

Long-term salmon catches at sea in salmon districts in Finnmark

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Cover photo: Alta type bag net in Altafjord in year 2012. Photo: Eero Niemelä

This report has been produced with the assistance of the European Union, but the contents can in no way be taken to reflect the views of the European Union.

Abstract

In Kolarctic salmon project we made an overview of the officially reported salmon catches in four salmon district areas in Finnmark County especially studying catches taken with bag nets, bend nets and also with drift nets. We collected catch data of the salmon fishery at sea from the past 50 years. More discussion with the old salmon fishermen should be done to explain fluctuations and development in the catches and also changes in the fishery. Salmon fishery has been important over hundreds of years for the people living in the coastal areas in the north. Salmon is available to be captured in the coastal areas at sea rather short time when it migrates towards it's rivers of origin. In Northern Norway, where salmon from c. 200 hundred stocks is migrating during some months to east and to west it is captured nowadays with bag nets and bend nets. Until the year 1988 drift net fishery was intensively used especially in West Finnmark but also in Troms County affecting the catches in Eastern Finnmark. After the prohibition of the drift net fishery in the year 1988 salmon catches have fluctuated in the same way in all areas. Annual changes in the salmon catches have been clear in all districts. Changes are caused by the normal fluctuations in the salmon stocks and variations in the fishing efforts. In the Tana salmon district salmon catches were high in the middle of 1960s and declined towards the end of 1970s and thereafter fluctuating but not with a declining trend. Also in Alta and Hammerfest salmon districts the catches were high early in 1960s due to high economic value of salmon which made the fishing profitable and the large numbers of especially bag nets in the fishery made the fishing effective. High salmon catches were caught simultaneously in Tana and Varanger salmon districts in the mid-1970s, mid-1980s, in the years 1999-2002 and in the years 2006-2008. Since the prohibition of the drift net fishery in the year 1988 the proportion of salmon caught in Alta salmon district has increased clearly compared to other salmon districts. In the years 1979-1988 when catch reporting of the drift net fishery was improved the proportions of catches caught in Hammerfest salmon district area was as high as 60-80%. After the prohibition of the drift net fishery proportions of salmon catches caught in Tana salmon district area have declined and decline has taken place also in the latest years in Varanger salmon district area. In Hammerfest salmon district area the proportions have been more or less the same over the past 25 years. The total reported salmon catch at sea in Finnmark has varied between c. 100 tons and 500 tons. The highest catches took place during the period when drift net fishery was active. Drift net catch reporting was not good in 1970s although it is known that it was effective fishing method and widely used in Troms and at least in West Finnmark. The total reported salmon catches at sea in Finnmark have fluctuated since the prohibition of drift net fishery with increasing catches from the year 1988 onwards to the year 2001 and after that the catches have declined except small increase in the years 2005-2008. Bend net salmon catches started to increase clearly since 1988 until the early 2000s followed by a decline in the catches. Bag net salmon catches have also fluctuated but not as much as bend net catches. In the years with high drift net catches bag net catches were lower. Clear changes have taken place in long-term the proportions of catches caught with bag nets in four salmon district areas. In the entire Finnmark county area c. 50% of the catch caught with bag nets has been caught in Alta salmon district area during the past 10 years. Early in 1960s and still in the beginning of 1970s the main proportion of salmon caught with bag nets in Finnmark was caught in Tana salmon district area but then in the mid-1970s the proportions declined clearly. In long-term catches caught with bag nets have increased in Alta salmon district and slightly also in Hammerfest salmon district but declined in East Finnmark. The proportions of salmon catches caught with bend nets between four salmon districts have been surprisingly stable during the past 10 years. It is possible, however, to observe some small increase in the proportions of salmon caught in Alta salmon district area with bend nets.

1. Introduction

In the Kolarctic salmon project application it was stated that the final beneficiaries and/or target groups of all the data collected and reported within this project are ministries, management authorities, national and regional and local authorities (Counties and Municipalities), research institutions, fishers organizations, fishermen (recreational/ professional), international governmental organization (like NASCO, ICES), indigenous peoples, tourism operators, tourists, local people, NGOs and politicians. Therefore in this project it was decided to also collect basic data on the reported salmon catches to illustrate long-term changes and observe possible trends in the catches and catch components which are describing the salmon resources. Knowing and recognizing the status of salmon stocks is important for management authorities that are regulating salmon fishery to attain higher spawning stock levels if needed. In general the reported salmon catches have been considered to represent the size or level of salmon stocks in the rivers. Salmon catches have been collected in Norway since the end of 19th century and since the year 1993 the catch reporting system has been improved and since the year 2004 the reporting of salmon catches also in the river fishery has been obligatory. The data presented here gives at least the best possible overview of the long-term changes although the real total salmon catches remain a mystery because all the fishermen have not reported their catches and/or the reported catches are smaller than the real catch and catches for those fishermen who have not reported catch information have not been estimated. The total catches most likely are higher than reported catches.

In the Kolarctic salmon project application it has mentioned *in the "ACTION 2 – BIOLOGICAL AND GENETIC ANALYSES OF COASTAL AND RIVERINE SAMPLES"* and *in the Activity 7: Enter data into existing databases*, and therefore FGFRI and FMFI received catch statistics from SSB (Statistics Norway) for further analysis. Also to fulfill the *Activity 12: Salmon and global climate change* SSB catch data was needed for the evaluation, comparison and description of possible signs of global climate change in relation to historical and new data regarding the salmon catches, abundance and environmental parameters. And to fulfill the *Activity 13: Salmon ecology and different management regimes*, SSB catch data was needed for the description of the salmon ecology (size groups) and salmon resource in project area and also for the description of the development in the salmon fisheries management measures over time.

2. Material and methods

Catch data used in this report before the year 1993 is collected from the annual official reports ((Statistisk Sentralbyrå (SSB), Laks-og Sjøaurefiske; Central Bureau of Statistics of Norway, Salmon and Sea Trout Fisheries)). Catch data from the year 1993 onwards is delivered directly from SSB. In Finnmark County there are four salmon districts like Alta (includes municipalities Alta, Loppa), Hammerfest (municipalities Hasvik, Kvalsund, Hammerfest, Måsøy, Nordkapp, Porsanger), Tana (Lebesby, Gamvik, Tana, Berlevåg) and Varanger (Båtsfjord, Vardø, Vadsø, Nesseby, Sør-Varanger).

3. Results

Salmon fishery has been important over hundreds of years for the people living in the coastal areas in the north. Salmon is available to be captured in the coastal areas at sea rather short time when it migrates towards it's rivers of origin. In Northern Norway, where salmon from c. 200 hundred stocks are migrating during a few months from east and to west and captured nowadays with bag nets and bend nets. Until the year 1988 drift net fishery was intensively used especially in West Finnmark but also in Troms County. Figure 1 gives an overview of the annual variations of salmon catches in four salmon districts in Finnmark. Figure 1 doesn't include catches from long-line salmon fishery which was also used in Northern Norway by Norwegian and foreign vessels and targeted on northern salmon stocks. After the prohibition of the drift net fishery in the year 1988 salmon catches have fluctuated on the same way in all areas. Reported catches have been about the same in all salmon districts in recent years.

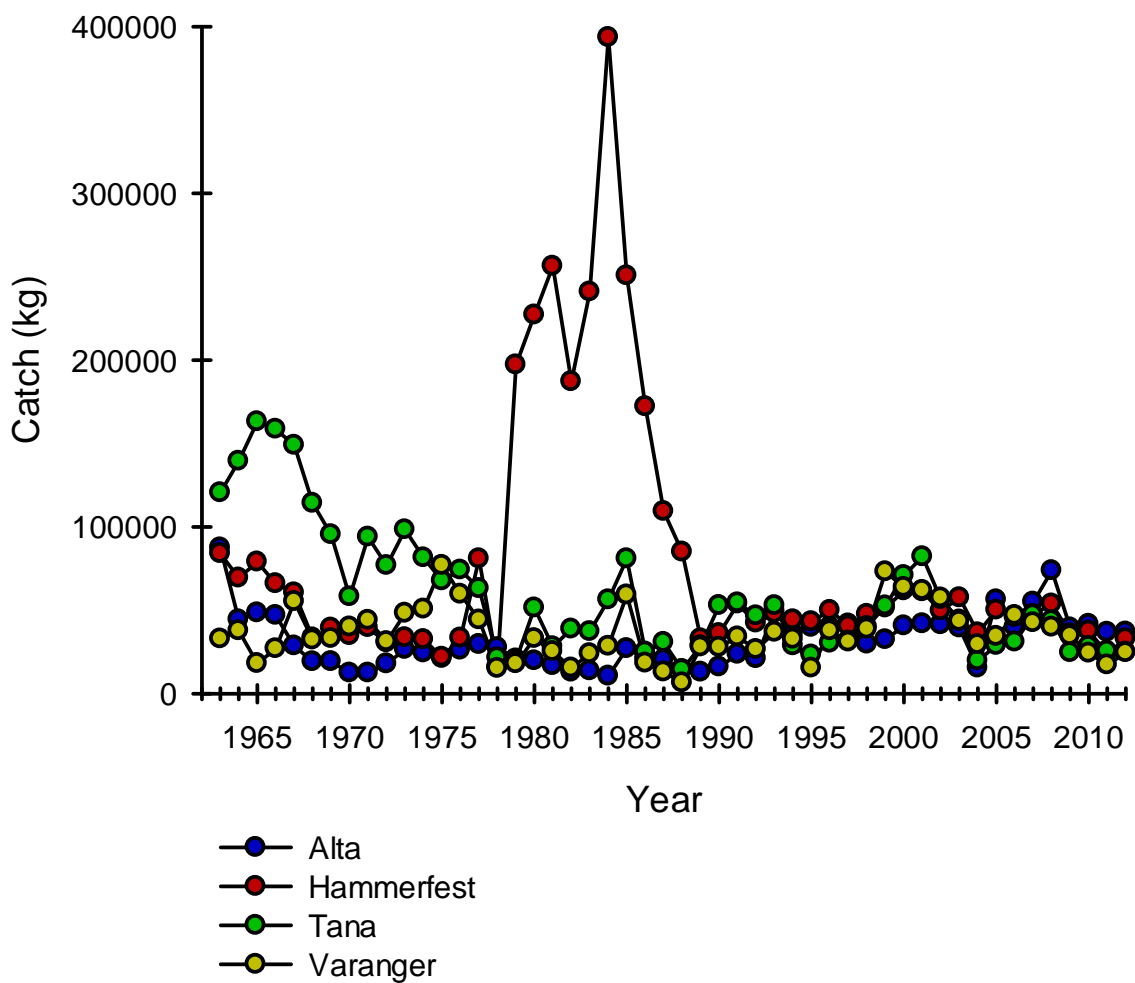


Figure 1. Total salmon catches at sea in four salmon districts in Finnmark in 1963-2012.

Annual changes in the salmon catches have been clear in all districts. Changes are caused by the normal fluctuations in the salmon stocks and variations in the fishing efforts. In the Tana salmon district salmon catches were high in the mid-1960s and declined towards the end of 1970s (Figure 2) and thereafter they have been fluctuating but not with a declining trend. Also in Alta and Hammerfest salmon districts the catches were high early in 1960s due to high economic value of salmon which made the fishing profitable and the large numbers of especially bag nets in the fishery made the fishing effective. High salmon catches took place simultaneously in Tana and Varanger salmon districts in mid-1970s, mid-1980s, in the years 1999-2002 and in the years 2006-2008.

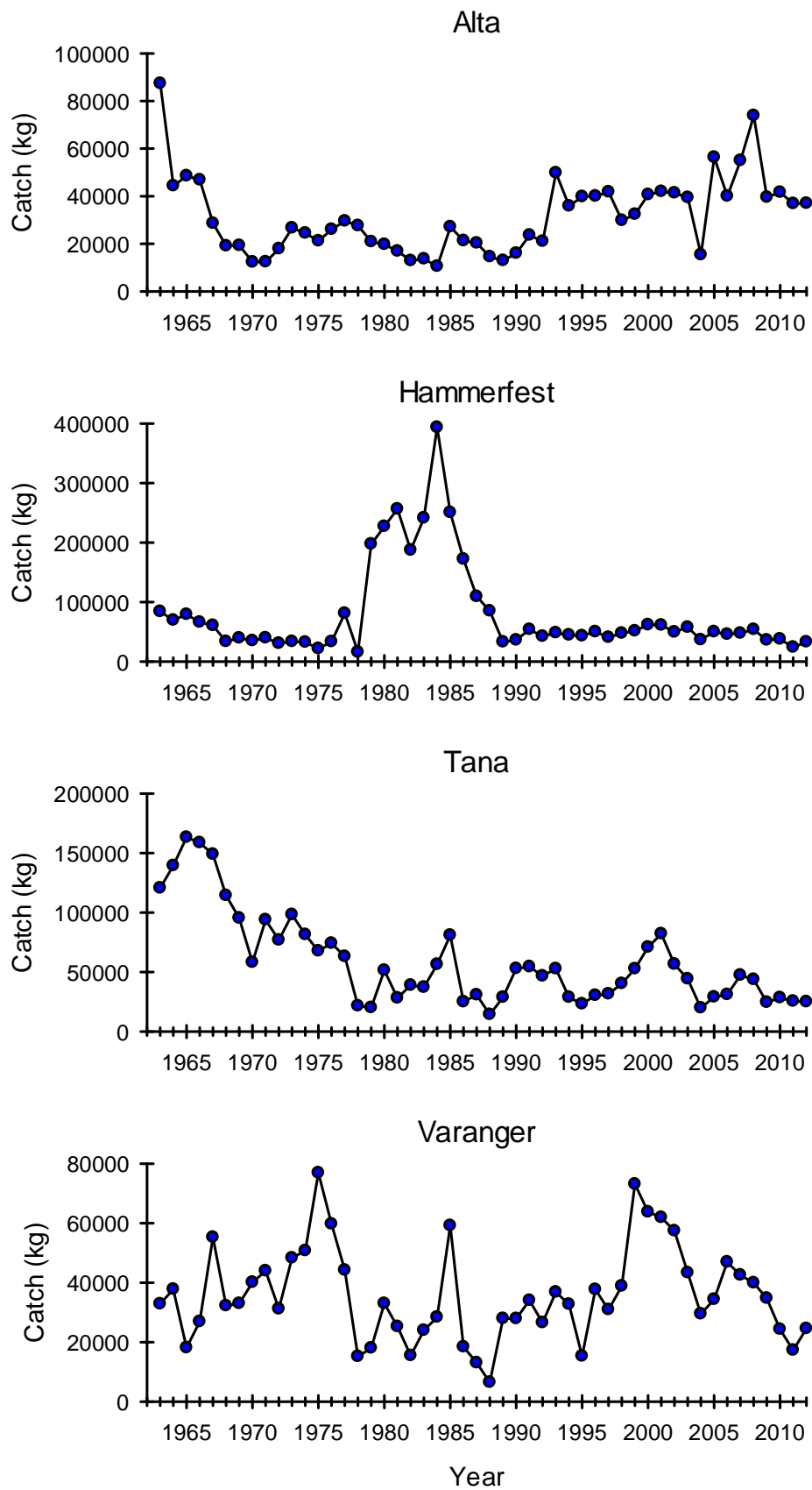


Figure 2. Annual fluctuations in the reported salmon sea catches. All fishing methods combined.

Since the prohibition of the drift net fishery in the year 1988 the proportion of salmon caught in Alta salmon district has increased clearly compared to other salmon districts (Figure 3). In the years 1979-1988 when catch reporting of the drift net fishery was improved the proportions of catches caught in Hammerfest salmon district area was as high as 60-80%. After the prohibition of the drift net fishery proportions of salmon catches caught in Tana salmon district area have declined and a decline has taken place also in recent years in Varanger salmon district area. In Hammerfest salmon district area the proportions have been more or less the same over the past 25 years.

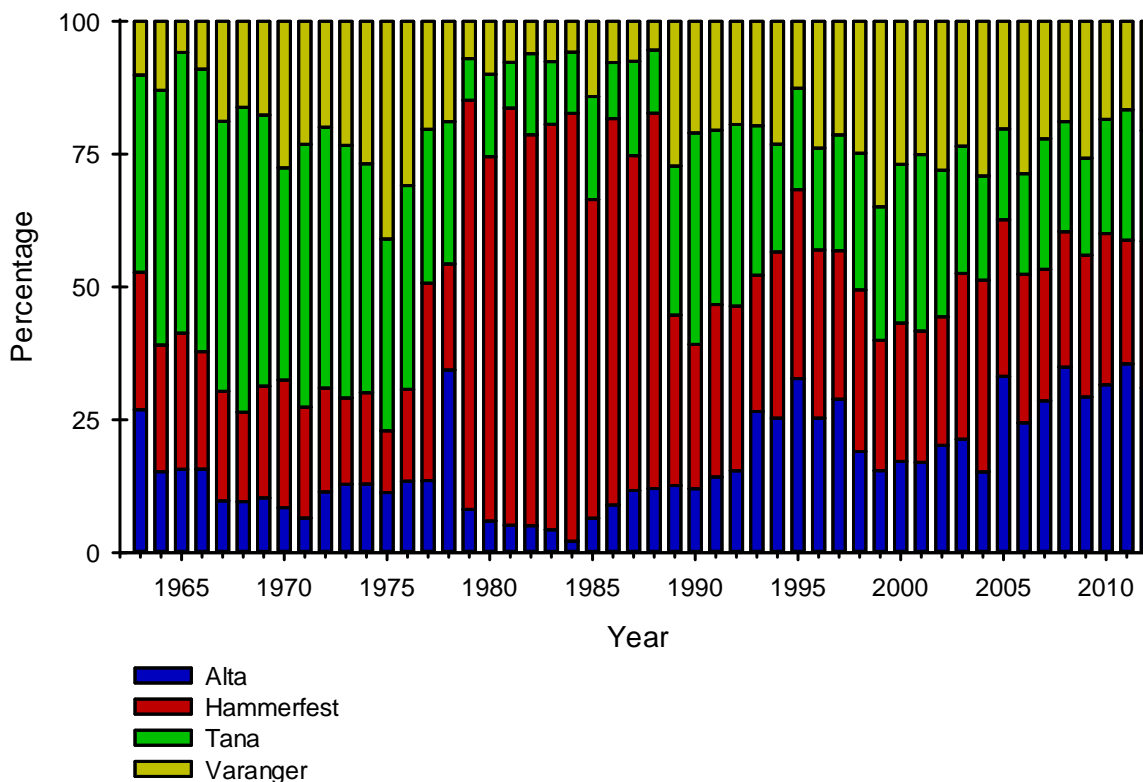


Figure 3. Salmon catch distributions between salmon districts in Finnmark bag net and bend net catches combined.

The total reported salmon catch at sea in Finnmark has varied between c. 100 tons and 500 tons (Figure 4). The highest catches took place during the period when drift net fishery was active. Drift net catch reporting was not good in 1970s although it is known that it was effective fishing method and widely used in Troms and at least in West Finnmark. The total reported salmon catches at sea in Finnmark have fluctuated since the prohibition of drift net fishery with increasing catches from the year 1988 onwards to the year 2001 and after that the catches have declined except small increase in the years 2005-2008. Bend net salmon catches started to increase clearly since 1988 until the early 2000s followed by declining catches. Bag net salmon catches have also fluctuated but not as much as for bend nets. In the years with high drift net catches bag net catches declined.

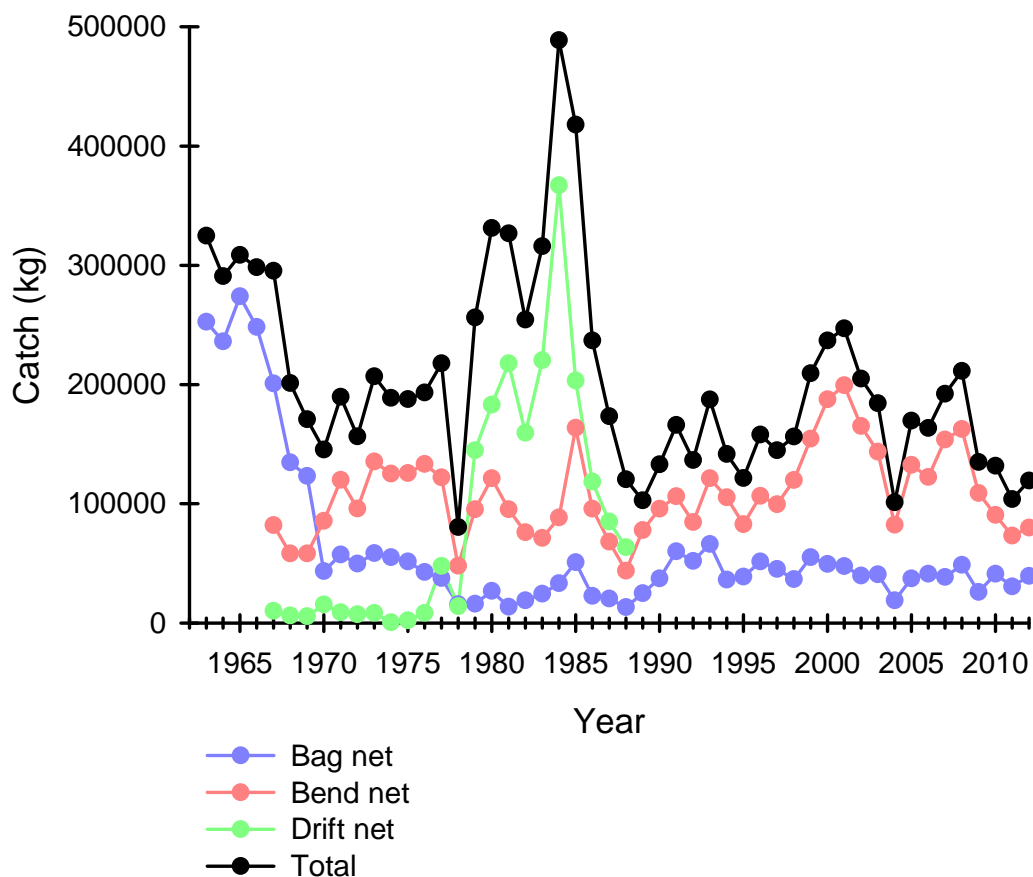


Figure 4. Salmon catches at sea in salmon districts for bag nets, bend nets and drift nets. In Alta salmon district bag net catches in the years 1963-1966 included also bend net catches.

Figure 5 indicates clearly the long-term development in the proportions of salmon catches caught with the old fashioned bag nets or with the modern bend nets. In all the salmon districts the proportions of salmon caught with bend nets is clearly larger than the catch caught with bag nets. As a general conclusion it can be observed that the proportion of salmon caught with bag nets in the recent years is increasing towards west. Almost half of the salmon catches caught in Alta salmon district has been caught with bag nets in the early 2000s like also early 1990s soon after the prohibition of drift net fishery at sea. In Hammerfest salmon district area the proportions of salmon catches caught with bag nets and bend nets have been mostly stable compared to other salmon districts. In Eastern Finnmark, in Tana and Varanger salmon districts, the proportions of salmon catches caught with bag nets have clearly declined in the past twenty years. Some increase in the proportions of bag net salmon catches caught can be observed in all salmon districts and the reason might be different fishing times for bag nets and bend nets. The fishing time for bend nets has been shorter than the fishing time for bag nets and that might be the main reason to the decreased proportions in bend net catches. Bend nets came available for fishermen in very early 1960s and based on the reported salmon catches especially in Tana salmon district most of salmon was caught until the end of 1960s with bag nets but in a few years fishermen took new method, bend nets, into use by the year 1970.

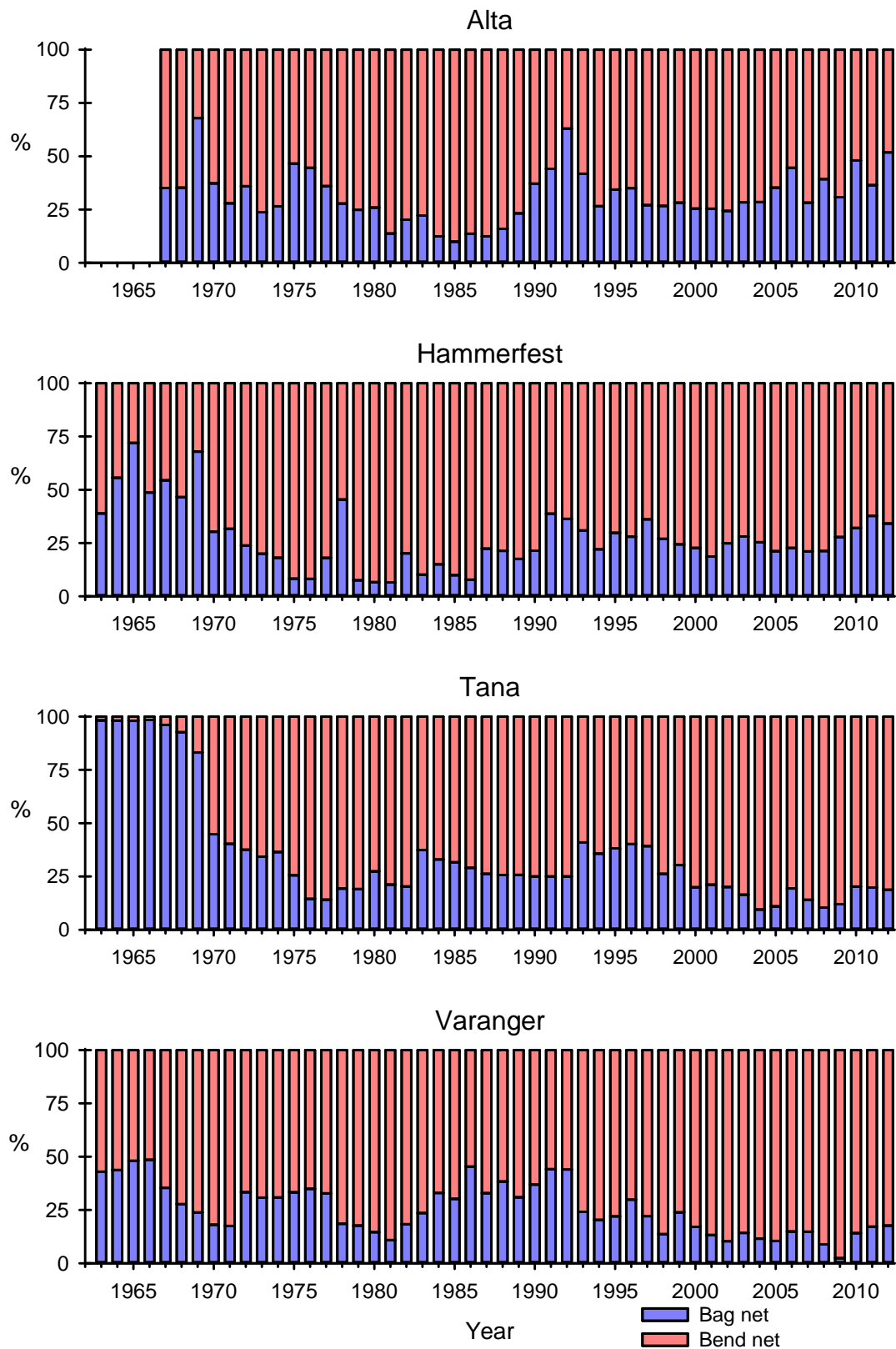


Figure 5. Proportions of salmon catches caught with bag nets and bend nets in four salmon districts in Finnmark over 50 years.

Figure 6 indicates the long-term annual variations in the salmon catches caught with bag nets and bend nets. Bend net as a fishing method is catching salmon with the meshes in the nets and fishermen are selecting in some areas the meshes during the summer to maximize their catches. Bag nets are not selecting so much the fish according to the size. Bag net and bend net catches have clearly increased in the Alta salmon district. In Tana salmon district catches have fluctuated up and down without a clear long-term trend in bag net and in bend net catches. There have also been annual changes in bag net catches in Varanger salmon district with a clear long-term declining trend. Also the bend net catches have declined. The new restrictions on salmon fishery at sea introduced especially in the early 2010s have affected the changes in the catches by limiting the fishing days. The normal fluctuations in the salmon stocks in the entire Kolarctic salmon project area are large and therefore these fluctuations are masking the effects caused by the new salmon fishing regulations.



Photo 1. Bend net in Varangerfjord in 2011 (Photo: Eero Niemelä).

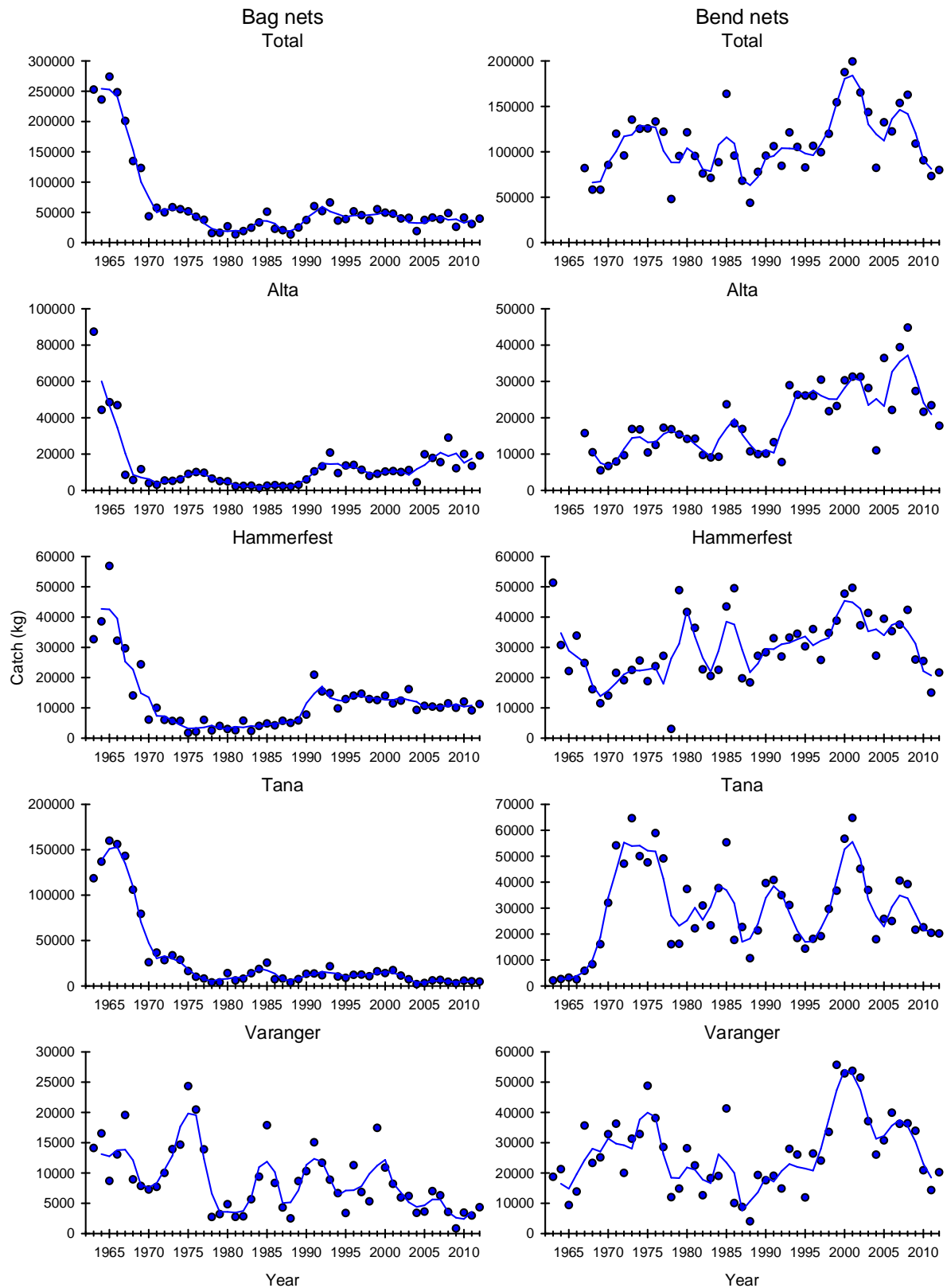


Figure 6. Salmon catches for bag nets and bend nets in four salmon districts in Finnmark. In Alta salmon district bag net catches in the years 1963-1966 included also bend net catches.

There have been clear changes in the long-term proportions of catches caught with bag nets in four salmon district areas. In the entire Finnmark county area c. 50% of the catch caught with bag nets has been taken in Alta salmon district area during the last 10 years. Early in 1960s and still in the beginning of 1970s the main proportion of salmon caught with bag nets in Finnmark was caught in Tana salmon district but then in the mid-1970s the proportions declined clearly. Bag net catches show a clear long-term increase in Alta salmon district and a slight increase in Hammerfest salmon district but they have declined in East Finnmark (Figure 7). The proportions of bend net salmon catches in the four salmon districts have been surprisingly stable during the last 10 years. However there is a small increase in the proportion of salmon caught with bend nets in Alta salmon district.



Photo 2. Salmon catch in Finnmark (Photo: Eero Niemelä)

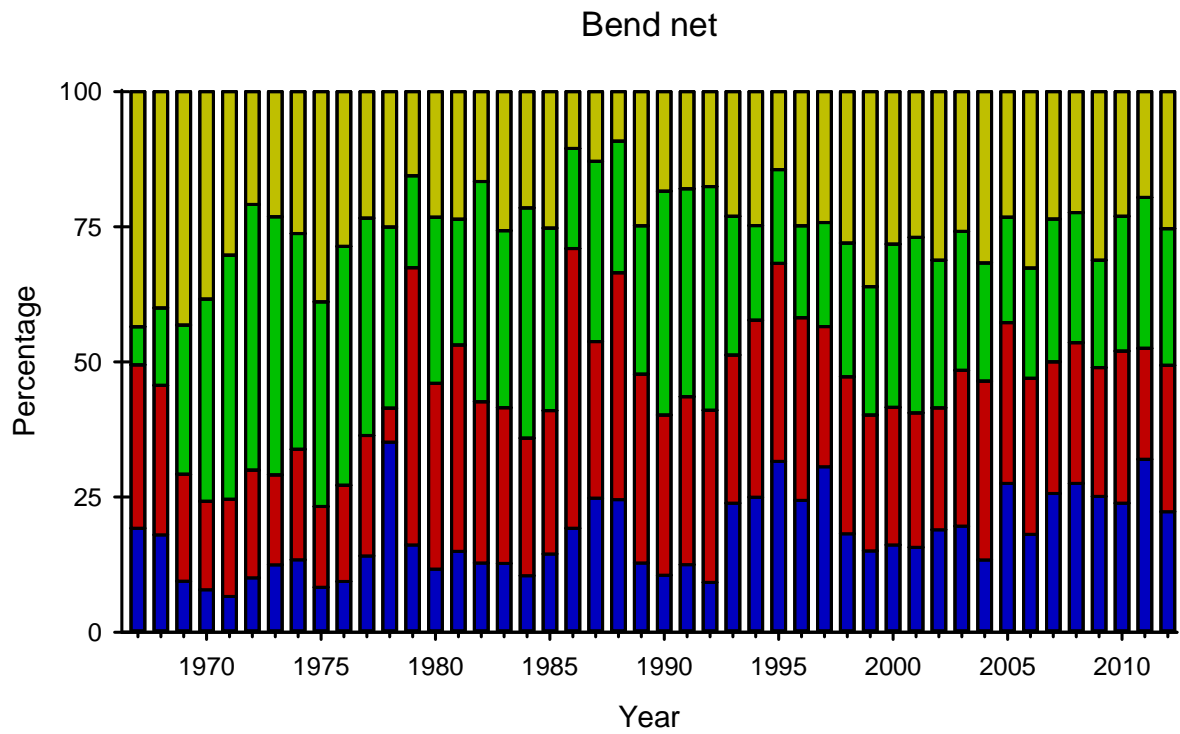
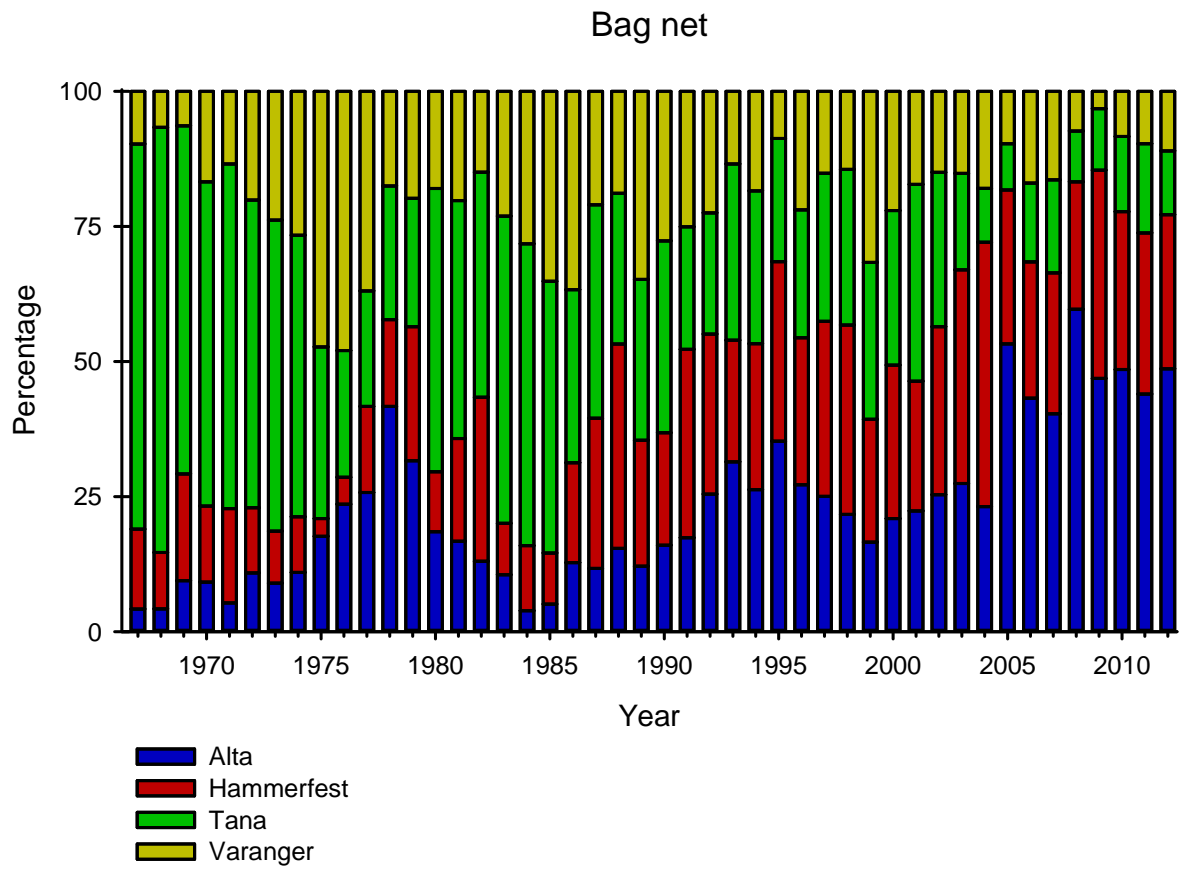


Figure 7. Salmon catch distributions in bag net fishery and in bend net fishery between salmon districts in Finnmark.

Salmon which has been caught at sea in four salmon districts in Finnmark do not originate only from Finnmark rivers but also from Russian rivers, rivers on the Finnish side of the rivers Tana and Neiden, from Troms County and also to a lesser extent from Nordland County. There has been quite high exploitation towards the stocks from Finnmark and Russia not only in the coastal areas of Northern Norway but also in the salmon fishing areas in Faroe Islands especially during the years 1979-1991 (Figure 8). Drift net fishing operated in the Northern Norway especially in 1970s and 1980s which coincides with the salmon fishery in Faroe Islands. Bag net fishery was the most important fishing method at sea in the coastal areas until 1960s and slowly it was compensated with new bend net method. Salmon catches in the River Tana have fluctuated with clear peaks and it is clear that the expected peak in the catches in the beginning of 1980s did not happen and it has been thought that the overall effective fishery at sea and in the river Tana itself did not result to the expected high catches. Salmon catches at sea in Finnmark and in the River Tana show declining trend during the last ten years.



Photo 3. Salmon in bend net (Photo: Eero Niemelä).

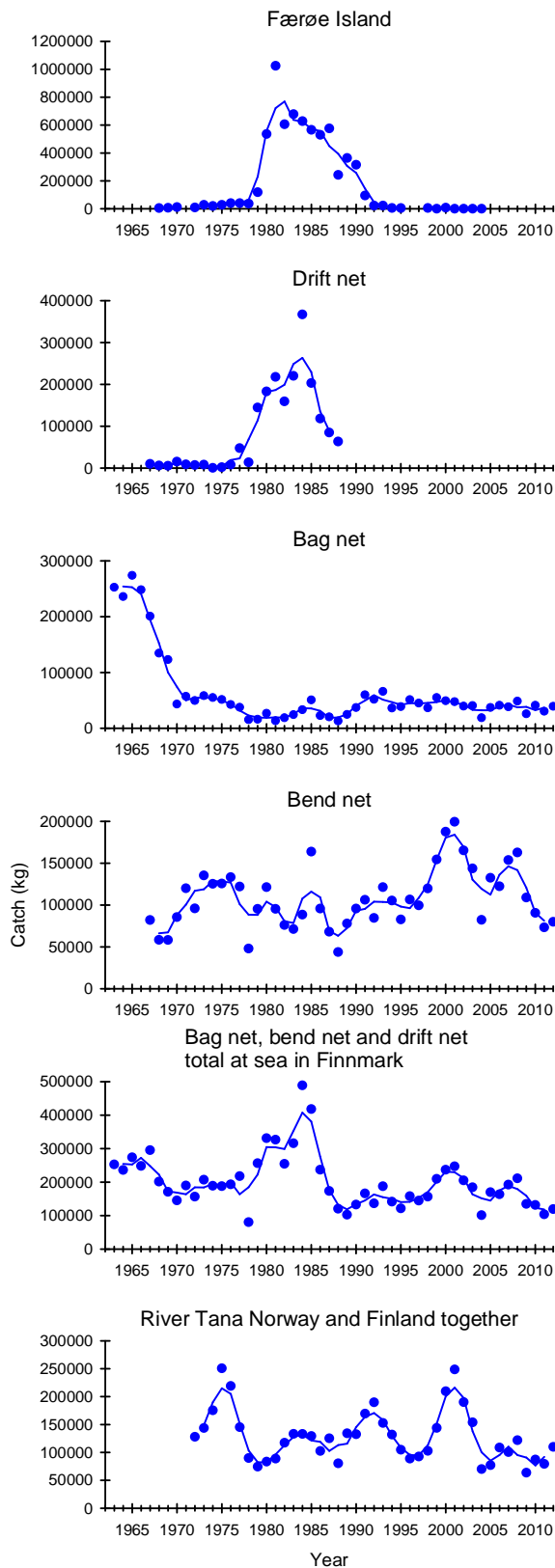


Figure 8. Summary figure from the salmon catches in Finnmark with drift net, bag net and bend net. Bag net catches are including also bend net catches from the years 1963-1966. It is also presented salmon catches in Faroe Islands where salmon also from Northern Norway and Russia have been caught. Salmon catches from the River Tana is presented combining Norwegian and Finnish catches.

Acknowledgements

This study was funded by the European Union, Kolarctic ENPI CBC project – *Trilateral cooperation on our common resource; the Atlantic salmon in the Barents region - "Kolarctic salmon"* (KO197) and national sources in each participating country. The Lead partner of the project is the Office of the Finnmark County Governor (FMFI). Partners in Finland: University of Turku (UTU) and Finnish Game and Fisheries Research Institute (FGFRI). Partners in Norway: Institute of Marine Research (IMR) and Norwegian Institute of Nature Research (NINA). Partner in Russia: Knipovich Polar Research Institute of Marine Fisheries and Oceanography (PINRO).

Responsibilities in this report: FMFI organized the basic catch data covering the years 1994-2012 from SSB (Statistics Norway), FGFRI gathered the catch data from the yearly salmon catch reports covering the years before the year 1994, produced graphs and drafted text.

Lead Partner and partners of the Kolarctic ENPI CBC EU Kolarctic salmon project KO197 will thank warmly SSB (Statistics Norway/Anne Turi Baklien) for the good cooperation during the research period.

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