonstrate that their conservation actions are in accordance with NASCO Agreements and Guidelines. Two of these implementation plans, those from the Russian Federation and from EU (Finland) referred to the effect on their stocks of the coastal fisheries in Norway. Moreover, NASCO and its Parties have adopted the Precautionary Approach which requires that priority be given to conserving the productive capacity of the resource and that there is a need for caution when information is incomplete or lacking. The Agreement on the Precautionary Approach states that stocks should be maintained above their conservation limits and conservation actions be taken when there are grounds for concern even if the scientific evidence is not yet complete. There is then a requirement to obtain the necessary scientific advice.

The Head of the Federal Agency for Fisheries in the Russian Federation wrote to the Minister of Environment in Norway in February 2008 expressing his concerns about the impact of the Norwegian net fishery in coastal waters on the stocks of Atlantic salmon of Russian origin. There was also reference to the overall decline of wild Atlantic salmon stocks in the North Atlantic. He had urged Norway to take measures to reduce coastal catches of Atlantic salmon migrating through Norwegian waters and invited closer cooperation on this matter, through, *inter alia*, joint scientific programmes on genetic identification of salmon from Russian and Norwegian rivers.

The Norwegian Minister of Environment responded in April 2008 that the government intended to introduce significant reductions in the salmon fishery. He added that this would be based on

international advice and criteria, which implies a reduction in the marine mixed-stock fisheries and agreed that a closer cooperation was needed both in NASCO and in the joint Russian-Norwegian Environmental Commission.

In the light of the intention to have closer cooperation, agreed by both Ministers, this issue was addressed by the joint Russian Norwegian Environmental Commission in December 2008 when a project to study the migration of salmon in the Barents Sea was approved. In the same light this informal meeting was called to seek means of closer cooperation on this issue.

Norway is now in the process of deciding on the 2009 regulations for the marine mixed-stock fisheries. The proposal for the relevant regions is to retain the 2008 regulations which restrict the fishing season and the number of fishing days compared to the period 2003-2007.

Acknowledging the regulations adopted by Norway for 2008 Russia urges Norway to take further actions to restrict the coastal fisheries for Atlantic salmon specifically in those areas where salmon of Russian origin are intercepted, including measures such as a ban on bend netting, further reduction of the fishing season and number of fishing days, and closure of all salmon fishing in Varanger fjord (Finnmark).

Under the NASCO Convention a Party can propose, and the North-East Atlantic Commission can adopt, a regulatory measure where a Party intercepts salmon originating in the rivers of another Party.

Secretary  
Edinburgh  
2 March 2009



## **A note on interception of Atlantic salmon of foreign origin in Norwegian home water fisheries**

Lars P. Hansen, NINA

### **Introduction**

As a result of the decline of salmon populations in the Atlantic national authorities have made efforts to reduce the exploitation of the stocks to secure sustainable recruitment of local populations. In recent years heavy regulations, particularly of mixed stock fisheries have been effectuated in large areas of the distribution range of the salmon. In Norway one of the significant measures taken was the overall ban on the drift net fishery off the coast. Furthermore due to the weak salmon populations in western Norway, the fisheries in this area have been heavily regulated. However, the marine salmon fisheries still account for about half of the total nominal salmon catch in Norway.

Results from old Norwegian salmon tagging programs of adult salmon have demonstrated that in some areas Norwegian fishermen exploit fish originating from neighbouring countries, particularly Russian and Swedish salmon. On the other hand returning adults of smolts tagged in several Norwegian rivers have been recaptured in the neighbouring countries.

The purpose of this document is to provide a first crude assessment of by-catch of Russian, Finnish and Swedish salmon in Norwegian salmon fisheries, and of by-catch of Norwegian salmon in neighbouring countries.

### **Tagging of adult salmon in Finnmark**

In the past tagging of adult salmon was carried over large areas of Norway (Fig.1), but Russian and Finnish recoveries were reported from the tagging programs in Sørøya (Breivik and Sørvær) in Finnmark. At Breivik adult salmon were tagged during the period 1962-1974, and at Sørvær 1964-1967. At Breivik a total of 3527 salmon were tagged, and a total of 1036 were recaptured (29.4%), the majority in Norway. Of the total number of recaptures 136 were reported from Russia (13.1%) and 19 from Finland (1.8%) (Table 1).

At Sørvær a total of 1066 salmon were tagged and released. The total number recaptured was 143 individuals (13.4%), the majority in Norway. Of the total number of salmon recaptured 15 (10.5%) and 3 (2.1%) were reported from respectively Russia and Finland (Table 1).

Between 1962 and 1974 the proportion of Russian origin salmon recovered of those tagged at Breivik on total adult recoveries varied between 0% (1974) and 25% (1966) (Fig.2). The proportion of Finnish salmon varied between 0 and 5 % during the same time period.

The recaptures from the adult tagging at Sørvær and Breivik were spread over a large geographical area (Fig. 3 and 4), both to the southwest and to the east of Sørøya, the majority tended to move eastwards. This shows that the bagnets and bendnets operating in this area would exploit salmon from a number of rivers.

The data strongly indicates that during the period of tagging at Sørøya the by-catch of Russian origin salmon was relatively large in northernmost Norway. The data from Sørøya are old and do not necessarily represent the present situation. But along the migratory route of salmon towards rivers east of Sørøya there are still extensive salmon fisheries, suggesting that Russian origin salmon are caught in these fisheries as well. This shows that by using the simple recovery rate from Russia as an index of interception would underestimate the catches of Russian salmon in Norwegian home water fisheries.

To assess the by-catch of Finnish salmon is difficult because both Tana and Neiden rivers are border rivers between Norway and Finland, and salmon taken in these rivers on Norwegian and

Finnish side originate in both countries. This implies that salmon taken in marine waters in Norway are of both Finnish and Norwegian origin.

To provide a better assessment of by-catch of Russian and Norwegian origin would require more information, included historical and present information of tag reporting rates, effort reductions and exploitation in Norway, Russia and Finland. The driftnet fishery in Norway was banned in 1989 which must have reduced the interception on Russian and Finnish salmon, but there is still a significant coastal salmon fishery with fixed gear in Finnmark. Available information on the number of Norwegian fishermen operating in marine waters in Finnmark since 1993 shows a reduction from about 800 to 500 fishermen (fig. 5).

#### *Recaptures of Swedish salmon in Norway*

Recaptures on the Norwegian west coast of adult salmon tagged as smolts in the River Lagan on the Swedish west coast increased considerably during the 1970s (Fig. 6). Before that time less than 5% of the total adult recaptures was reported from Norway, but between 1971 and 1978 the proportion of recaptures of salmon originating in the River Lagan in Norway varied between 10 and 35% (Fiskenämnden i Hallands Län 1979) There is no data available in later years. Although some of these fish were taken in coastal fixed gear, the significant increase was due to the expansion of the Norwegian drift net fishery off the base line. The Swedish fish were mainly taken on the west and southwest coast of Norway. The drift net fishery was banned in 1989, and together with significant reduction of the coastal bag nets in this area and the general ban on bend nets in Norway (with the exception of the fishery in Finnmark county) it is reasonable to assume that the present by-catch of Swedish salmon in Norway is small.

#### *Recaptures of Norwegian salmon in other countries.*

The ICES working group on north Atlantic salmon (1998) summarized results from 14,508 adult recaptures of smolts tagged and released in different river in Norway 1990-1996. The great majority was recaptured in Norway (98.77%), 0.59% in Sweden, 0.30% in Denmark and 0,21% in Ireland. By examining the NINA tag database of about 60,000 adult recoveries from smolt tagging in Norway, Sweden and Denmark accounted for most of the foreign recaptures (Fig. 7). Very few recaptures were reported from other countries.

#### *Conclusion*

All in all the provisional analysis of the available information suggests that exploitation in Norway of salmon originating in neighbouring countries is low except for salmon originating in Russia. Exploitation of Norwegian origin salmon in neighbouring countries appear to be small. However, there may be local problems which is difficult to detect, for example interception of fish originating from rivers close to fisheries on the other side of the border. However, there is no information available.

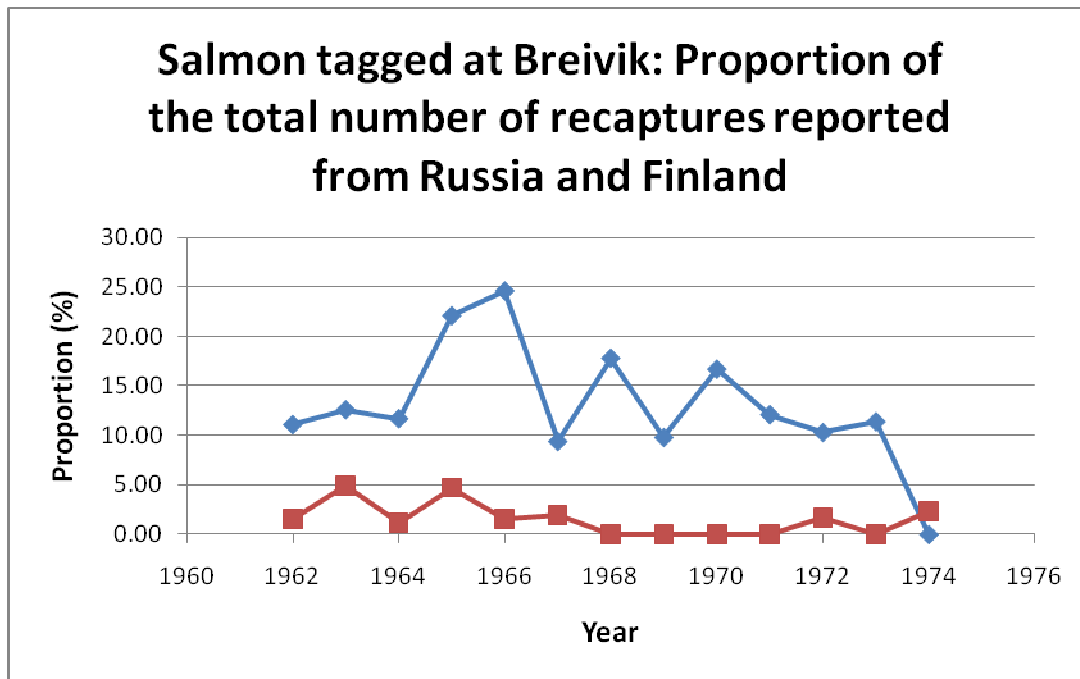
*Table 1. Total number og salmon tagged at Sørvær and Breivik and recaptured*

Station	Year tagged	Tot. No tagged	Tot. no. recaptured	% recapture
Sørvær	1964-67	1066	143	13.4
Breivik	1962-74	3527	1036	29.4

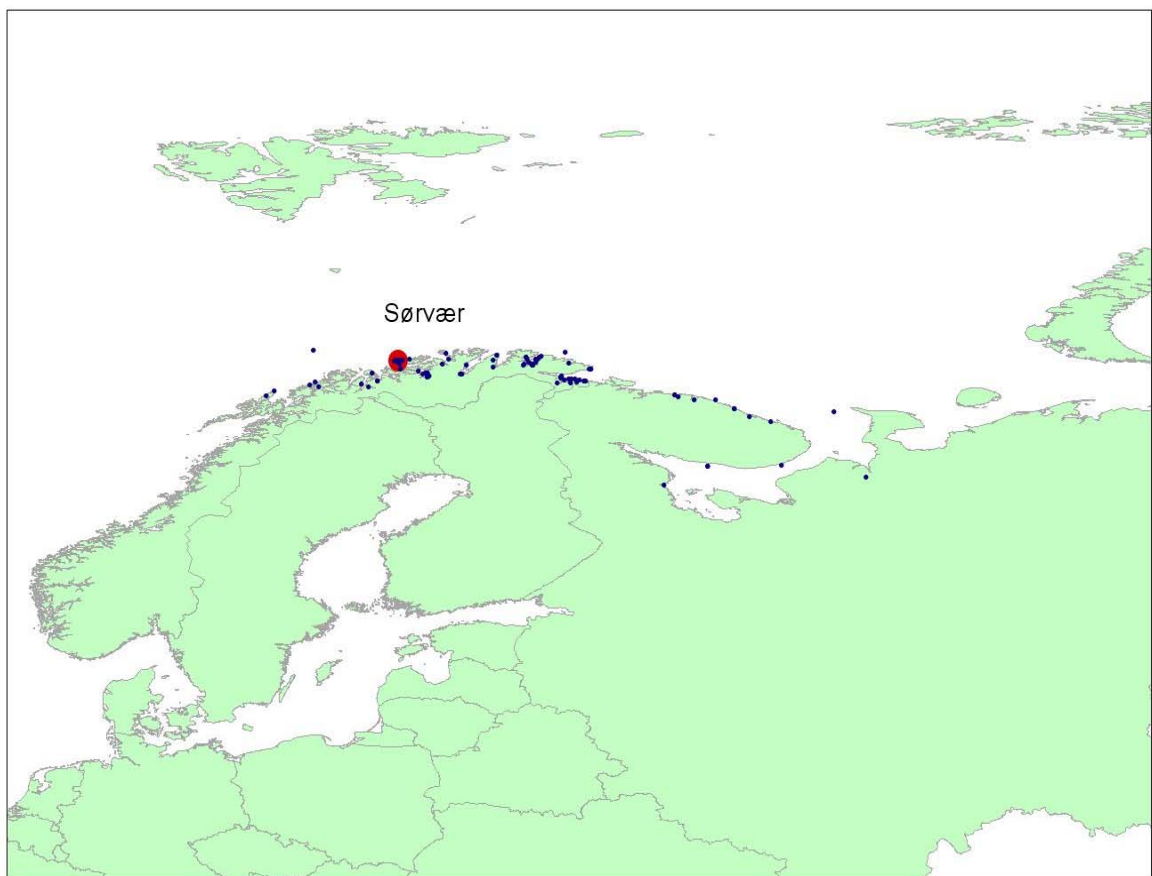
**Sørvær: Overall proportion Russia: 10.5% ; Finland: 2.1%**

**Breivik: Overall proportion Russia: 13.1% ; Finland: 1.8%**

*Fig.1. Geographical distribution of tagging stations in Norway*

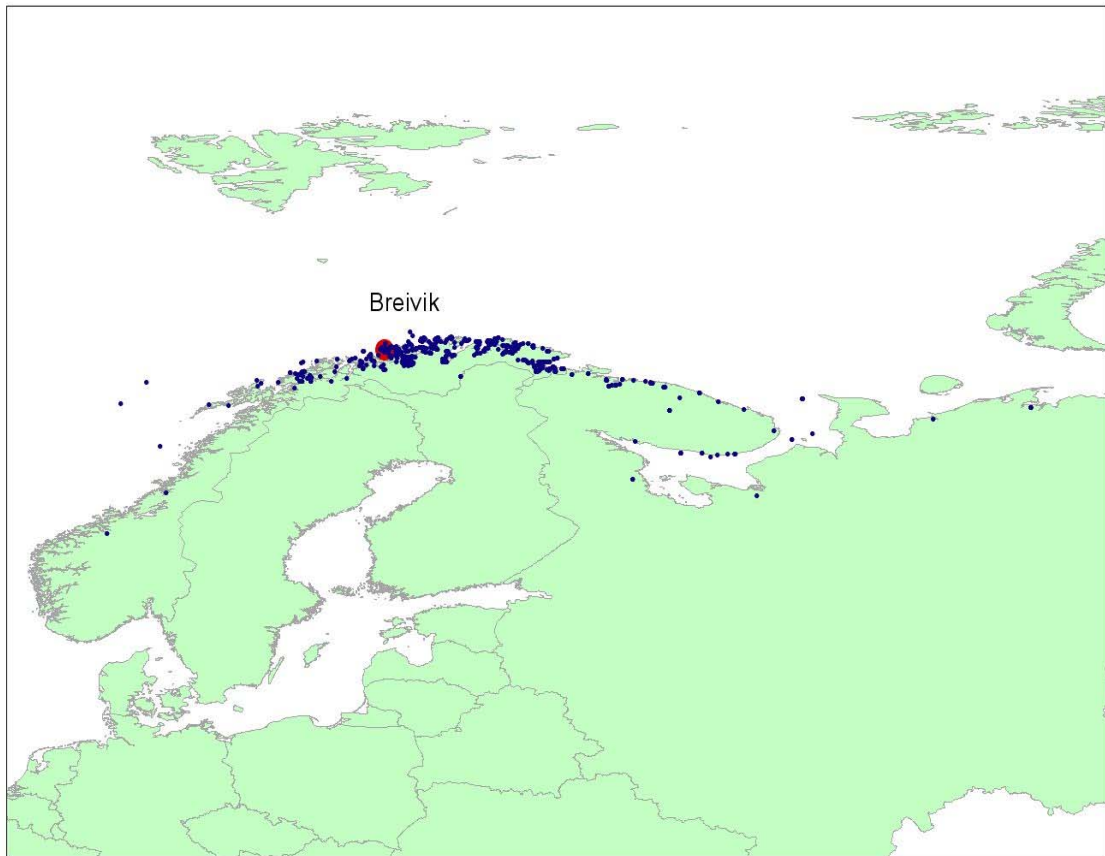


*Fig.2. Proportion of salmon of Russian and Finnish origin of salmon tagged at Breivik*

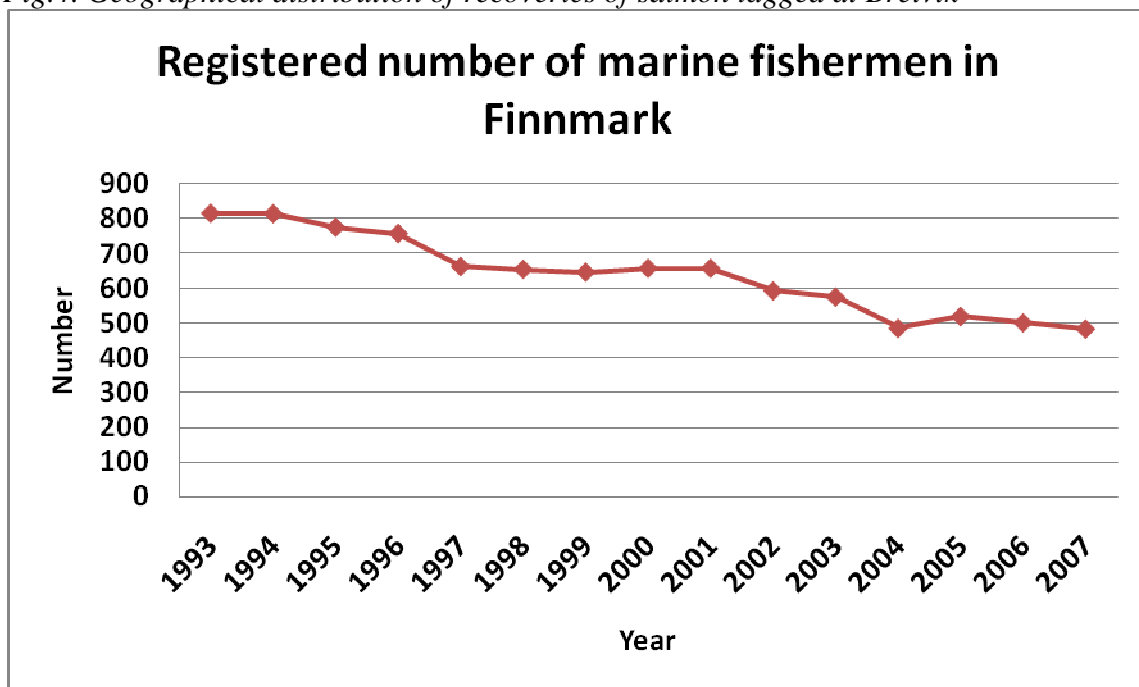


*Fig. 3. Geographical distribution of recoveries of salmon tagged at Sørvær*





*Fig.4. Geographical distribution of recoveries of salmon tagged at Breivik*



*Fig. 5. Number of marine fishermen registered in Finnmark*

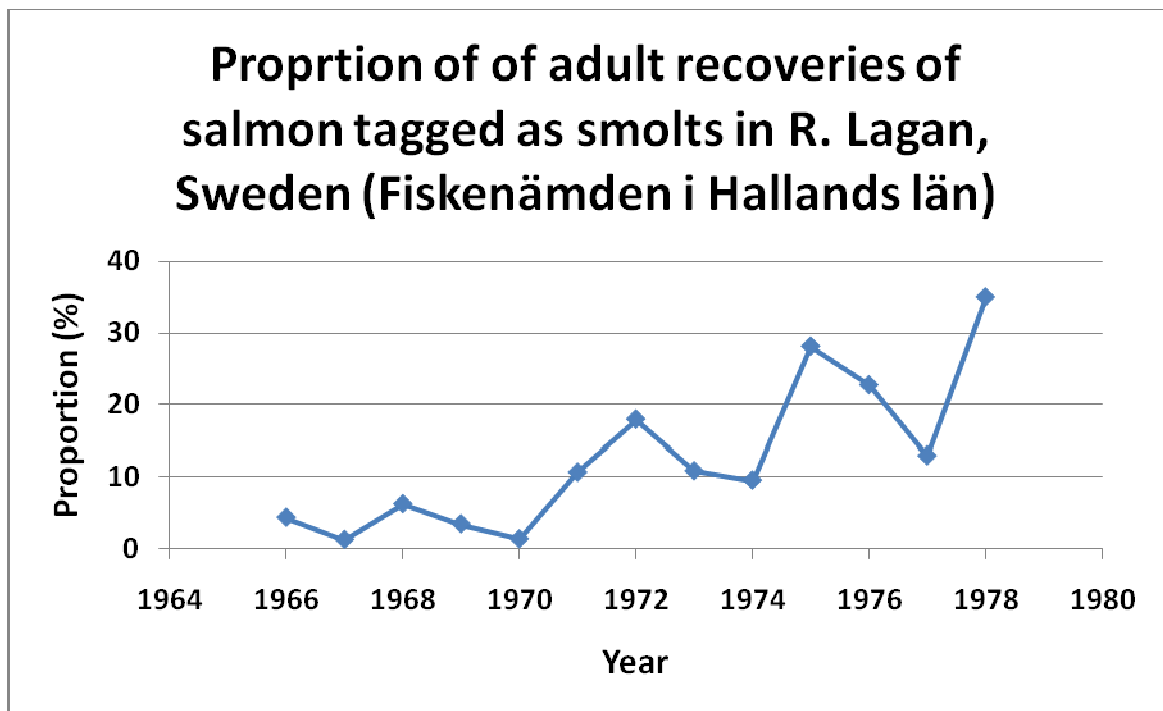


Fig. 6. Proportion of adult recoveries in Norway of salmon tagged as smolts in the River Lagan (Fiskenämnden i Hallands Län 1979).

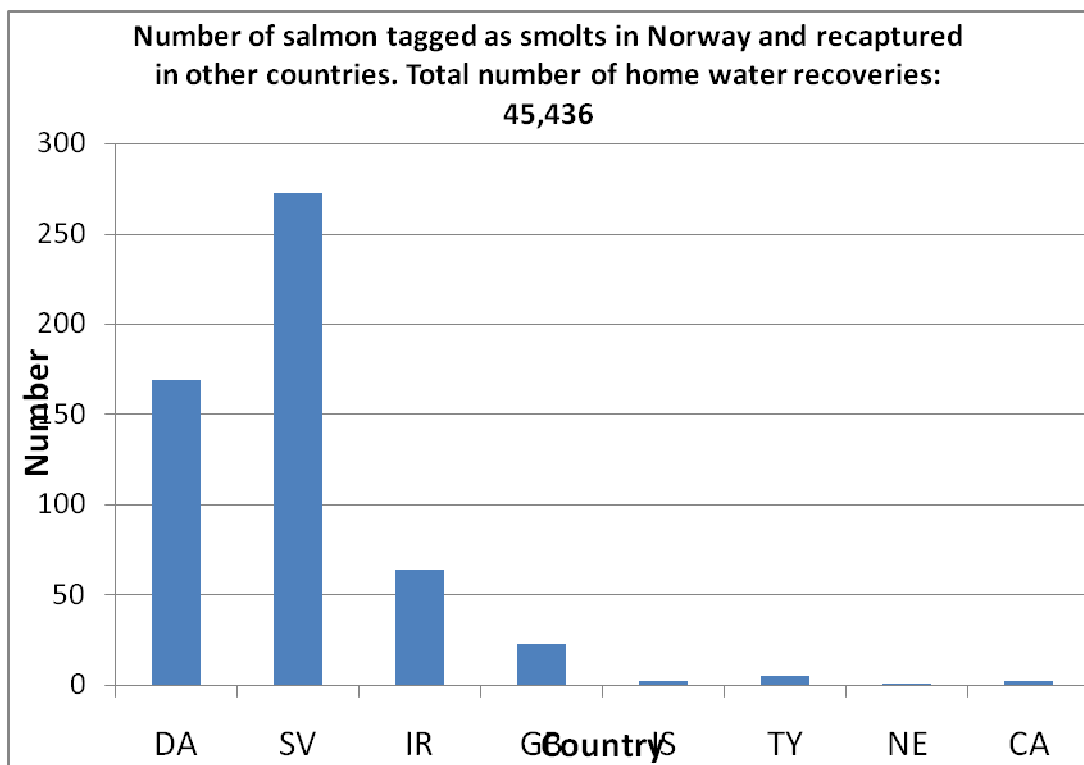


Fig.7. Number of adult salmon recaptured in other countries from smolts taggings in Norway. The total number of recaptures reported from Norway from the same tagging was 45,436.



### Regulation of salmon fisheries in 2009 – legal framework, process and proposal

#### **Background**

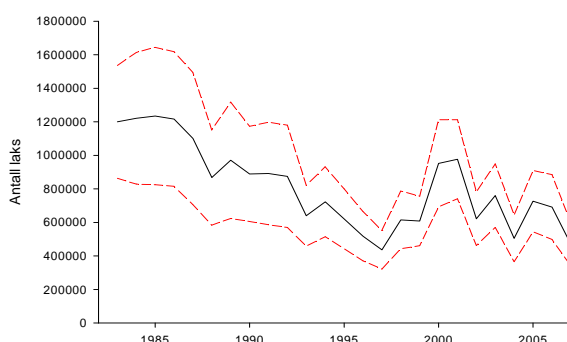
##### **Legal basis and management system**

- *Anadromous salmonids are protected unless otherwise determined in provisions set out in or issued pursuant to this Act.* (“Act Relating to Salmonids and Freshwater Fish etc.)
- Owners of shoreline have an exclusive right to fish in rivers, and to fish with stationary gear in the sea.
- Public fisheries regulations have primarily been based on regulations of fishing gear and season.
- Fisheries regulations are aimed at contributing to the conservation and restoration of spawning stocks at levels of abundance and with a composition that ensures genetic diversity and natural productivity in each river.
- The Ministry of Environment has the overall responsibility for the salmon management. The Directorate for nature management regulates the sea fisheries whilst County Governor regulates river fisheries.
- Fisheries in Border Rivers are based on bilateral agreements with Russia, Finland and Sweden, respectively.

##### **Abundance and diversity**

- About 400 rivers with self-reproducing salmon stocks remain.
- About 80 out a total of 450 Salmon rivers are either lost or threatened
- After a few years around 2000 with higher catches, catches have again been reduced in recent years – about 50% of the 70-ies and early 80-ies
- Catch in 2007 the lowest ever recorded (in numbers), mostly due to a very poor grilse run, catch slightly higher in 2008 (good multi-sea winter run – but again a poor grilse run in most parts of the country).

##### **Estimated number of salmon returning to the Norwegian coast from 1983-2007**



- Spawning targets established for 180 rivers, representing about 80-90% of the catches.
- Salmon runs and spawning stock sizes are estimated from catch, exploitation rates and fish counts.
- Escaped farmed salmon (ca 15 % in average) take part in the spawning and have a severe impact on production and genetics.

- Management target: The spawning stock should meet or exceed the spawning target in at least three out of four following seasons – status for seasons 2002-2006 is given on the map.



### **Salmon fisheries in rivers**

- About 50 rivers were not opened for salmon fishing in 2008 (29 in 2007). The outer time frame for the fishing season was from 1th June to 31th August.
- About 100.000 anglers are fishing for salmon in rivers yearly – indications that numbers have declined in 2008.
- Total catch in 2007 was about 300 tons, 488 t in 2008.
- Fishery with other gear than rod and line mainly for subsistence, food, recreational, tourist, and cultural heritage reasons in a few rivers:
  - Tana (driftnets, gillnets and weirs): Ca 40 tons
  - Neiden (one seine net): Ca 2 tons
  - Numedalslågen (traps and nets): Ca 5 tons
  - Mandal (one seine net): Ca 0,5 tons

### **Salmon fisheries in fjords and coastal areas**

- Catches in fjord fisheries are normally dominated by salmon from rivers within the same fjord, whilst catches in coastal areas consist of salmon from many rivers and large parts of the country. Therefore the Norwegian coast is divided into 10 coastal and 13 fjord regions (regulatory zones, different colours) – se map
- 1350 fishermen were fishing with about 2000 fixed engines (2007), the lowest numbers recorded – preliminary numbers for 2008: below 1100 fishermen, about 1600 fixed engines
- Commercial, cultural, subsistence and recreational fishing
- In 2008 the fishing season started between 1 June and 15 July and ended 4 August. 11 - 34 days per year.
- Autumn fishery for escaped farmed salmon in many regions.
- Catch 2007: 426 tons, mean weight 4,8 kg. Catch 2008 preliminary numbers: 388 tons (220 t in Finnmark), mean weight 3,7 kg.
- About 50% of the total catch was caught in the sea fishery, about 45% in 2008.
- Even though often very restricted, a fishery for wild salmon was allowed in all regions in 2007. In 2008 there was almost no fishery for wild salmon in most coastal regions (see map) due to late start of the fishing season (Annex 1), except in the county of Finnmark. Fishery in fjord regions was opened according to stock status for stocks within the fjord basin, and differed from “no fishery” to more or less normal season, see Annex 1.

## **Regulation of the sea fishery in 2009**

### **Proposal**

- After consulting salmon scientists, County Governors and main stakeholders on a national advisory and consultation meeting, the Directorate decided to propose a prolongation of the regulations from 2008 for 2009. – see Annex 1.

### **Process towards final decision**

- Proposal was sent on a formal hearing – deadline 6. February.
- Directorate for Nature Management summarizes up all responses
- Based on the hearing DN will consider the need for revisions of the proposal.
- Formal consultation meeting with the Sami Parliament concerning regulations in Sami areas
- Final proposal is discussed on a national advisory and consultation meeting with all main stakeholders – 24.-25. February
- Informal consultations and information exchange with relevant countries/parties to NASCO
- Decision by the end of March.

### **Concession system for sea fisheries**

- The Ministry of Environment has given DN the task to develop a proposal for a concession system for the sea fisheries with stationary gear as an additional regulatory tool. A concession system would also make it possible to regulate the number of fishermen in any given region, in addition to restricting the fishing season.
- The mandate points out that a concession system should provide for a fishery for commercial and cultural reasons.
- It is assumed that the final decision on the introduction and the design of a concession system will be made in 2009 – and that the system should be in place by the 2010 season.



**Annex 1 .** Overview over regions and fishing season of salmon fisheries with stationary gear in the sea for 2003 – 2007, and for 2008. The fishing season targeting escaped salmon is not listed.

County/Region	Fishing season 2003 – 2007	Fishing days	Fishing season 2008	Fishing days
<b>Østfold – Vest Agder</b>				
Østlandet	01.06 – 04.08	37	15.06 – 20.07	20
Agderkysten	01.06 – 04.08	37	15.06 – 20.07	20
<b>Rogaland</b>				
Jæren	01.06 – 04.08	37	01.07 – 04.08	19
Indre Rogaland	01.07 – 04.08	29/16*	15.07 – 04.08	11
Kysten av Rogaland (Part of region 16)	08.07 – 04.08	20/16*	15.07 – 04.08	11
<b>Hordaland</b>				
Kysten av Hordaland (Part of region 16)	08.07 – 04.08	16	Not opened	0
Indre Hordaland	08.07 – 04.08	16/0*	Not opened	0
<b>Sogn og Fjordane</b>				
Kysten av SF (Part of region 16)	08.07 – 04.08	16	15.07 – 04.08	11
Sognefjorden	Not opened	0	Not opened	0
Indre del av Fjordane	08.07 – 04.08	16/0*	20.07 – 04.08	8
<b>Møre og Romsdal</b>				
Fjordene i Møre og Romsdal	15.06 – 04.08/ 01.06 – 04.08	37/29*	01.07 – 04.08	19
Kysten av Møre og Romsdal	15.06 – 04.08/ 01.06 – 04.08	37/29*	10.07 – 04.08	13
<b>Sør-/Nord-Trøndelag</b>				
Kysten av Trøndelag	01.06 – 04.08	37	07.07 – 04.08	16
Fjordstrøk i Trøndelag	01.06 – 04.08	37	20.06 – 04.08/ 15.06 – 04.08	24/28*
<b>Nordland</b>				
Lofoten og Vesterålen	01.07 – 04.08	20	15.07 – 04.08	11
Nordlandskysten sør for Vestfjorden	01.07 – 04.08	20	15.07 – 04.08	11
Ofoten og Indre Salten	01.07 – 04.08	20	15.07 – 04.08	11
Indre Helgeland	01.07 – 04.08	20	15.07 – 04.08	11
<b>Troms</b>				
Kysten av Troms	15.06 – 04.08	21	10.07 – 04.08*	13
Fjordstrøkene i Troms	15.07 – 04.08	21	15.07 – 04.08*	11
<i>(Areas with specific protection regimes)</i>	3 days weekly		3 days weekly	
<b>Finnmark</b>				
Indre Varangerfjord (Bagnet/Bend net)	15.05 – 04.08/ 01.06 – 15.07	47/26	01.06 – 04.08/ 01.06 – 15.07	34/19
Tanafjorden		47/26		34/19
Porsangerfjorden		47/26		34/19
Fjordene i Vest-Finnmark		47/26	4 days weekly for bagnets 15.06-	34/19
Kysten av Finnmark		47/26	04.08, otherwise 3 days.	34/19
	4 days weekly			

\* Indicating a differentiation between regulatory regimes within the region.

Note also that the regulatory regions 2003-2007 are different from those in 2008. An exact comparison of fishing days is therefore in some cases difficult. Nevertheless the table gives a reasonable overview.

Not to be cited without prior reference to the Authors

International Council for  
the Exploration of the Sea

Working Paper 2007/  
Workshop on the Development and Use of Historical  
Salmon Tagging Information from Oceanic Areas

## OVERVIEW OF LITERATURE PUBLISHED IN RUSSIAN ON ATLANTIC SALMON TAGGING EXPERIMENTS

*S V Prusov<sup>1</sup>, A V Zubchenko<sup>1</sup>*

### INTRODUCTION

This overview contains some data published in the Russian literature on Atlantic salmon tagged in the Norwegian Sea and recaptured in Russian “home waters” and also data on tags recovered in oceanic and coastal areas from salmon tagged in Russia.

### TAGGED IN THE SEA – RECAPTURED IN “HOME WATERS”

The very first Atlantic salmon tagging experiments conducted in the coastal zone of Norway showed that Atlantic salmon from Russian rivers made their feeding migrations in the Norwegian Sea and came back to the native rivers through Norwegian coastal waters (Bakshtansky, 1970). The first salmon with a Norwegian tag was caught in the USSR in 1935 in the Vyg River, White Sea basin (Berg, 1948). That salmon was tagged nearby Trondheim. In 1936 in different rivers and coastal areas of the USSR 18 tagged salmon were caught (Danilchenko, 1938). Those fish were also tagged in Norway, nearby Breivik, Finnmark.

Bakshtansky and Nesterov (1973) in their work on the impact of foreign fisheries on Atlantic salmon from Russian rivers presented some data on tagged Atlantic salmon recaptured in Russian “home waters”. Over a period of 11 years (1962-1972) a total of 240 tagged salmon were recaptured. Information on location and date of tagging was available for only 38 fish (Table 1). Most of them were tagged nearby Breivik, Finnmark and recaptured 9 to 97 days after tagging (59 on the average). Two fish were recaptured in the Pechora River more than one year after tagging which meant that salmon from Russian rivers migrated through Norwegian coastal waters not only for spawning but for feeding too (Bakshtansky, Nesterov, 1973).

Antonova and Chuksina (1987) with reference to the report by the Direktoratet for jakt, viltstell og fersvannsfiske (Anon., 1974) analyzed data on recapture rate of Pechora salmon tagged among other Atlantic salmon in different areas of the Norwegian Sea in 1962-1973 (Table 2). In the period of 1962-1973 5,228 salmon from catches by bendnets and bagnets nearby Breivik, Finnmark and from catches by driftnets at Sørøy, Norwegian Sea were tagged. Of them 162 salmon were recaptured in Russian “home waters” including 14 fish caught in the Pechora River. Also in 1968-1972 4,899 salmon from long-line catches were tagged in different areas of the Norwegian Sea. Of them 71 salmon were recaptured in Russian “home waters” including 25 fish in the Pechora River (Antonova, Chuksina 1987).

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## **TAGGED IN THE RIVER – RECAPTURED IN THE SEA**

In the period from 1969 to 1974 13,606 smolts were tagged with external tags on different rivers and hatcheries of the USSR. By early 1975 120 salmon were recaptured (Bakshtansky et al., 1976) including 12 tags returned from abroad (Table 3). Seven tagged salmon were caught in the Norwegian Sea and five salmon were caught in the territorial waters of Norway (Table 4).

According to Bakshtansky and Yakovenko (1976) 1,923 kelts were tagged with external tags in the Varzuga River in 1968-1971. 72 fish were recaptured later. Of them 37 repeatspawners were recaptured in the Varzuga River, whereas 35 were caught in saltwater in different areas including two salmon in the Norwegian Sea. One of them (tagged in 1969) was caught by a Danish fishing vessel north-east of Vesteraalen on 18 February 1970. The other (tagged in 1971) was caught by a Norwegian fishing vessel nearby Nordkapp on 15 June 1972 (Bakshtansky, Yakovenko, 1976).

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Table 1. Recapture data on adult salmon tagged in the areas outside the USSR (Bakshtansky, Nesterov, 1973).

Release Location	Release Date	Recapture location	Sea Basin	Recapture Date
Breivik, Finnmark, Norway	04 June 1962	Strelna	White Sea	01 July 1962
	09 June 1962	Pechora River	Barents Sea	12 September 1962
	09 June 1962	Pechora River	Barents Sea	28 June 1962
	10 June 1962	White Sea	White Sea	07 September 1962
	10 June 1962	White Sea	White Sea	17 July 1962
	11 June 1962	Teriberka Bay	Barents Sea	01 July 1962
	10 June 1962	Kola Bay	Barents Sea	23 July 1962
	10 June 1962	Kola Bay	Barents Sea	09 July 1962
	17 June 1962	Voronya River	Barents Sea	12 July 1962
	17 June 1962	Pechenga River	Barents Sea	30 June 1962
	17 June 1962	Iokanga River	Barents Sea	02 July 1962
	18 June 1962	Kola Bay	Barents Sea	07 August 1962
	01 July 1962	Kola River	Barents Sea	01 October 1962
	02 July 1962	Kola Bay	Barents Sea	25 July 1962
	09 June 1963	Vestern Litsa	Barents Sea	12 July 1963
	09 June 1963	Eastern Litsa	Barents Sea	05 July 1963
	09 June 1963	Pechora River	Barents Sea	05 September 1963
	09 June 1963	Titovka River	Barents Sea	15 July 1963
	09 June 1963	Voronya River	Barents Sea	10 July 1963
	10 June 1963	Eastern Litsa	Barents Sea	05 July 1963
	10 June 1963	Teriberka Bay	Barents Sea	08 July 1963
	17 June 1963	Titovka River	Barents Sea	15 July 1963
	13 June 1966	Voronya River	Barents Sea	27 June 1966
	05 June 1966	Sidorovka River	Barents Sea	13 July 1966
	19 June 1966	Sidorovka River	Barents Sea	08 July 1966
	12 June 1966	Pechora River	Barents Sea	01 August 1967
	13 June 1966	Pechora River	Barents Sea	14 August 1967
	19 June 1967	Pechora River	Barents Sea	20 August 1967
	09 June 1968	Kola River	Barents Sea	18 July 1968
	09 June 1968	Tuloma River	Barents Sea	17 July 1968
	01 July 1968	Vestern Litsa	Barents Sea	09 July 1968
	01 July 1968	Chapoma	White Sea	19 July 1968
	07 July 1968	Varzuga River	White Sea	29 July 1968
	08 July 1968	Knyajaya Bay	White Sea	04 August 1968
	15 July 1968	Chapoma	White Sea	01 August 1968
	08 July 1968	Paz River	Barents Sea	28 August 1968
Norwegian Sea, 69°49N, 13°58E,	16 May 1969	Pechora River	Barents Sea	1970
Norwegian Sea, 70°00N, 16°20E,	20 March 1971	Pechora River	Barents Sea	1971

Table 2. Tagging and recapture data on adult salmon tagged in the areas outside the USSR (Antonova, Chuksina, 1987).

Marking season	Gear	Release Location	Number Marked	Number Recaptured		
				Total	USSR	Pechora River
1962-1967	Bagnets, Bendnets, Driftnets	Breivik, Finnmark, Sørøy	4,316	994	124	12
1968-1973	Bagnets, Bendnets,	Breivik, Finnmark	912	280	38	2
1968-1971	Long-line	Norwegian Sea, 63°N - 68°N	1,781	230	14	1
1970	Long-line	Norwegian Sea, 68°N - 71°N, East of 23°E	948	113	13	1
1971-1972	Long-line	Norwegian Sea, North of 68°N, 09°E - 17°E	2,170	178	44	23

Table 3. Data on tagging smolts in the USSR and tag returns for 1969-1974 (Bakshansky et al., 1976).

Marking season	Number Marked		Release Location	Number Recaptured		
	Hatchery	Wild		Norwegian Sea	Territorial Waters of Norway	USSR
1969	600	500	Kola River Z. Zolotitsa River	1		5
1970	986	180 100	Kandalaksha bay Z. Zolotitsa River Porya River	1		1
1971	805 2,930	700 1,507	Kola River Luvenga River Porya River Z. Zolotitsa River	2 2	1	3 10 1
1972		600 100	Porya River Z. Zolotitsa River	1	2	6
1973	950	148 1,600	Kola River Porya River Soyana River		1 1	48 1 33
1974	1,000	700 200	Soyana River Kandalaksha bay Porya River			

Table 4. Data on recapturing adult salmon in the areas outside the USSR (Bakshantansky et al., 1976).

Marking season	Release Location	Recapture Date	Recapture Location	Age	Weight, kg	Distance from Place of Release, km
1969	Kola River	02 May 1970	60 miles North of Trondheim	1SW	1.4	3,000
1970	Porya River	08 June 1971	Tysfjord, East of Ralen	1SW	2.4	1,890
1971	Porya River	09 May 1973	Norwegian Sea, 69°30N, 05°00E, long line	2SW	2.4	3,800
1971	Porya River	03 May 1973	Kjofjord	2SW	3.2	1,290
1971	Porya River	29 June 1973	Bought at the Hammerfest fish market	2SW	3.3	1,365
1971	Z. Zolotitsa River	25 June 1973	Norwegian Sea	2SW	2.1	
1971	Z. Zolotitsa River	25 July 1973	Norwegian Sea	2SW	2.1	
1972	Porya River	16 May 1973	Norwegian Sea, 70°10N, 06°50E, long line	1SW	1.5	3,900
1972	Porya River	07 June 1973	Eidsfjord, Vesteraalen	1SW	1.8	1,905
1972	Porya River	19 June 1973	Henningsvaer	1SW	2.0	1,920
1973	Porya River	13 June 1974	Skrovkjosen	1SW	1.7	1,890
1973	Kola River	02 July 1974	Paz River	1SW		