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SUMMARY REPORT XXIV; Salmon fishery at sea in Finnmark; long-term changes in fishing activity, catch distributions between fishing methods and fishing areas, timing of catches and catches after the total moratorium of bend net fishery after the year 2021.

Niemelä [1], E., Hassinen[1], E., Høstmark[2], M.S. (ed.), Kalske[2], T.H (ed.)

[1)] *Firm Olli van der Meer; Oulu; Finland*
[2)] *County Governor of Troms and Finnmark; Vadsø, Norway*

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In Finnmark the total salmon catch in numbers and weights and catch of small, medium and large size salmon has declined since early 2020's.

The proportions of total salmon catches, all size groups combined, in terms of numbers and weight has been quite stable between the four salmon districts (Alta, Hammerfest, Tana, Varanger) in Finnmark until the year 2020. Salmon catches in numbers and weights, however, indicate three peaks during the three decades, namely in the years 1999-2001, 2005-2008 and 2017-2018. These three clear peaks in the total catches have been simultaneous between the salmon districts and catch distributions have been more or less the same in the salmon districts until recent years. In the years 2021-2023 catches and their proportions in Tana salmon district decreased significantly compared to other salmon districts in Finnmark. This declining of catches in Tana salmon district is connected to the prohibition of salmon fishing almost in the entire Tana salmon district.

Long-term data with catch distribution data between four salmon districts, that span 60 years, indicate that the proportions have increased in Varanger and in Alta, declined in Tana and been quite stable in Hammerfest. The proportion of salmon caught in Hammerfest salmon district increased remarkably in the period 1979-1988, due to effective drift net fishery in the area west of Nordkapp.

Drift net fishery at sea has been prohibited since 1989.In the year 1989, the proportion of salmon caught in Hammerfest clearly declined and, remained stable until present days.

Bag net as a salmon fishing method was used for the first time in Norway in the middle of the 1800´s. Bend net and its way of use in Finnmark during the last 60-70 years, became more efficient in the end of the 1960´s and in the beginning of the 1970´s after the fishers started to use new materials in their nets. Bend nets were prohibited in salmon fishery in the year 2022 and has been prohibited since then.

In Alta salmon district bag net salmon catches in numbers have long-term increase and especially in the years 2022 and 2023 they clearly increased after the prohibition of bend net fishery. Also, salmon catch in weight in the years 2022 and 2023 was higher than in the preceding nine years.

In Hammerfest salmon district salmon catches caught with bend nets had a long-term declining trend. Salmon catches caught with bag nets declined along the years but, not so clearly as in the

bend net fishery. The increase in bag net catches in the years 2022 and 2023 was significant. Catches in the bag net fishery were the highest in the years 2022 and 2023 during the 30 years catch records.

In Tana salmon district catches caught with bend nets had a steadily decreasing trend over the long term. Salmon caught with bag nets had two peaks, first clear peak in early 2000's and second small peak in the second half of 2010's. Important and worrying phenomenon in the catch development is the fact that the numbers and the weights of large salmon (>7 kg) and their proportions in the total catches have clearly and steadily declined. This is the same phenomenon that has been observed in the catch developments in the rivers Tana and Neiden. Catches in the years 2022 and 2023 were caught in Laksefjord in Lebesby municipality area in Tana salmon district and these catches were close to the earlier bag net catches in the period 2003-2020 in the entire Tana salmon district.

In Varanger salmon district the change in salmon catches caught with bend nets is similar to the development in Tana salmon district namely long-term clear declining from the early 2000's onwards. The catch development in bag net fishery was equal to the development in the catches in Tana salmon district but, in Varanger salmon district catches reached the historically highest levels in the years 2022 and 2023. The numbers and weights of large salmon (>7 kg) and their proportions in bag net catches have been much higher in the earlier period in the years 1993-2008 than in the later period in the years 2009-2023.

The clear declining in the numbers, weights, and proportions of large salmon (>7 kg) along the years in the bag net fishery is similar in the catches in Tana and Varanger salmon districts. After the prohibition of bend nets in the year 2022 catches in bag nets increased significantly. Salmon which were earlier caught with bend nets shifted in the years 2022 and 2023 into bag nets. This shift can be seen especially in the catches in Varanger and Hammerfest salmon districts and slightly in Alta salmon district. In the years 2022 and 2023 the numbers of salmon fishermen and the numbers of official fishing sites available in Varanger salmon district declined compared to the earlier years. The numbers of bag nets used in Varanger salmon district, however, were about the same in the year 2021 one year before the bend net prohibition and in the years 2022 -2023 after the bend net prohibition. The numbers of bag nets used in Varanger salmon district increased from the year 2009 until the year 2021.

The reason for the increase of salmon catches in bag net fishery, and especially in the Varanger salmon district, has at least three explanations. One reason is the fact that the numbers of bag nets used have increased significantly. Another reason is the use of modified trapping device, so-called patent bag net where the ordinary bend net with effective hook-shaped net is combined into the single bag net trapping method. It is not known; however, how many fishermen have used this modified fishing method. The third reason for the increased salmon catches in Varanger salmon district is the fact that there has been increased consumer demand of fresh salmon after all salmon fisheries have been prohibited in the neighboring River Tana and at sea close to the river Tana. Marketing has activated some salmon fishermen in Varangerfjord to catch salmon throughout the entire allowed fishing season.

In Finnmark, most of the salmon caught at sea has been caught with bend nets until the year 2021. From the year 2010 onwards the proportions from the total catch taken with bag net has increased regularly from around 20% to 55% in the year 2021. The development has been the same for all three size groups and the most remarkable increase has been in the 3 kg salmon catches, where bag nets has taken 75% from the catches in the year 2021.

Key words:
Sea salmon fishery, Atlantic salmon, Finnmark, catch distribution, size groups, bag net, bend net, new fishing regulation

Front page photo:
Eero Niemelä

Content

1. Introduction

Sea salmon fishery, and especially in the coastal areas, has long traditions in Norway. In this summary report we use graphs to describe the development of the salmon fishing efforts and catches in Finnmark county from bag nets and bend nets during the last 30 years. Catch statistics are combined by Statistics Norway (SSB). Salmon fishers have reported their daily catch information, divided into three size groups (below 3 kg, between 3-7 kg, above 7 kg). Salmon catches reporting has been mandatory for all sea salmon fishers since the year 1993.

Salmon fishery at sea has been regulated many times along the years. There have been two major fishing methods to capture salmon, bag net and bend net fisheries. Bend net fishery has been more popular than the traditional bag net fishery. In Finnmark bend net fishery came prohibited in the year 2022. In other areas in Norway the use of bend nets was prohibited in the normal salmon fishing season approx. 20 years ago.

In this salmon catch report we have been separated the catches into four salmon districts: Alta salmon district (including the municipalities Alta and Loppa), Hammerfest salmon district (including the municipalities Hasvik, Hammerfest, Kvalsund, Måsøy, Nordkapp and Porsanger), Tana salmon district (including the municipalities Lebesby, Gamvik, Tana and Berlevåg), Varanger salmon district, (including the municipalities Båtsfjord, Vardø, Vadsø, Nesseby and Sør-Varanger).

The purpose of this summary report is to present information on the changes in the long-term fishing efforts in terms of the numbers of bag nets, bend nets, salmon fishing sites approved and used, numbers and proportions of three size groups of salmon, cumulative catches and median dates of captures and long-term changes in the medium sizes of salmon. Especially, we want to report the changes in fishery and catches before and after the moratorium of bend net fishery in Finnmark in the year 2022 and 2023.

Norwegian Ministry of Foreign Affairs and County Governor of Troms and Finnmark have funded this catch and fishery report.

2. Long-term annual salmon catches for three size groups between four salmon districts in Finnmark

Since the year 1993, fishermen in Finnmark have informed their salmon catches in numbers and in weights in the three size groups. Total reported catches caught with bag nets and bend nets have long-term declining trends in all salmon size groups from the end of 1990's and to the early 2020´s. Salmon catches in numbers and weights, however, indicate three peaks during the three decades, namely in the years 1999-2001, 2005-2008 and 2017-2018. There have been three clear peaks in the total catches and during these periods, catch distributions have been more or less the same between the salmon districts. This indicates that catches have increased and decreased simultaneously between salmon districts (Figs.1 and 2).

Catch fluctuations are the most prominent for salmon in the size group 3-7 kg fish. A remarkable conclusion from the figures 1 and 2 is that catches in the peak periods are clearly declining towards the latest years. Catches in all size groups have declined simultaneously since the first peak catches in the years 1999-2001. In 2021, coastal salmon fishery was prohibited in a large area close to Tanafjord. Therefore, there is only a small catch in Lebesby municipality that belongs to the Tana salmon district. The use of bend nets was prohibited in 2022 in the entire Finnmark coastal and fjord areas. Even though all salmon fishery was prohibited in the years 2021-2023 in Tanafjord and in the municipalities Berlevåg and Gamvik outside Tanafjord, and bend net fishery has been prohibited in the entire Finnmark since the year 2022, reported total salmon catch has increased in Finnmark in the years 2022-2023.

Long-term data with catch distribution data between four salmon districts, that span over 60 years, indicates the following: the proportions have increased in Varanger and in Alta, declined in Tana and been quite stable in Hammerfest (Fig. 3). The proportion of salmon caught in Hammerfest salmon district increased remarkably in the period 1979-1988, due to effective drift net fishery in the area west of Nordkapp.

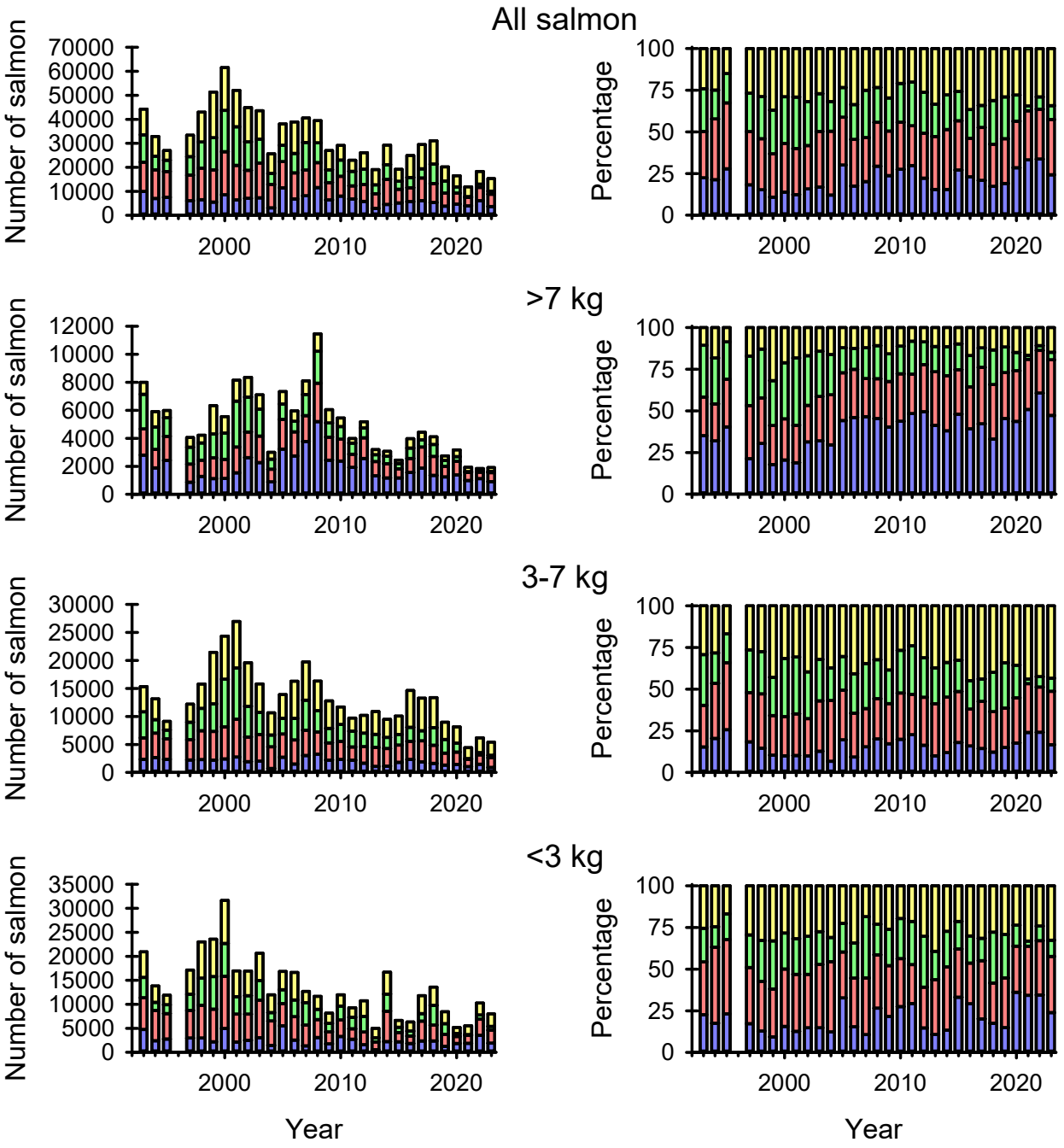


Figure 1. Long-term annual salmon catches for three size groups in numbers and proportions between the four salmon districts in Finnmark; Alta, Hammerfest, Tana and Varanger. Legends of colors is in the figure 2. Source; SSB.

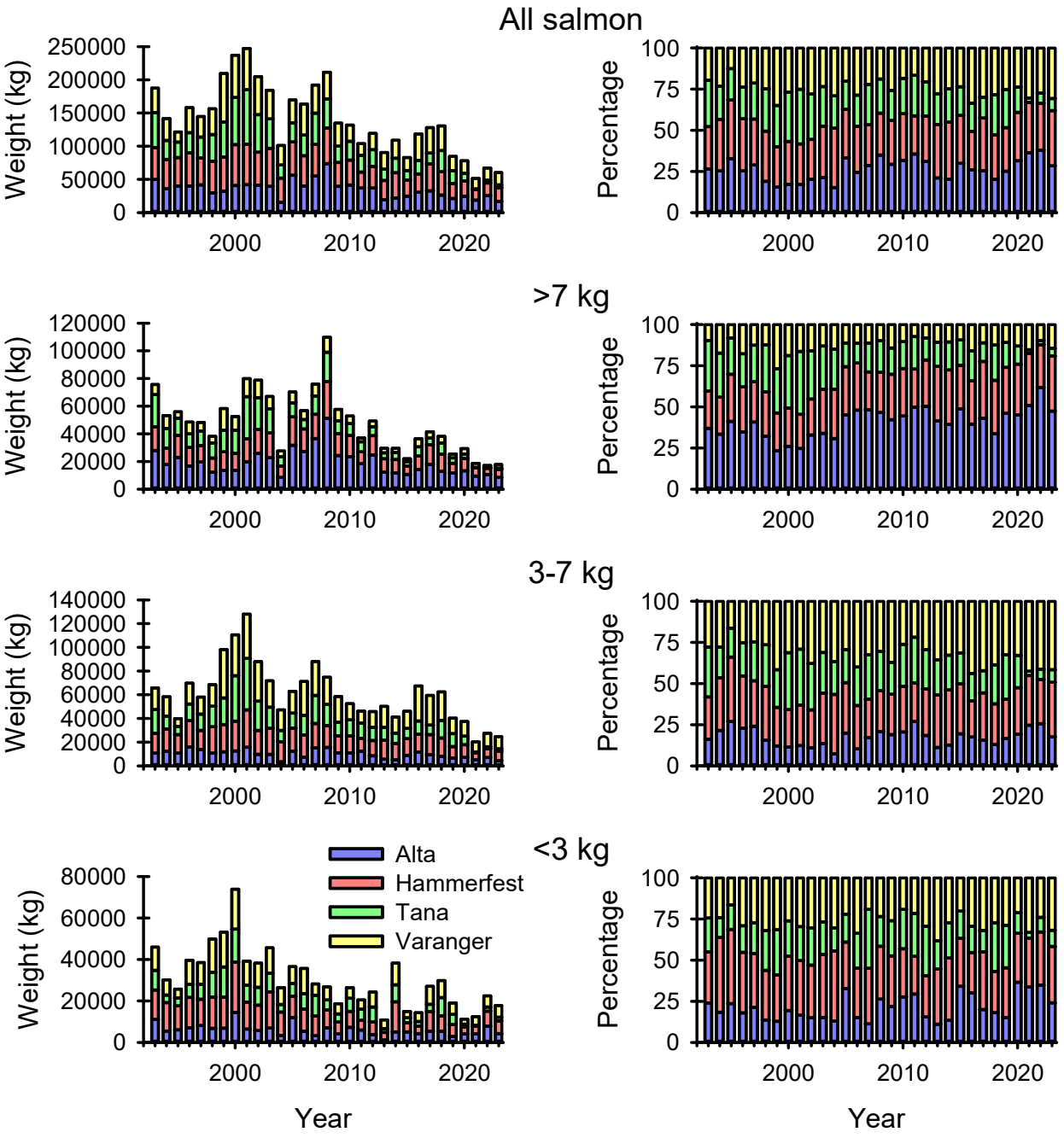


Figure 2. Long-term annual salmon catches for three size groups in weights and in proportions between the four salmon districts in Finnmark; Alta, Hammerfest, Tana and Varanger. Source; SSB.

Drift net fishery has been prohibited since 1989 and in the year 1989 the proportion of salmon caught in Hammerfest salmon district clearly declined and, remained stable until present days (Fig. 3). Drift net fishery was an effective method to capture salmon in coastal waters in late May and in June. Fishermen from Hammerfest salmon district caught drift net catches in a large area in Northern Norway in the area west from Nordkapp.

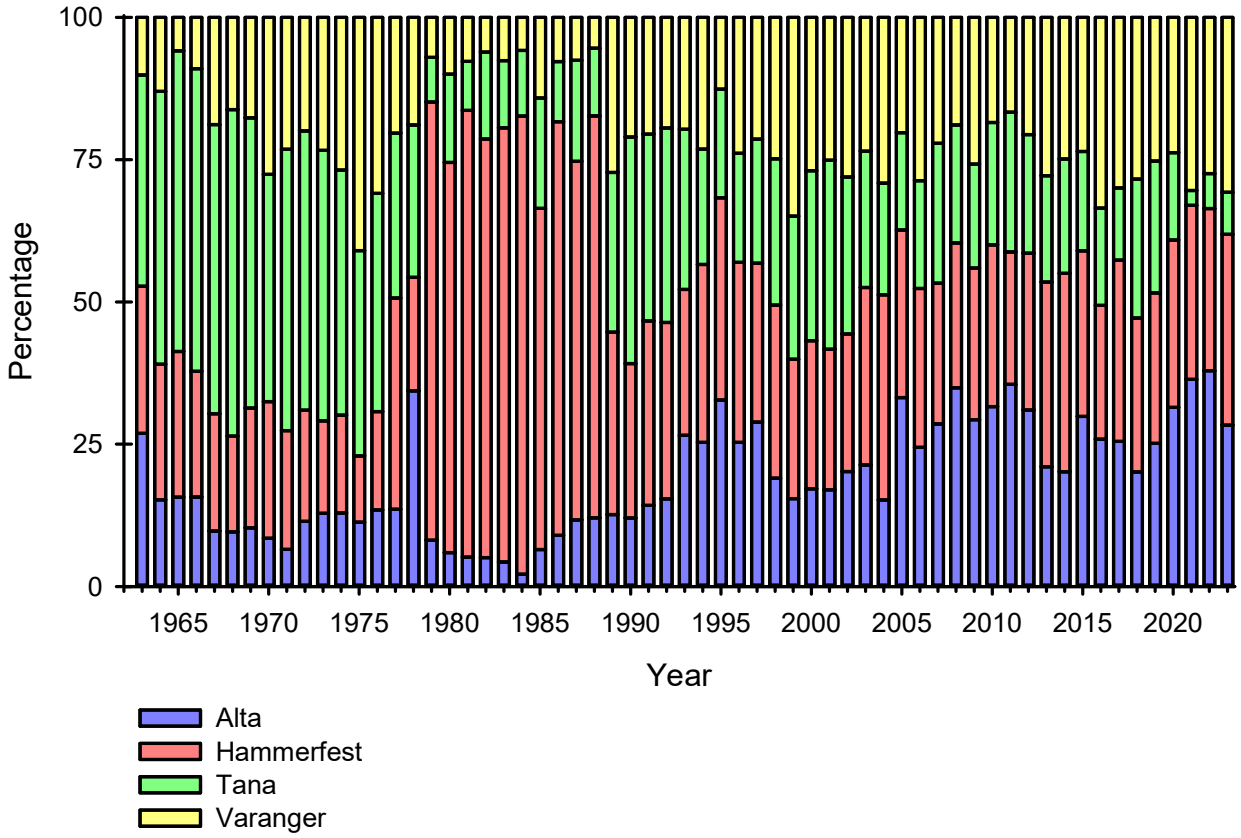


Figure 3. Differences in the annual proportions of salmon catches (in weights) caught with driftnets, bag nets and bend nets in Finnmark between the four salmon districts. Source; SSB.

Bag net as a salmon fishing method was used for the first time in Norway in the middle of the 1800´s. Bend net, and the way it has been used in Finnmark during the last 60-70 years, became more efficient in the end of 1960´s and in the beginning of 1970´s after the fishers started to use new materials in their nets. Bend nets were prohibited in salmon fishery in the ordinary fishing season in the year 2022.

The majority of salmon catches caught with the bag nets in Finnmark were caught from the late 1960's to the middle of 1980's in Tana salmon district in the municipalities Lebesby, Gamvik, Tana and Berlevåg (Fig. 4). The proportion of salmon caught with bag nets in Finnmark has declined in Tana salmon district compared to other salmon districts. Conversely to that, the proportion of bag net catches has increased in the Alta salmon district. Bag nets in Tana salmon district in the years 2021-2023 were used in Lebesby municipality area like bend nets also in Lebesby municipality area in the year 2021.

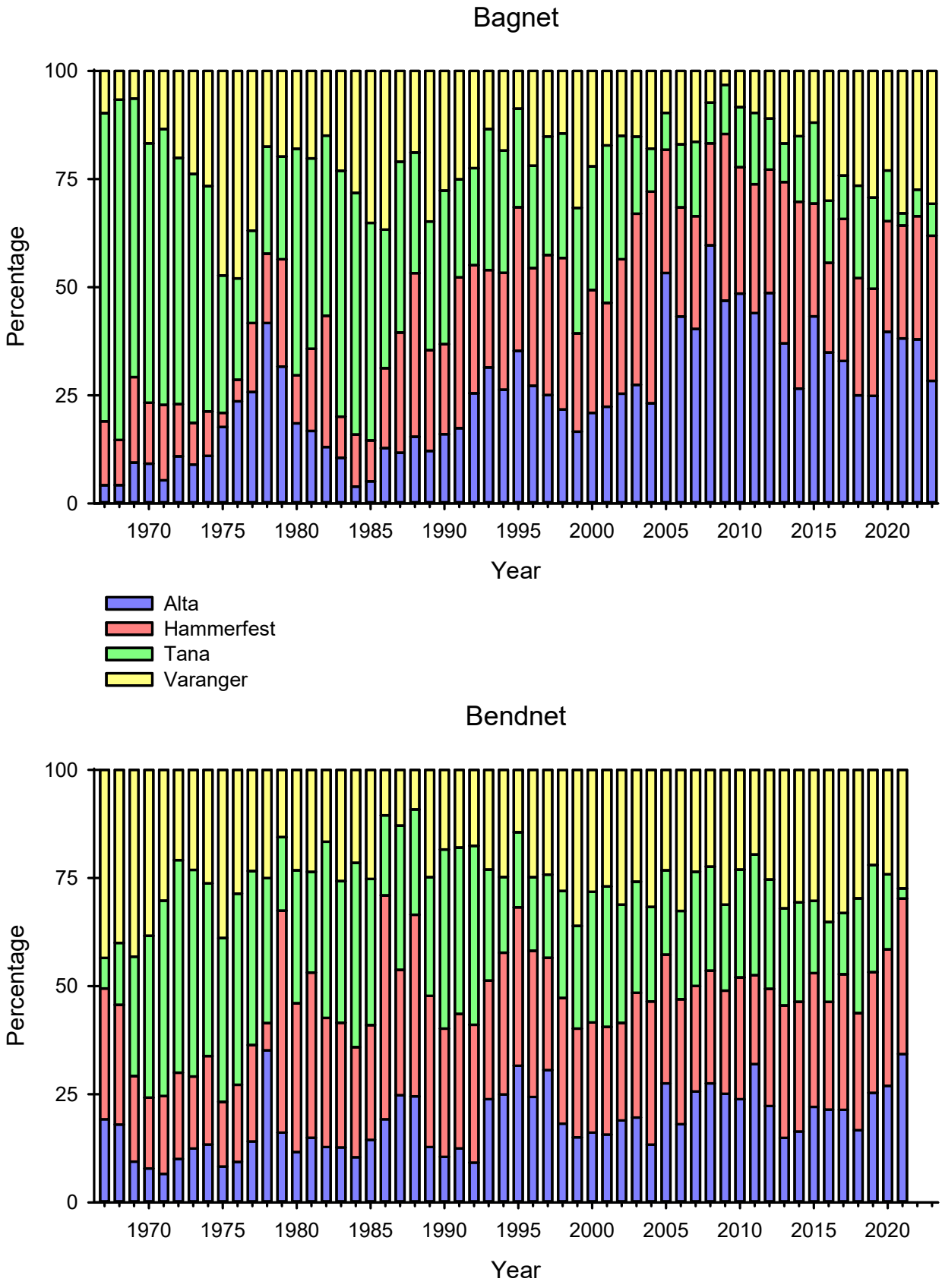


Figure 4. Annual proportions of salmon catches (in weights) with bag nets and bend nets between four salmon districts in Finnmark. Source; SSB.

3. Annual salmon catches from bag net and bend net fisheries in the four salmon districts, divided into three size groups

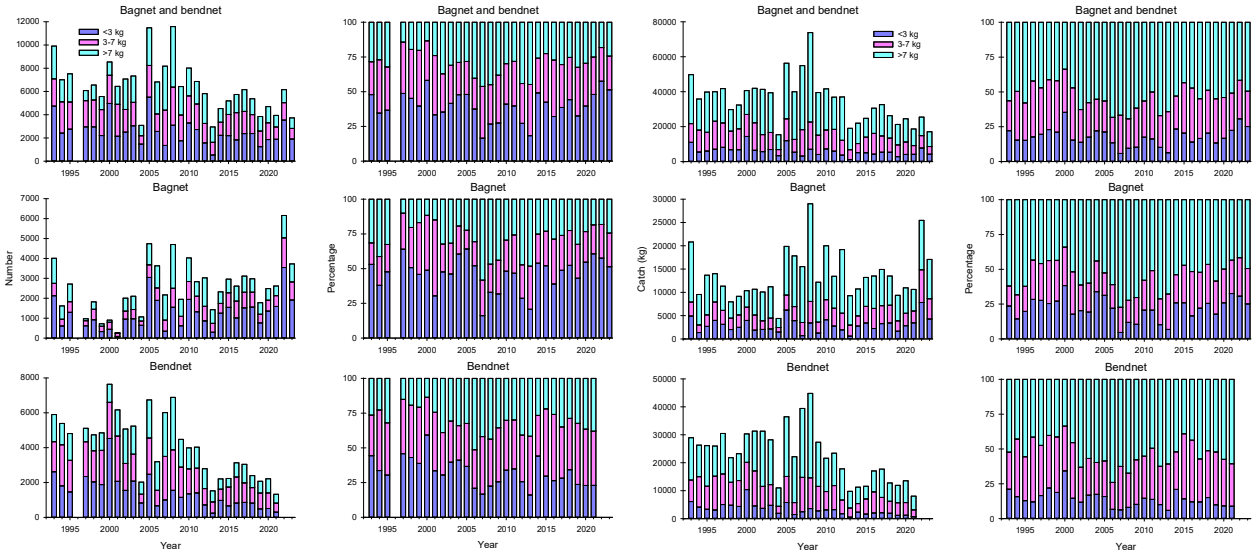


Figure 5. Small, medium and large salmon catches in numbers, weights and proportions caught in Alta salmon district with bag nets and bend nets. Source; SSB.

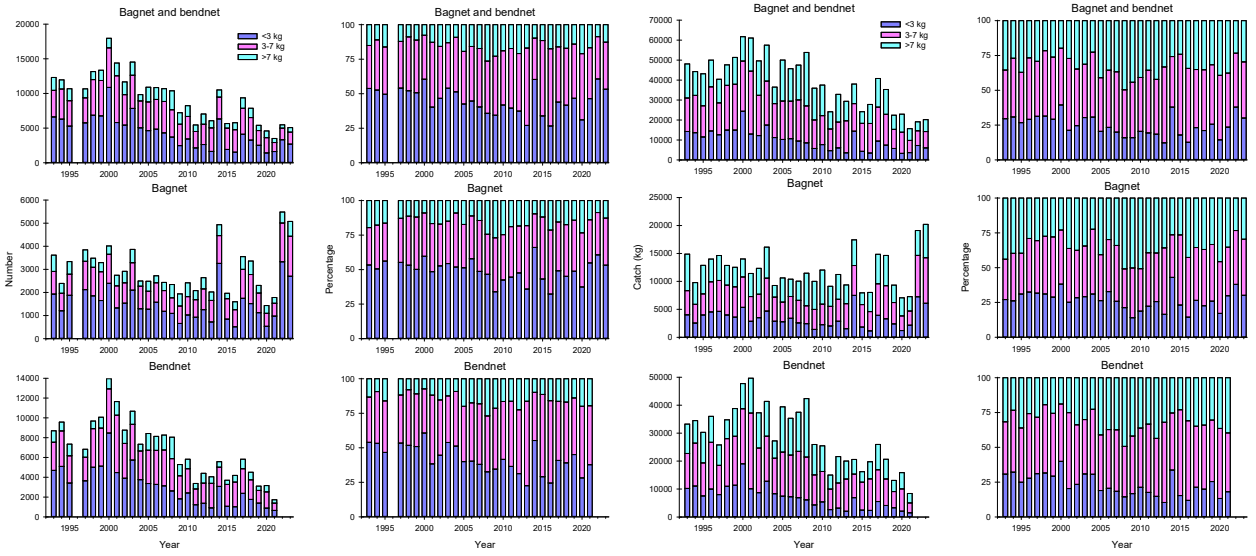


Figure 6. Small, medium and large salmon catches in numbers, weights and proportions caught in Hammerfest salmon district with bag nets and bend nets. Source; SSB.

In Alta salmon district bag net salmon catches in numbers have long-term increase and especially in the years 2022 and 2023 they clearly increased after the prohibition of bend net fishery (Fig. 5). Also, salmon catch in weight in the years 2022 and 2023 were higher than in the preceding nine years. In Alta salmon district the proportion of large salmon (>7 kg) in weight is making c. 50% from the catch and in some years even 75%. Bend net fishery in Alta salmon district was targeting

more into medium size (3-7 kg) and large size (>7 kg) salmon than bag net fishery. Bend nets with larger mesh-sizes in nets were selecting larger fish than bag nets.

In Hammerfest salmon district salmon catches caught with bend nets had long-term declining trend (Fig. 6). Salmon catches caught with bag nets declined along the years but not so clearly than in bend net fishery. The increase in bag net catches in the years 2022 and 2023 was significant. Catches in the bag net fishery were the highest in the years 2022 and 2023 during the 30 years catch records.

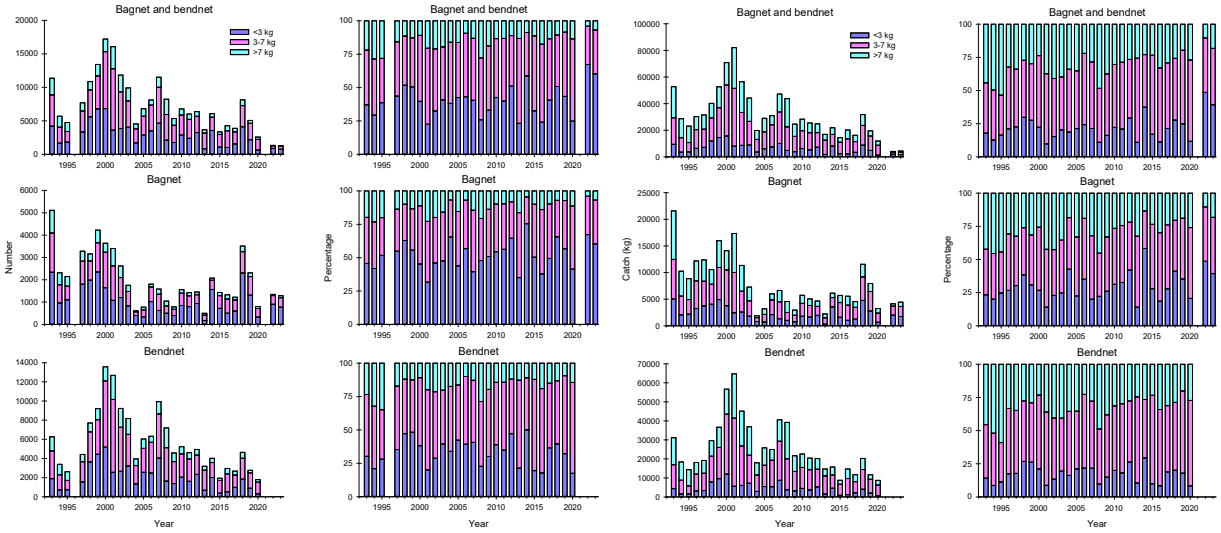


Figure 7. Small, medium and large salmon catches in numbers, weights and proportions caught in Tana salmon district with bag nets and bend nets. Catch is only from Lebesby municipality area. Source; SSB.

In Tana salmon district catches caught with bend nets had a long term steadily decreasing trend (Fig. 7). Salmon caught with bag nets had two peaks, first a clear peak in the early 2000's and a second small peak in the second half of 2010's. An important and worrying phenomenon in the catch development is the fact that the numbers and the weights of large salmon (>7 kg) and their proportions in the total catches have clearly and steadily declined. This is the same phenomenon that has been observed in the catch developments in the rivers Tana and Neiden (see Fig. 178). Catches in the Tana salmon district in the years 2022 and 2023 were caught in Laksefjord area in Lebesby municipality and these catches were close to the earlier bag net catches in the period 2003-2020 in the entire Tana salmon district.

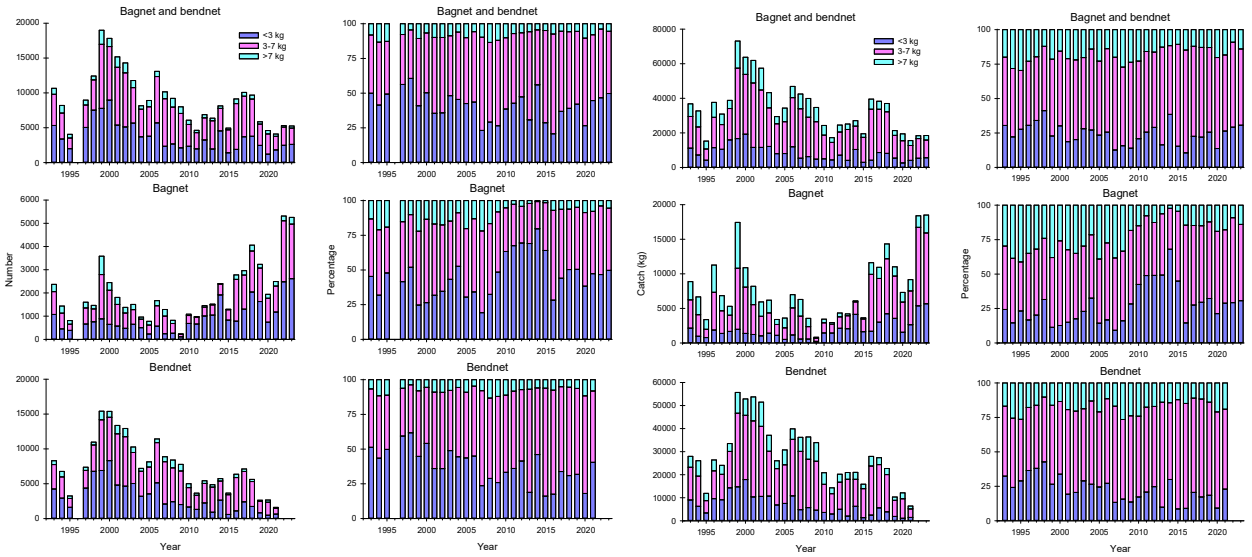


Figure 8. Small, medium and large salmon catches in numbers, weights and proportions caught in Varanger salmon district with bag nets and bend nets. Source; SSB.

In Varanger salmon district the change in salmon catches caught with bend nets is similar to the development in Tana salmon district, namely the long-term clear declining from the early 2000's onwards (Fig. 8). The catch development in bag net fishery was equal to the development in the catches in Tana salmon district but in Varanger salmon district catches reached the historically highest levels in the years 2022 and 2023. The numbers and weights of large salmon (>7 kg) and their proportions in bag net catches have been much higher in the earlier period in the years 1993-2008 than in the later period in the years 2009-2023.

The clear declining in the numbers, weights and proportions of large salmon (>7 kg) along the years in the bag net fishery is similar in the catches in Tana and Varanger salmon districts. That indicates the general long-term decrease in large size salmon stocks, and it has been observed also in the catches in the rivers Tana and Neiden and in other rivers in Finnmark (see figures 178 and 179).

After the prohibition of bend nets in the year 2022 catches in bag nets increased significantly. Salmon catches which were caught earlier with bend nets moved in the years 2022 and 2023 into bag nets. This shift can be seen especially in the catches in Varanger and Hammerfest salmon districts and slightly in Alta salmon district (Figs. 5, 6 and 8). In the years 2022 and 2023 the numbers of salmon fishermen (see figures 170-173) and the numbers of official fishing sites available (see figures 157-159) in Varanger salmon district declined compared to the earlier years. The numbers of bag nets used in Varanger salmon district, however, were about the same in the year 2021 one year before the bend net prohibition and in the years 2022 -2023 after the bend net prohibition (see figures 163, 165-166). The numbers of bag nets used in Varanger salmon district increased from the year 2009 until the year 2021.

The reason for the increase of salmon catches especially in Varanger salmon district in bag net fishery has at least three explanations. One reason is the fact that the numbers of bag nets used have increased significantly. Another reason is the use of modified trapping device, so-called patent bag net (Norwegian: patentnot) where the ordinary bend net with effective hook-shaped net is combined

into the single bag net trapping method (see the photo 1 in appendix). This new modified trapping device is not accordance to the rules introduced in the end of 2010's. In this modified trapping device when using old-fashioned bend net combined into the bag net, bend net has been used as long period in the summer as bag nets. It is not known how many fishermen have used this modified fishing method. In bag nets it is allowed to use a short leading net without hook-shaped net and this leading net shall not capture salmon. Third reason to the increased salmon catches in Varanger salmon district is the fact that there has been an increased consumer demand of fresh salmon after all salmon fisheries have been prohibited in the neighboring River Tana and at sea close to the river Tana. Many fishermen from Tana River valleys have been visiting salmon fishermen in Varangerfjord areas and they have bought fresh salmon there. This marketing has activated some salmon fishermen in Varangerfjord to catch salmon throughout the entire allowed fishing season.

Photo 2. Double bagnet. Photo: Eero Niemelä.

4. Annual salmon catches caught with bag nets and bend nets in Finnmark and in salmon districts

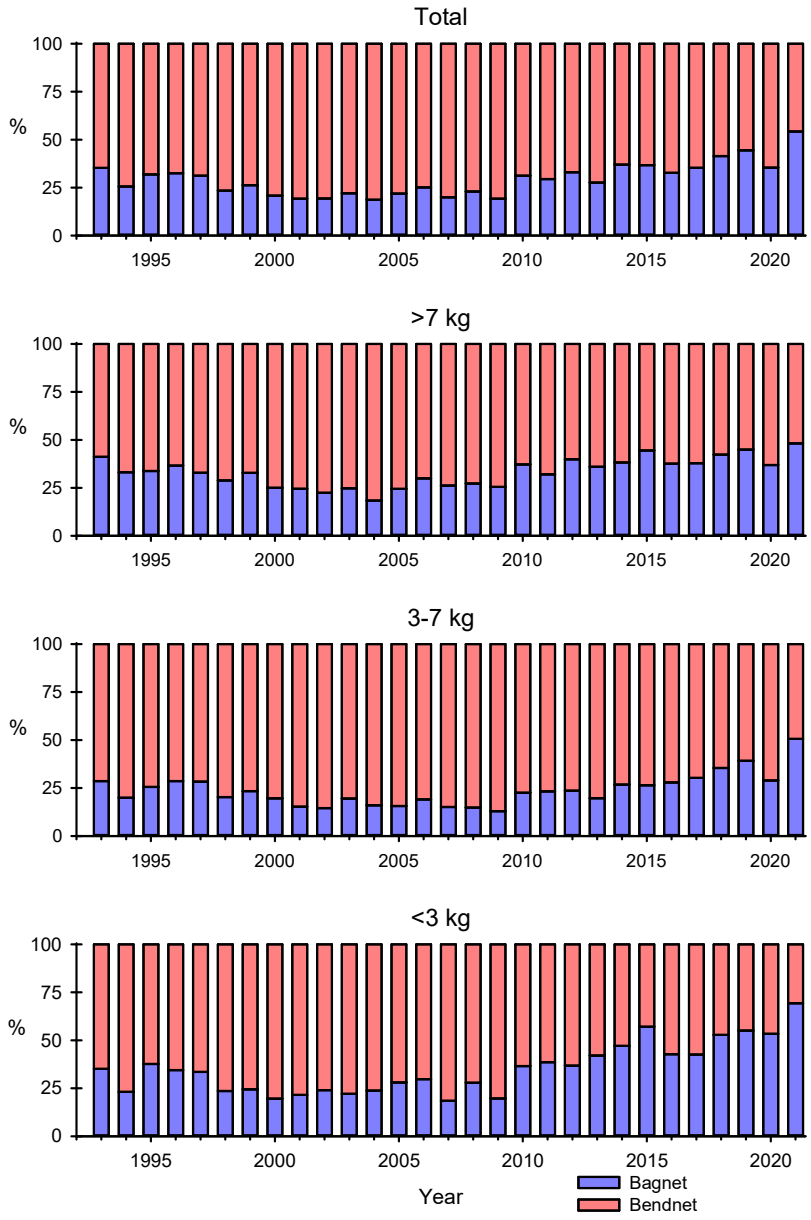


Figure 9. Annual salmon catch (in weight) distributions between bag nets and bend nets from the four salmon districts, divided into three size groups in Finnmark (Alta, Hammerfest, Tana, Varanger combined). In the years 2022 and 2023 all salmon was caught with bag nets. Source; SSB.

In Finnmark, most of the salmon caught at sea has been caught with bend nets (Fig. 9). From the year 2010 onwards the proportions from the total catch taken with bag net has increased regularly from around 20% to 55% in the year 2021. The development has been the same for all three size groups and the most remarkable increase has been in the 3 kg salmon catches, where bag nets has taken 75% from the catches in the year 2021.

Bend net has been the most important salmon fishing method in Varanger, Tana and Hammerfest salmon districts making up the majority in the catches. However, in Varanger salmon district catches caught with bend nets have clearly declined since the year 2015 (Fig. 10). This decline is most probably due to the fishing time being shorter than it was before. In the Alta salmon district 50% from the total catch was taken with bend nets just before the prohibition of bend nets.

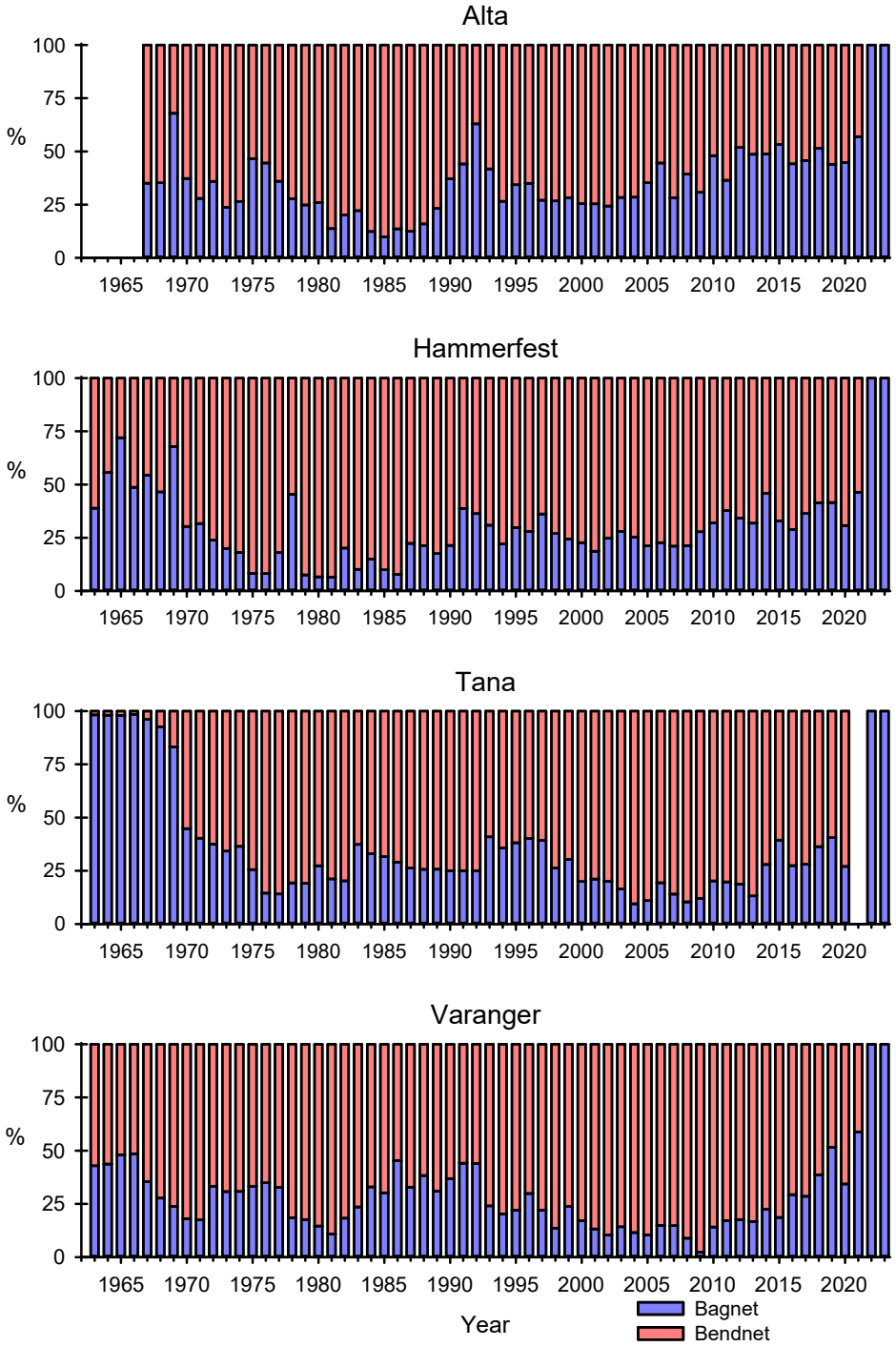


Figure 10. Salmon catch (in weight) distributions in the sea fishery between bag net and bend net in Finnmark. All size groups and catches within each salmon districts have been combined. In the years 2022-2023 all salmon was caught with bag nets. Source; SSB.

5. Detailed salmon catches caught with bag net and bend net in four salmon districts; catches for small, medium and large size salmon in numbers and weight (kg)

Figures 11-12 indicates the annual changes in the proportions of salmon caught with bend net and bag net in the small, medium and large size salmon.

The proportion of salmon caught with bag nets has increased for the 3 kg size group, and especially in the Varanger and Tana salmon districts. In Varanger salmon district the proportion of salmon caught with bag nets has clearly increased also for the 3-7 kg size group and the size group larger than 7 kg.

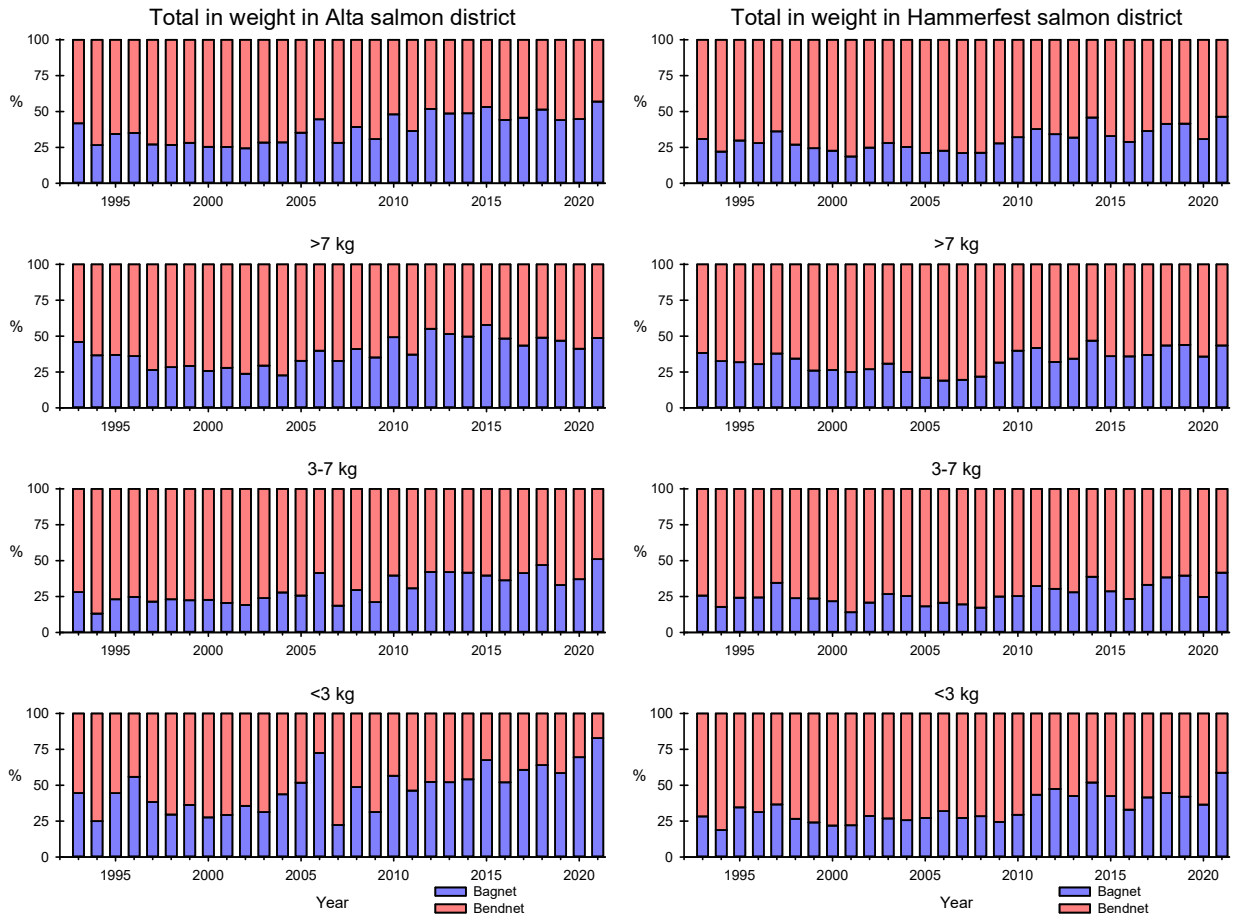


Figure 11. Annual salmon catch distributions between bag nets and bend nets for three size groups in weight in Alta and Hammerfest salmon districts. In the years 2022-2023 all salmon was caught with bag nets. Source; SSB.

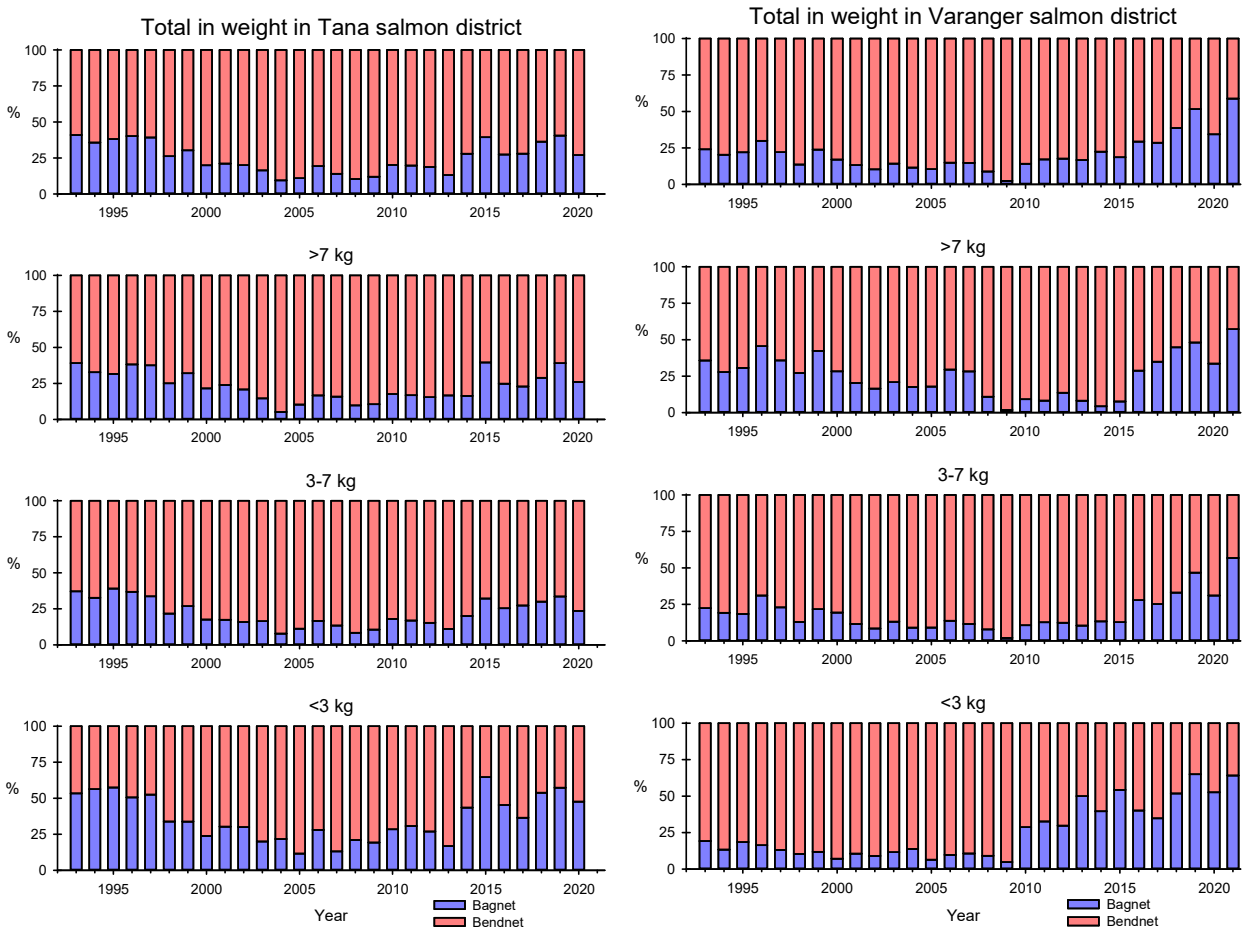


Figure 12. Annual salmon catch distributions between bag nets and bend nets for three size groups in weight in Tana and Varanger salmon districts. In the years 2022-2023 all salmon was caught with bag nets. Source; SSB.

6. Weekly numbers and proportions of salmon in the catches, divided between bag net fishery and bend net fishery in four salmon districts; for all size groups combined, for small salmon, for medium salmon and, for large salmon

Figures 13-32 are indicating the weekly catches in numbers and proportions of salmon and their distributions in three size groups between bag nets and bend nets. The figures are indicating that salmon fishery has covered the entire salmon migration period in all coastal areas in Finnmark. In Alta and Hammerfest salmon districts fishermen have started to catch salmon in late May and early June with bend nets and the use of bag nets has increased towards the end of July. Weekly catches in the years 2022 and 2023 have distributed in the bag net fishery like earlier when also the use of bend nets was allowed in salmon fishing. In eastern Finnmark, in Tana and Varanger salmon districts, fishermen used earlier bag nets and bend nets in the begin of the fishing season. Figures are indicating that in the entire coastal area in Finnmark all three size groups of salmon are occurring throughout the summer in the catches and they have clear peak seasons in their catches.

In the period 1993-2021 most of the salmon catches have accumulated in the middle of summer in bend net fishery. In the latest years when bend net was still legal, the fishing times in bend net fishery have been shorter than in bag net fisheries.

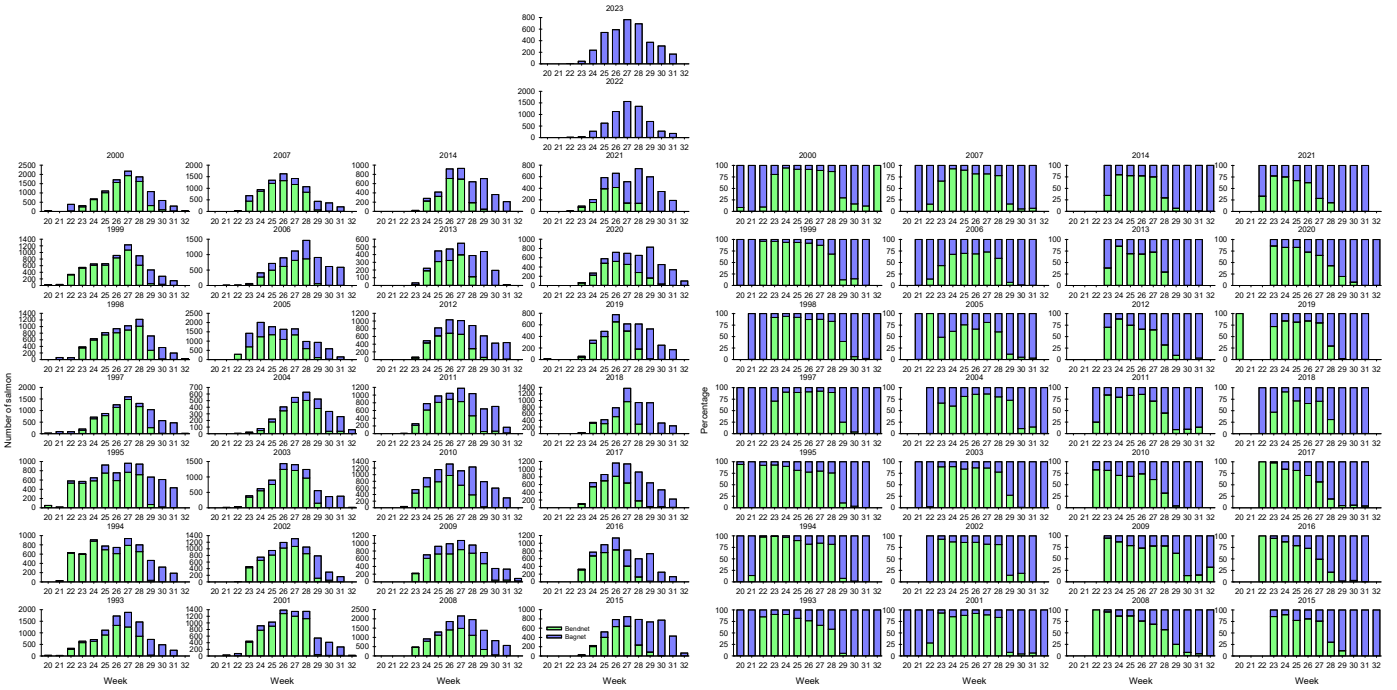


Figure 13. Weekly numbers and proportions of salmon caught with bag nets and bend nets in all size groups combined in Alta salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB.

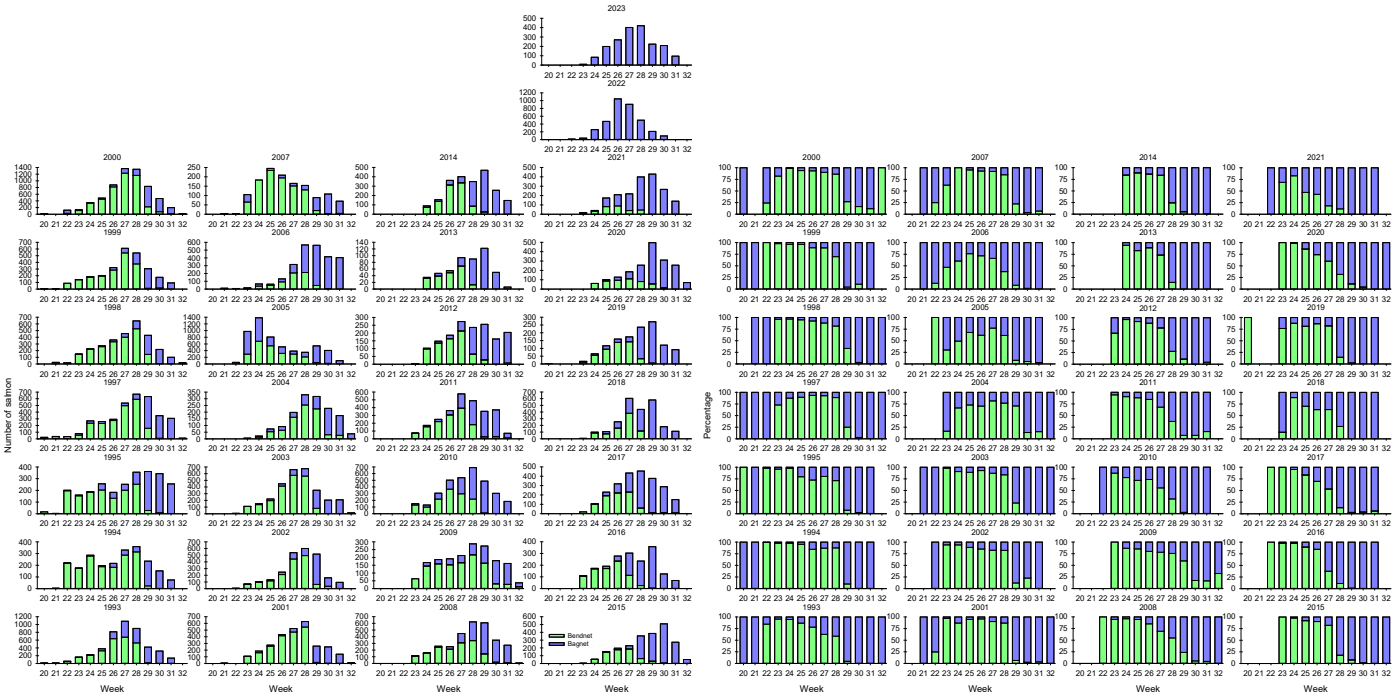


Figure 14. Weekly numbers and proportions of salmon below 3 kg caught with bag nets and bend nets in Alta salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB.

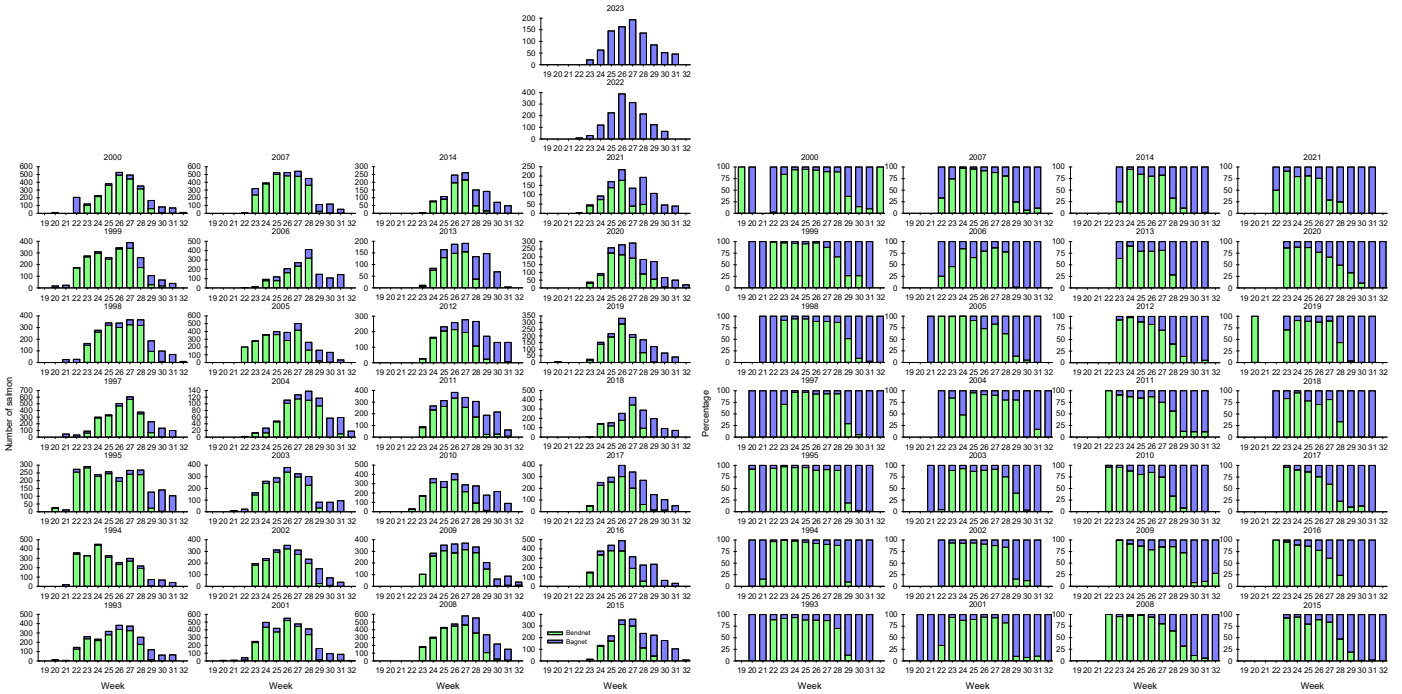


Figure 15. Weekly numbers and proportions of salmon between 3-7 kg caught with bag nets and bend nets in Alta salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB.

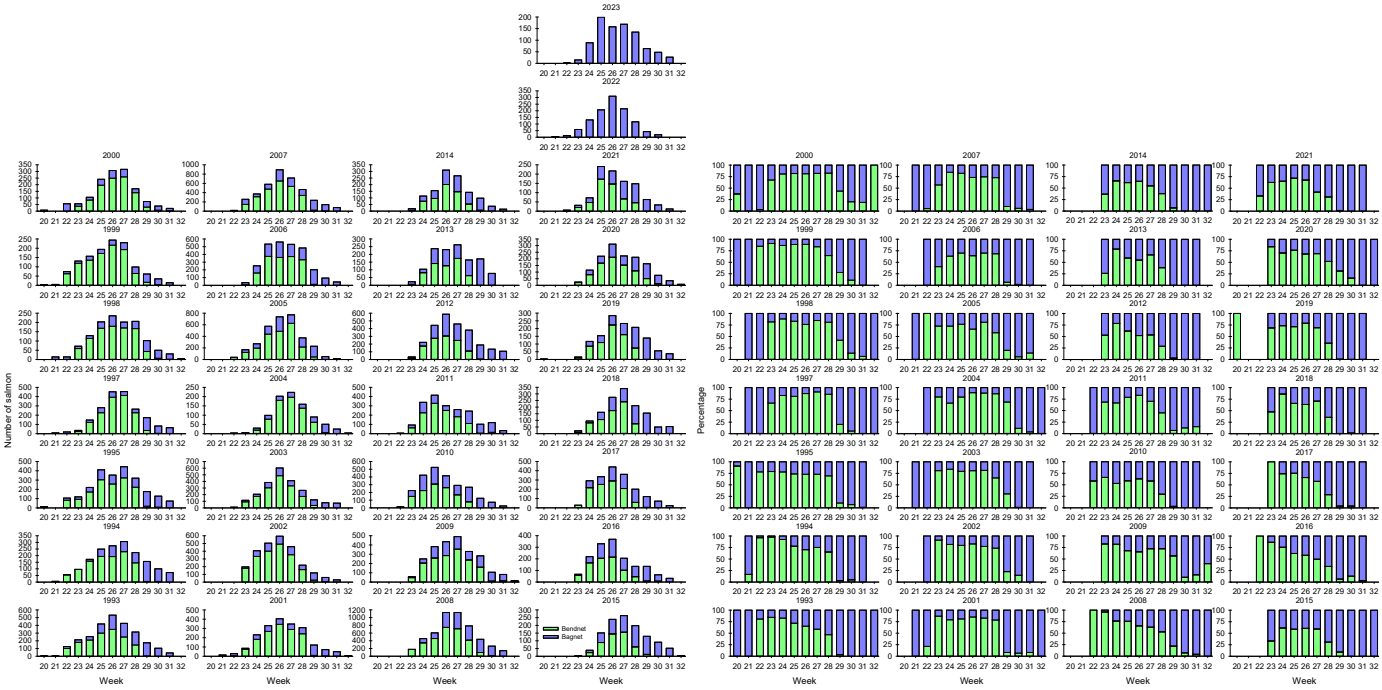


Figure 16. Weekly numbers and proportions of salmon above 7 kg caught with bag nets and bend nets in Alta salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB.

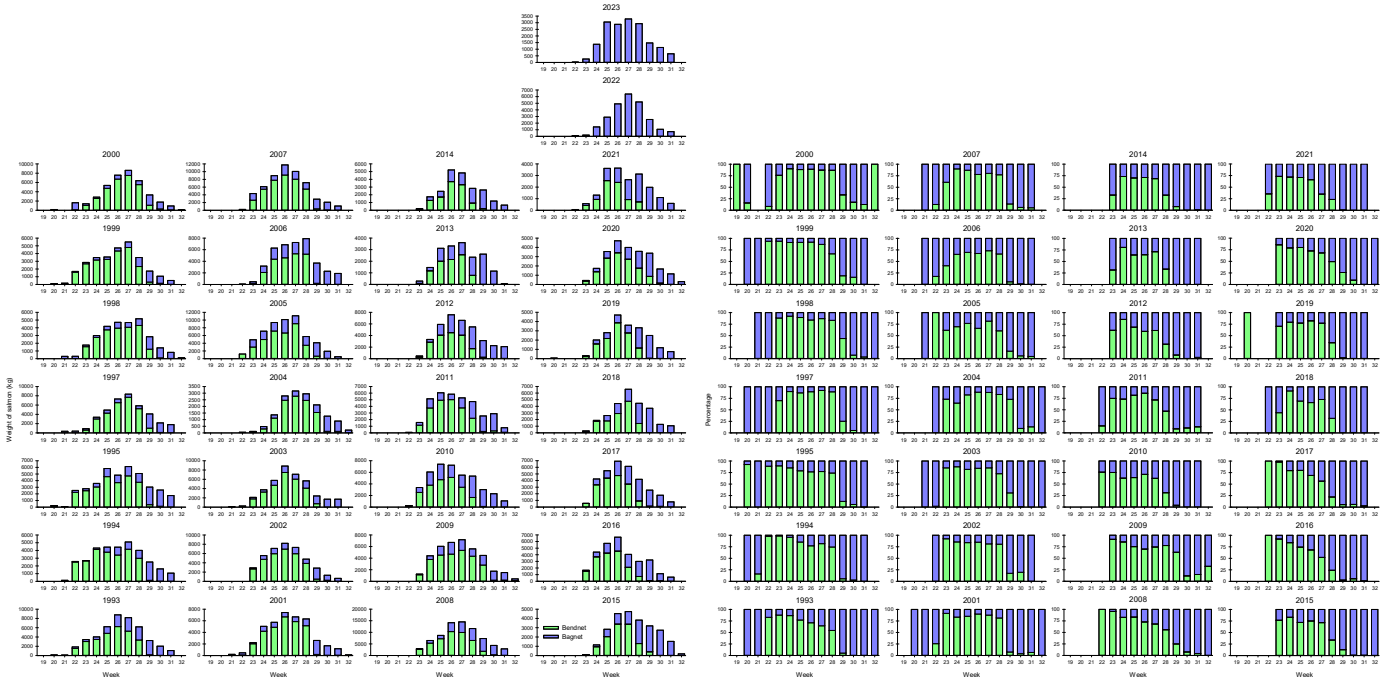


Figure 17. Weekly weights and proportions of salmon all size groups combined caught with bag nets and bend nets in Alta salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB.

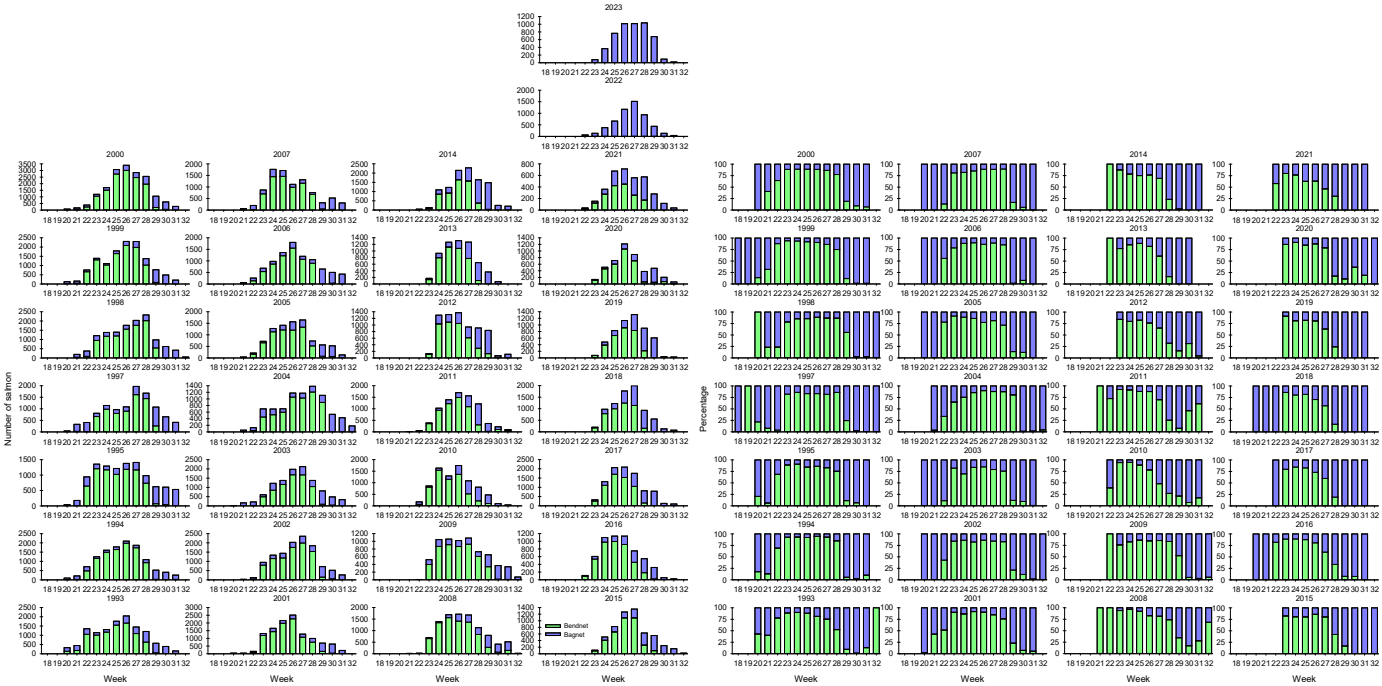


Figure 18. Weekly numbers and proportions of salmon caught with bag nets and bend nets all size groups combined in Hammerfest salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB.

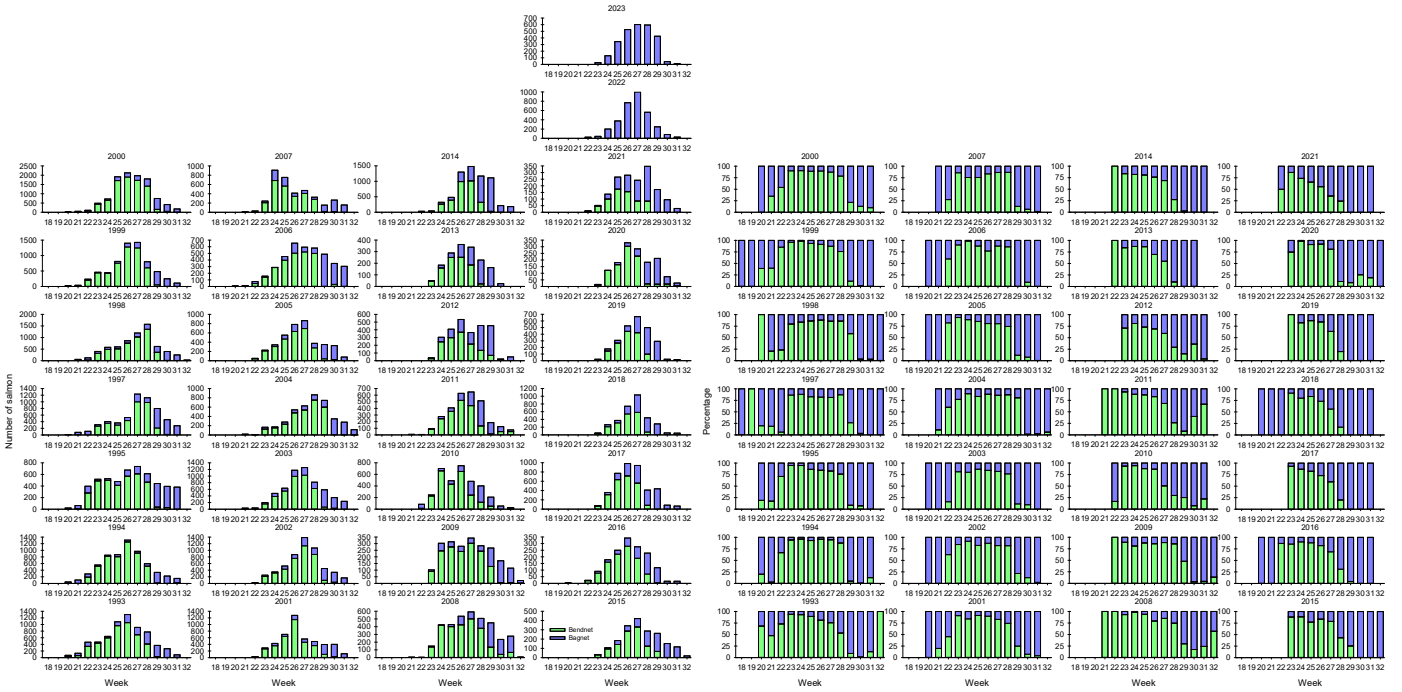


Figure 19. Weekly numbers and proportions of salmon below 3 kg caught with bag nets and bend nets in Hammerfest salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB.

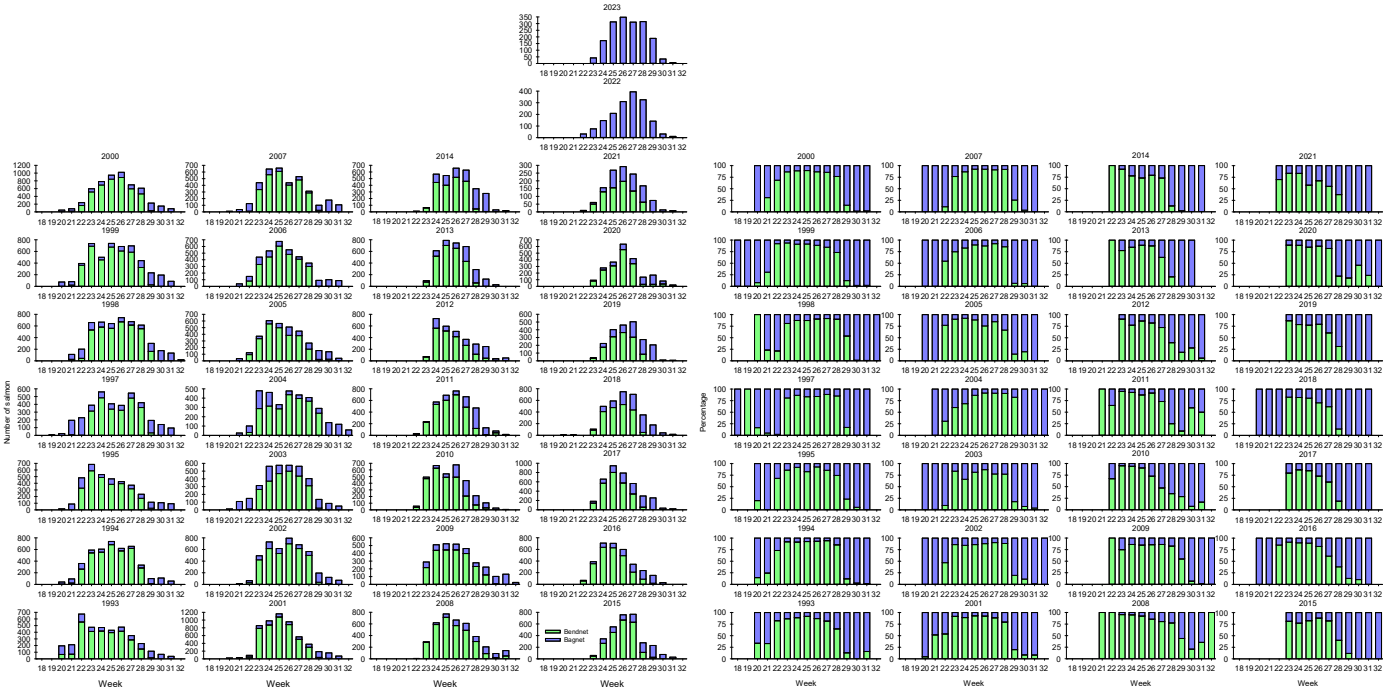


Figure 20. Weekly numbers and proportions of salmon between 3-7 kg caught with bag nets and bend nets in Hammerfest salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB

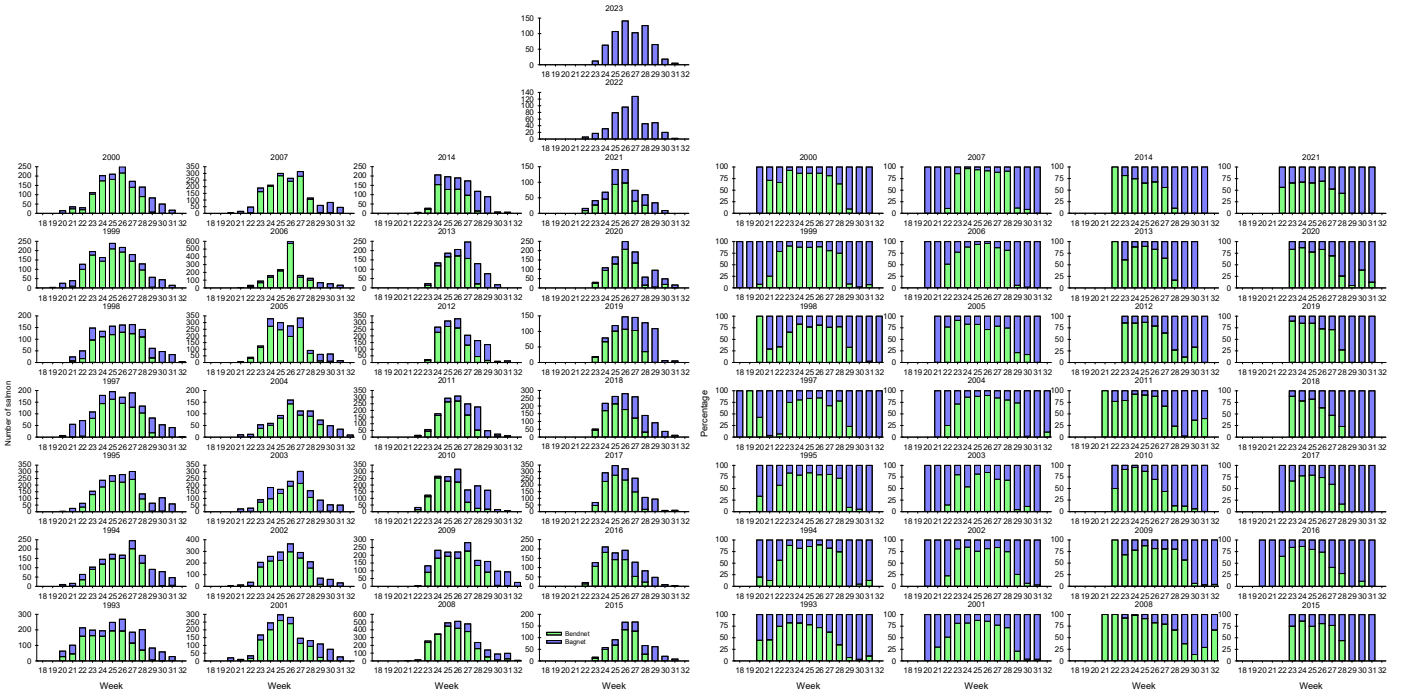


Figure 21. Weekly numbers and proportions of salmon above 7 kg caught with bag nets and bend nets in Hammerfest salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB.

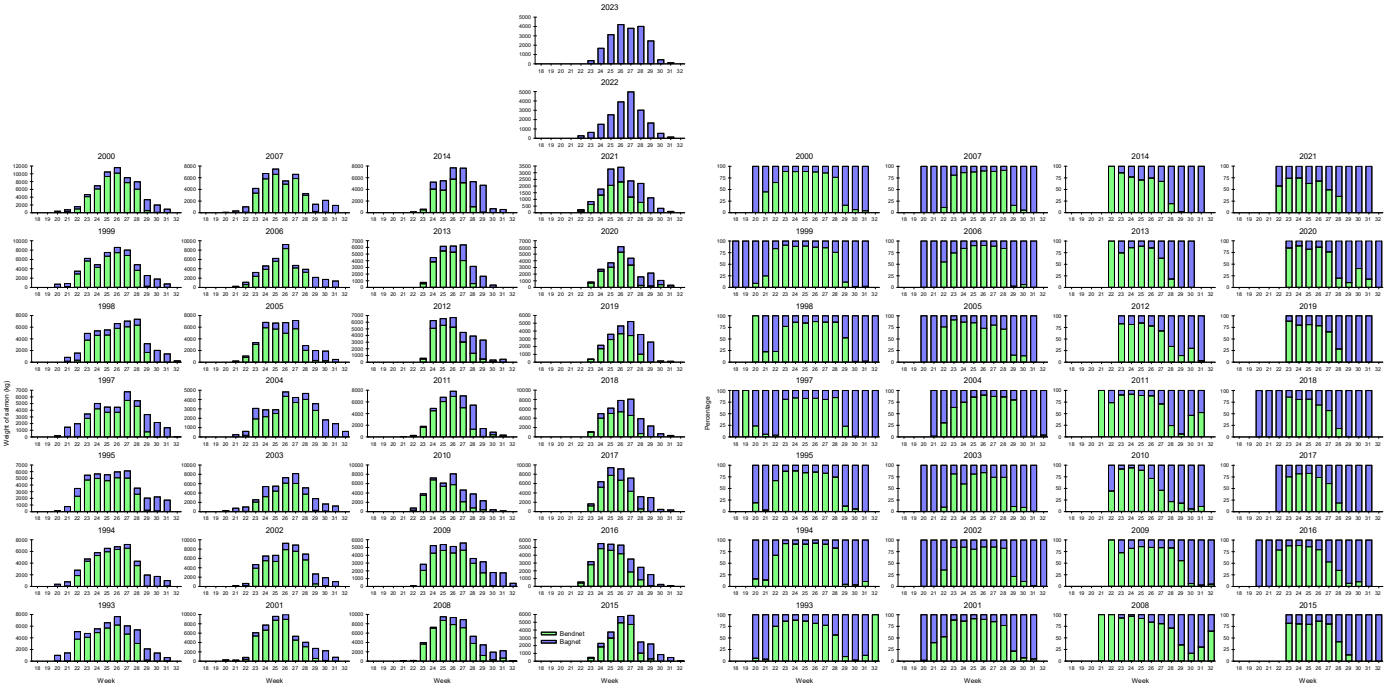


Figure 22. Weekly weights and proportions of salmon all size groups combined caught with bag nets and bend nets in Hammerfest salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB.

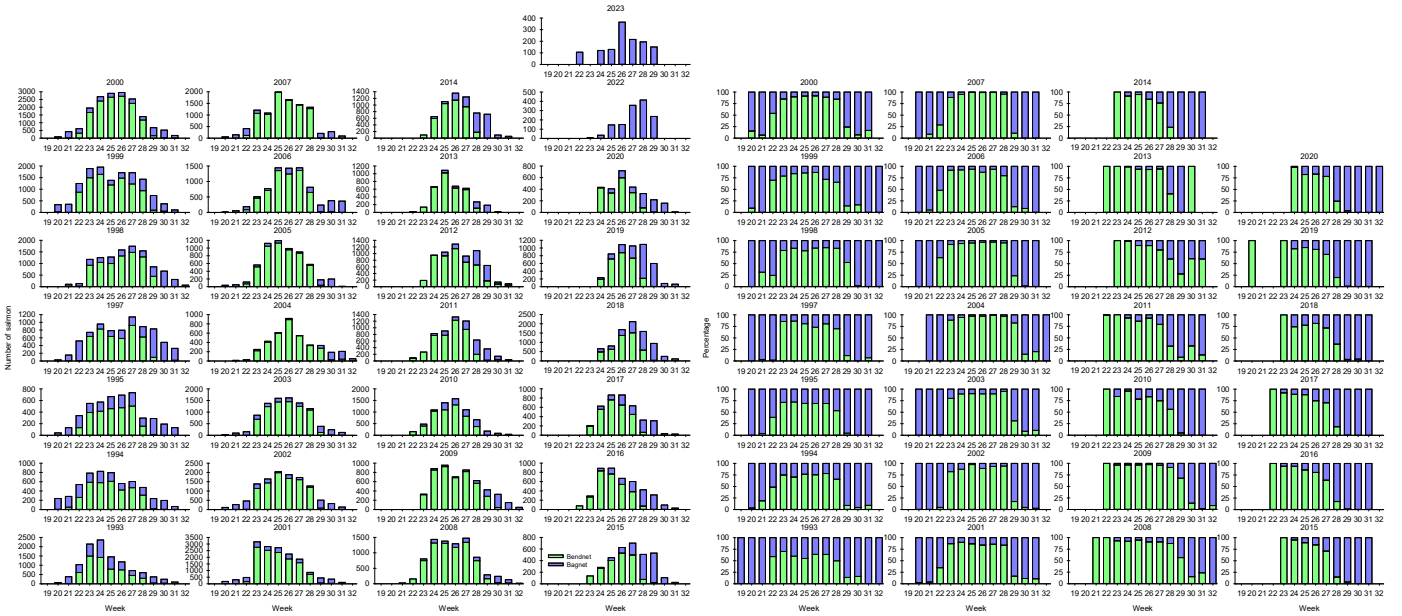


Figure 23. Weekly numbers and proportions of salmon caught with bag nets and bend nets all size groups combined in Tana salmon district. In the years 2022-2023 only bag nets were allowed in Lebesby area in Laksefjord. Source; SSB.

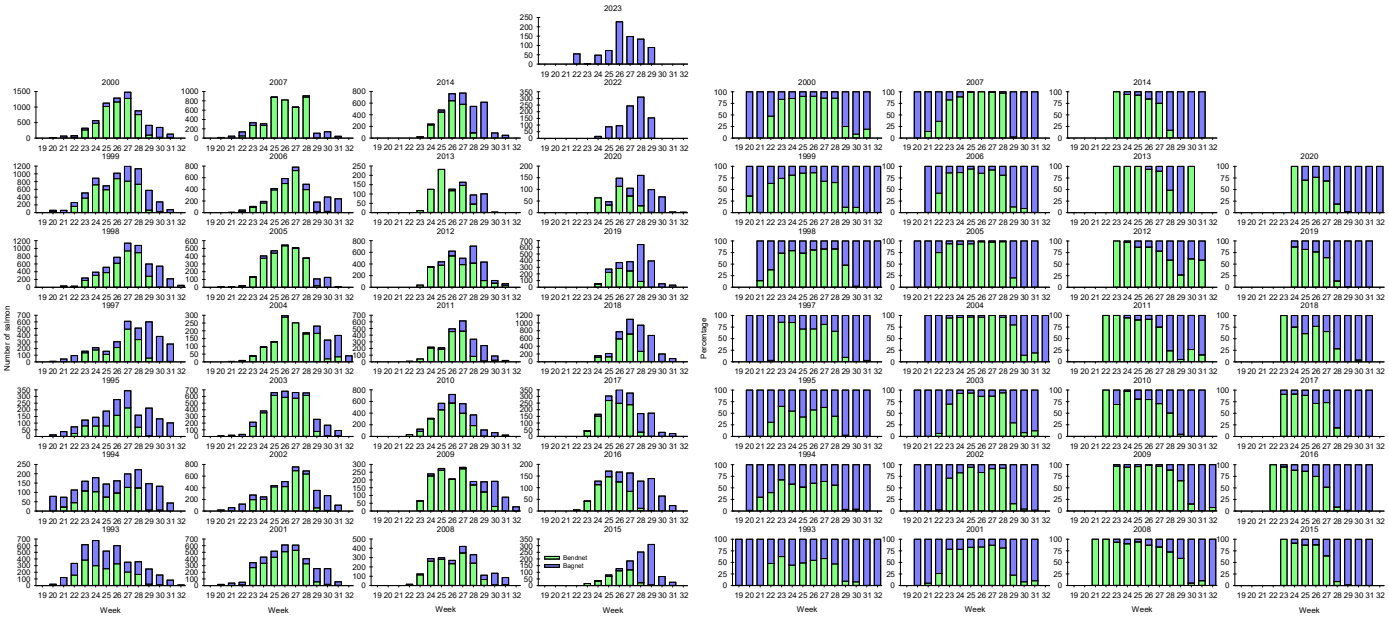


Figure 24. Weekly numbers and proportions of salmon above below 3kg caught with bag nets and bend nets in Tana salmon district. In the years 2022-2023 only bag nets were allowed in Lebesby area in Laksefjord. Source; SSB.

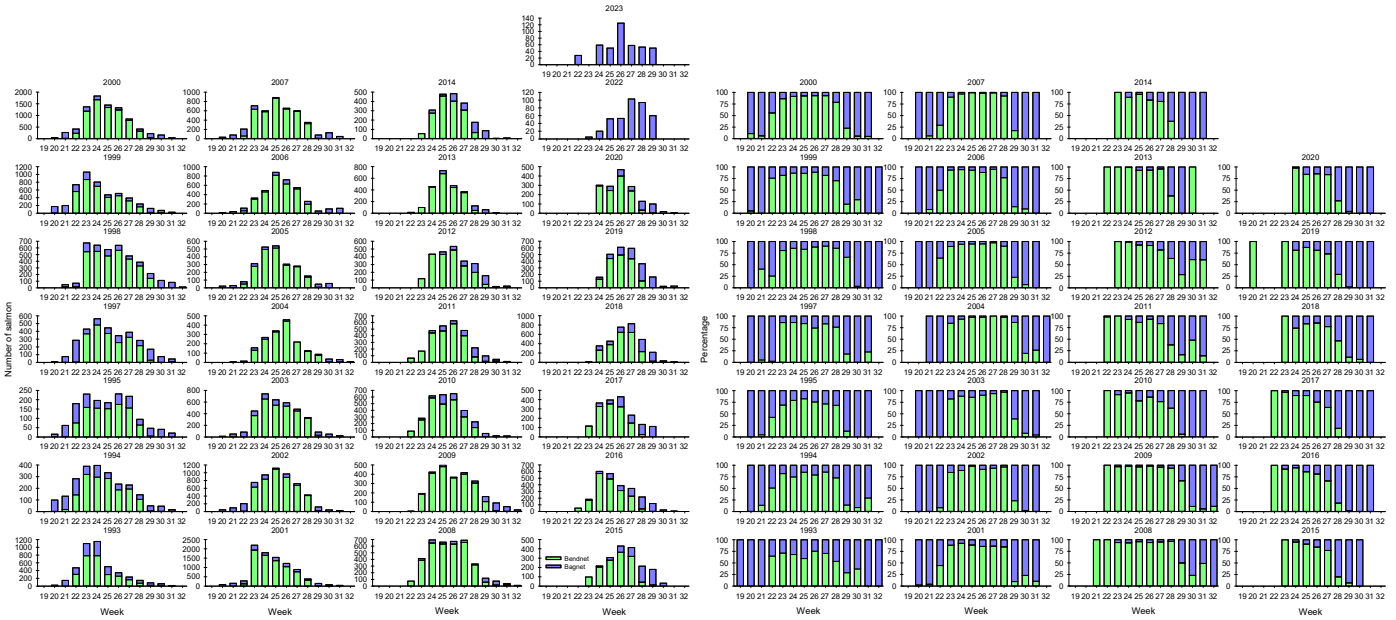


Figure 25. Weekly numbers and proportions of salmon between 3-7 kg caught with bag nets and bend nets in Tana salmon district. In the years 2022-2023 only bag nets were allowed in Lebesby area in Laksefjord. Source; SSB.

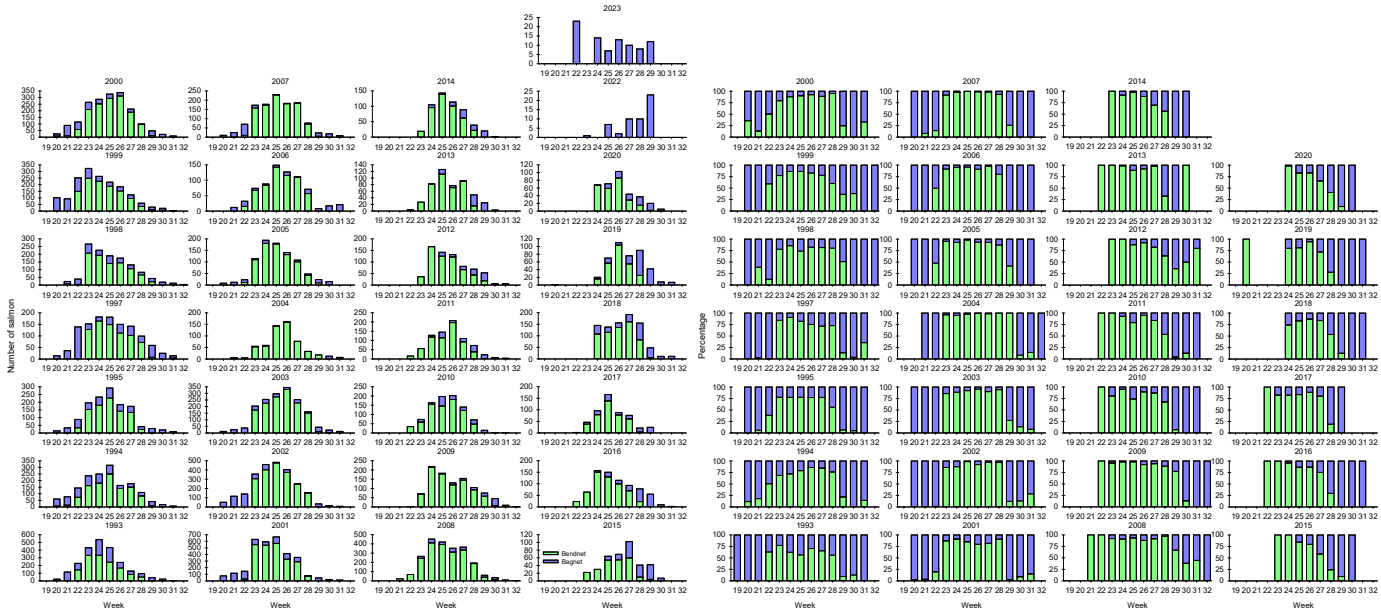


Figure 26. Weekly numbers and proportions of salmon above 7 kg caught with bag nets and bend nets in Tana salmon district. In the years 2022-2023 only bag nets were allowed in Lebesby area in Laksefjord. Source; SSB.

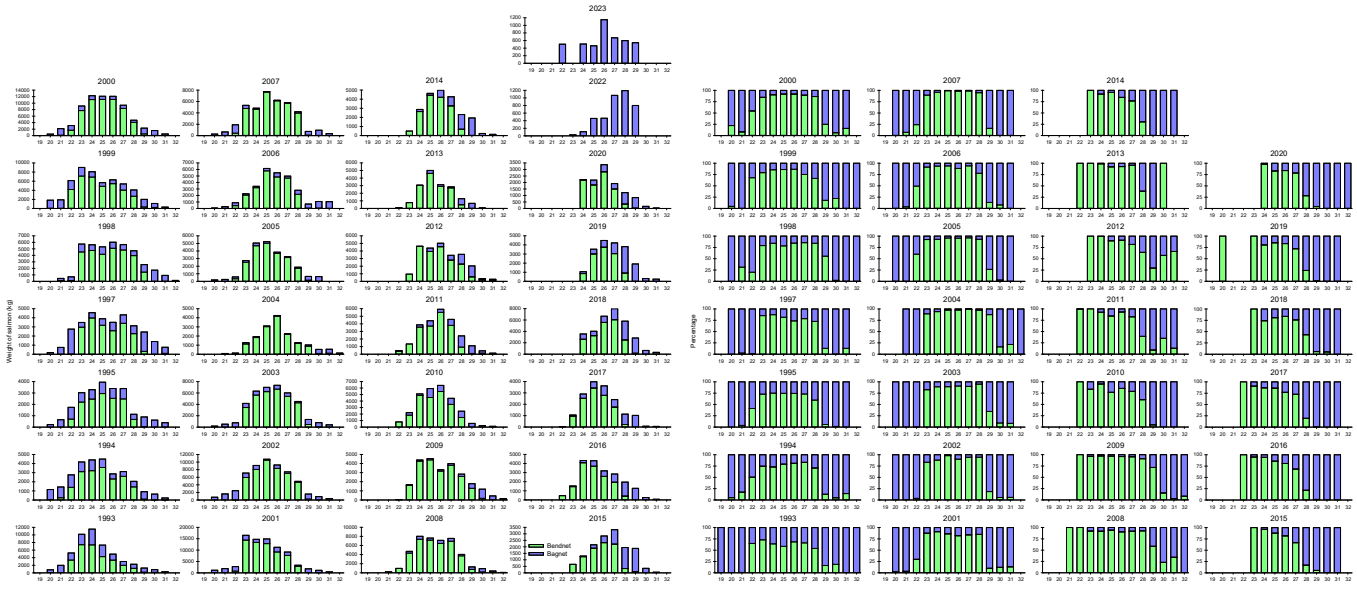


Figure 27. Weekly weights and proportions of salmon all size groups combined caught with bag nets and bend nets in Tana salmon district. In the years 2022-2023 only bag nets were allowed in Lebesby area in Laksefjord. Source; SSB.

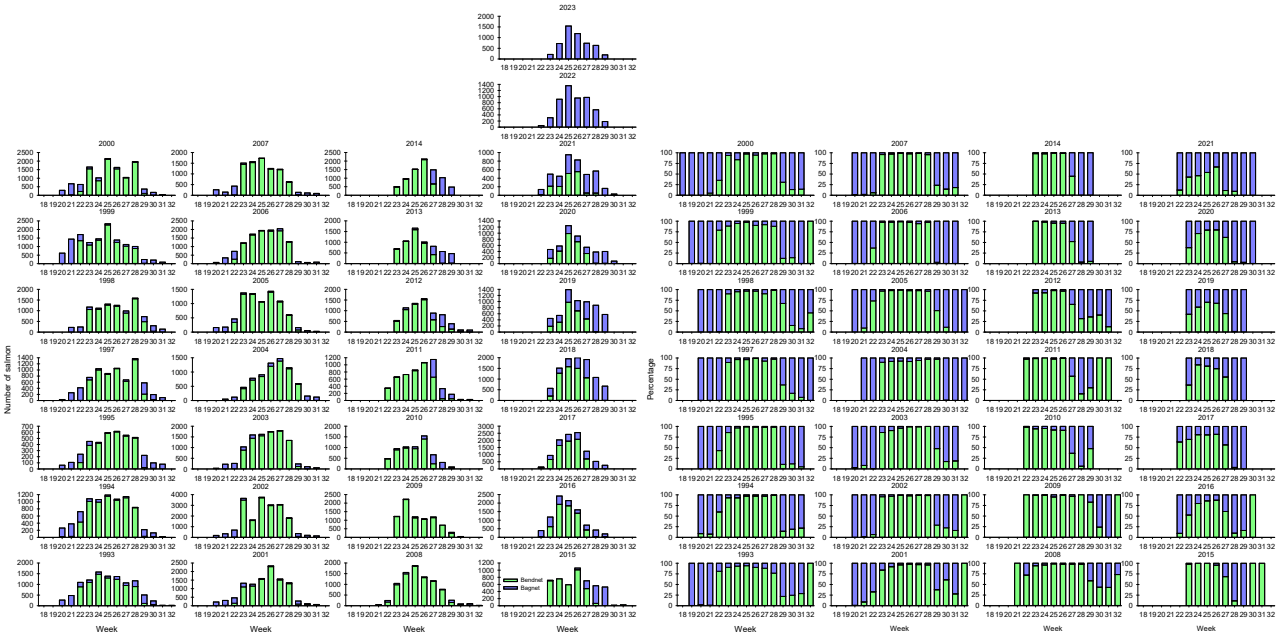


Figure 28. Weekly numbers and proportions of salmon caught with bag nets and bend nets of all size groups combined in Varanger salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB.

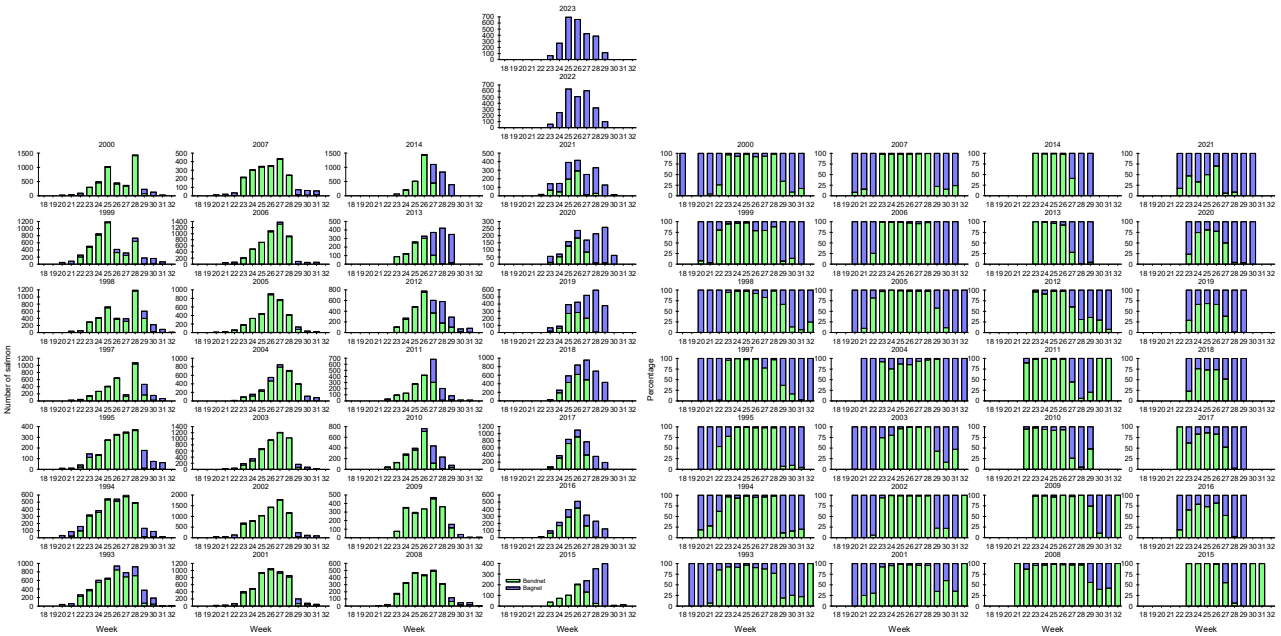


Figure 29. Weekly numbers and proportions of salmon below 3 kg caught with bag nets and bend nets in Varanger salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB.

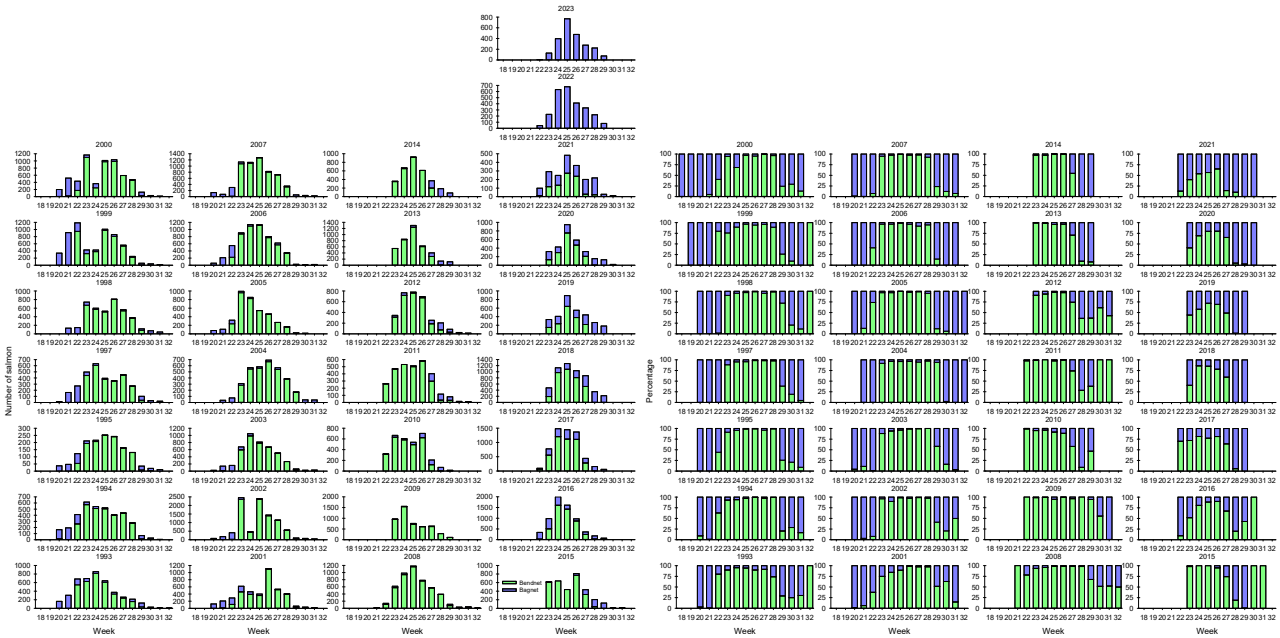


Figure 30. Weekly numbers and proportions of salmon between 3-7 kg caught with bag nets and bend nets in Varanger salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB.

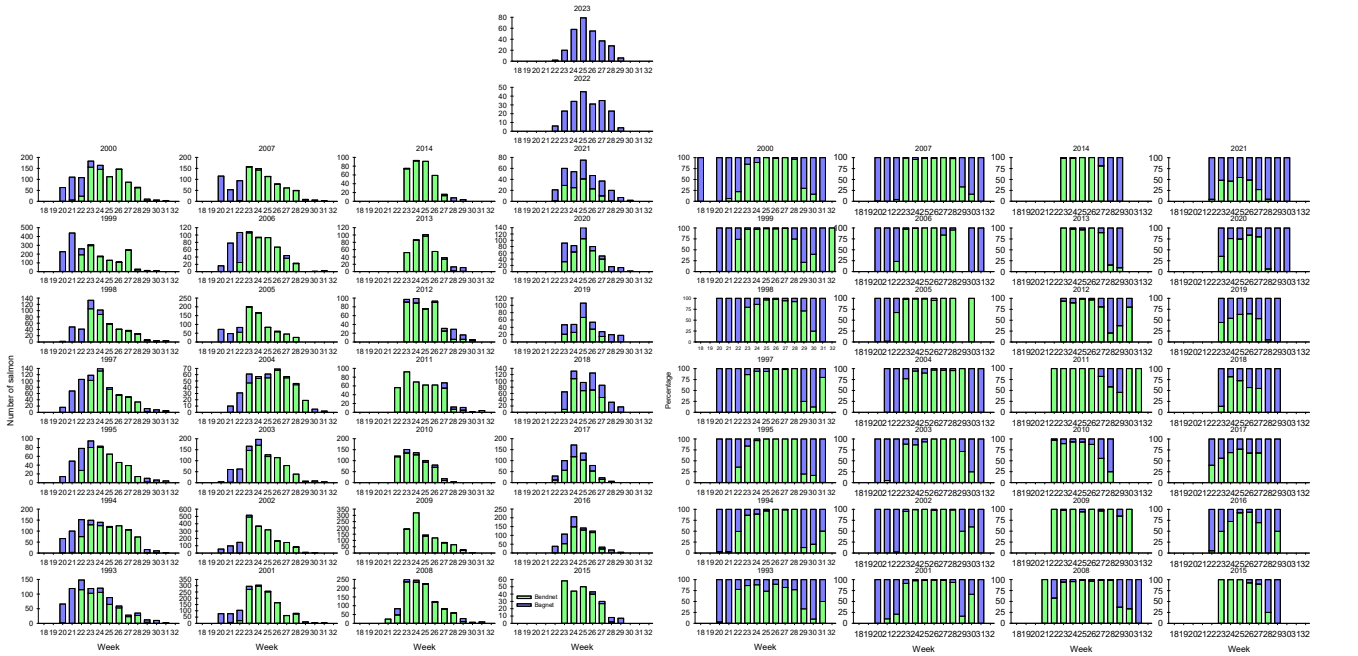


Figure 31. Weekly numbers and proportions of salmon above 7 kg caught with bag nets and bend nets in Varanger salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB.

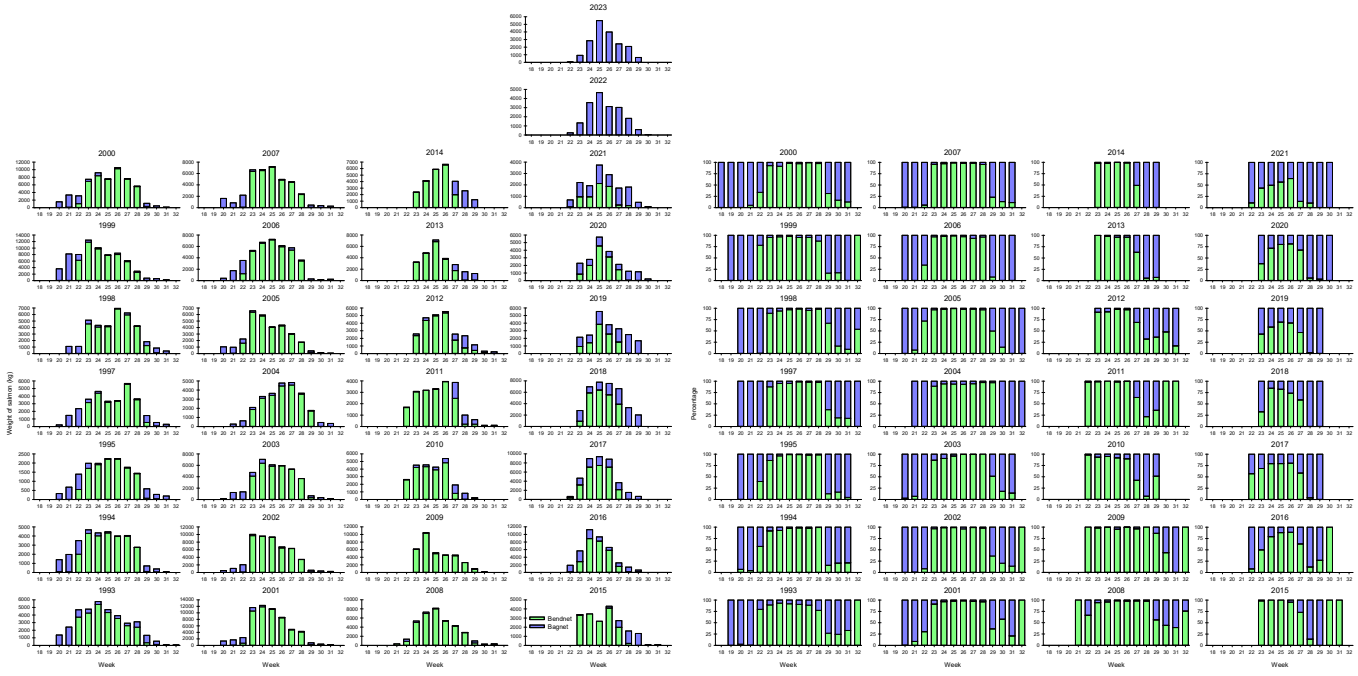


Figure 32. Weekly weights and proportions of salmon all size groups combined caught with bag nets and bend nets in Varanger salmon district. In the years 2022-2023 only bag nets were allowed. Source; SSB.

7. Salmon catches at sea in the years 1966-2021

Salmon catch data from sea fishing since the year 1966 indicate remarkable annual variations for all the municipalities in Finnmark. One important reason to this variation is the method used to collect annual catch data. Nowadays, all salmon fishermen must report their daily catches divided in numbers and weights for small, medium and large salmon. The fishing method used, bag net or bend net before bend net was prohibited, must also be informed about. This improvement in catch reporting took place in the year 1993. Before 1993, fishermen had to inform catches in two size groups namely below 4 and above 4 kilos.

Salmon catches were exceptionally large in the period from the last years of the 1970's to the middle of 1980's in the municipalities Hasvik, Hammerfest, Kvalsund and Måsøy. A reason for that was the high salmon catches caught with driftnet fishing in the outer coast, west from Nordkapp. After driftnet fishery was prohibited in 1988 total catches declined.

Salmon catches have been clearly higher in some municipality areas than in other areas. Good catches in some areas indicate high numbers of fishers combined with good fishing sites in the outer coastal areas. In general, salmon catches have in the long-term declined in most of the municipalities.

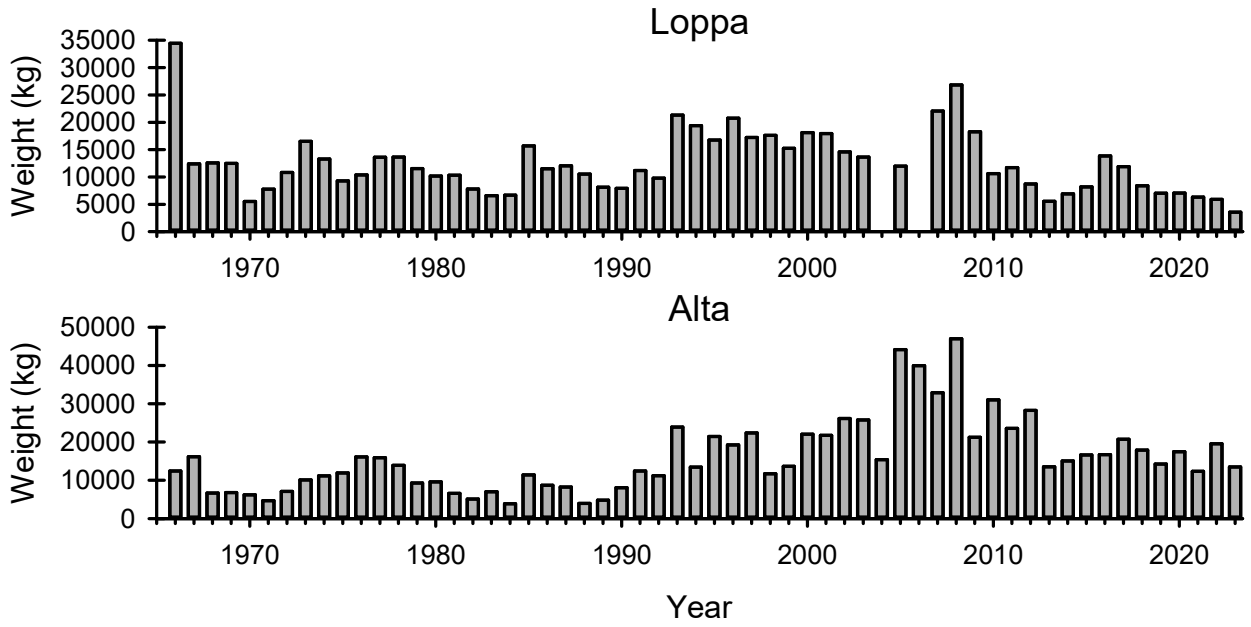


Figure 33. Long-term salmon catches at sea in the municipalities of Alta salmon district. Source; SSB (Norway).

Salmon catches have had clear annual variations between high and low occurrence of salmon. Figures 33-36 are indicating simultaneous catch fluctuations between the municipalities and especially between the municipalities Gamvik, Berlevåg, Tana, Vadsø-Nesseby and Sør-Varanger.

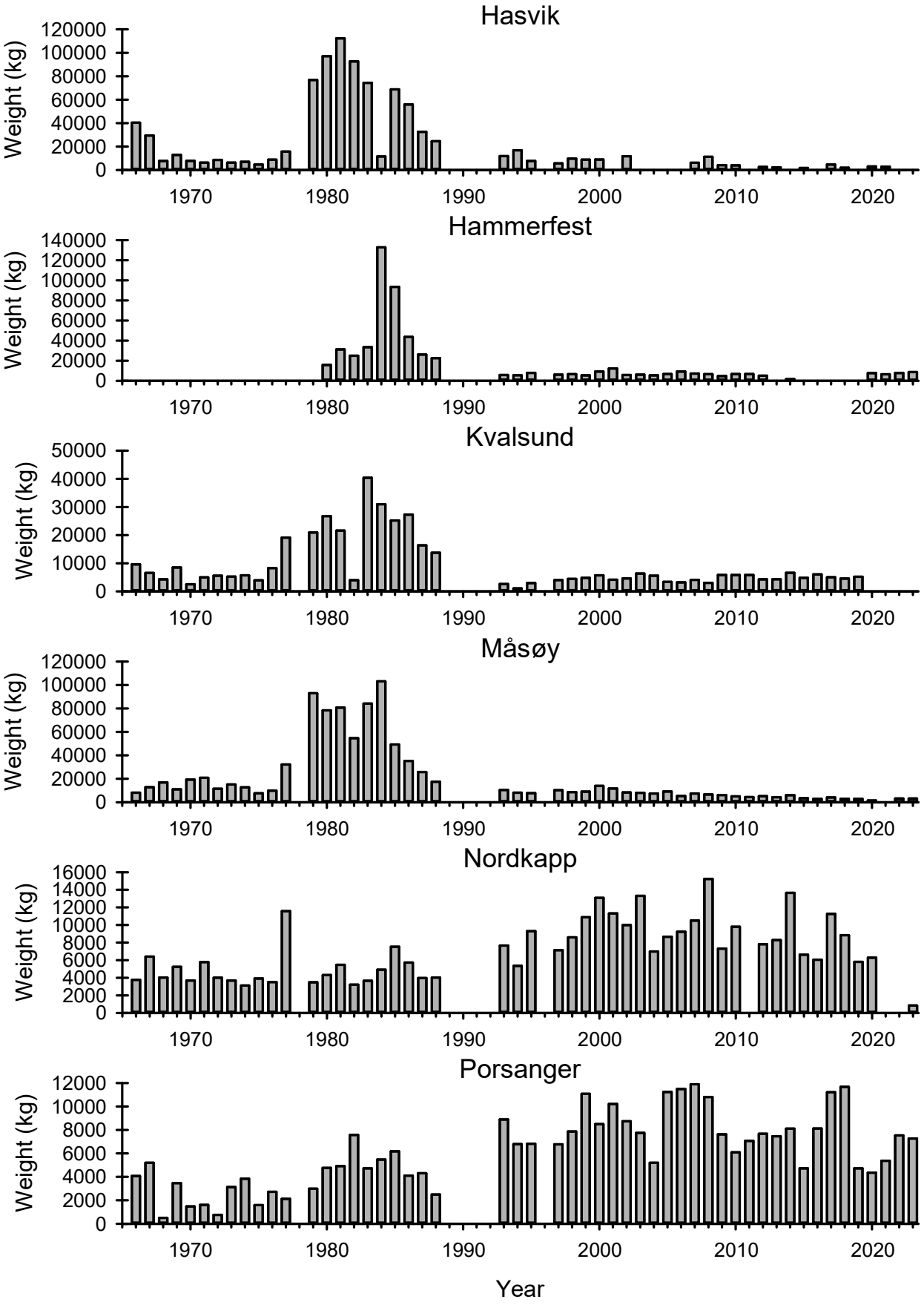


Figure 34. Long-term salmon catches at sea in the municipalities of Hammerfest salmon district. Source; SSB (Norway).

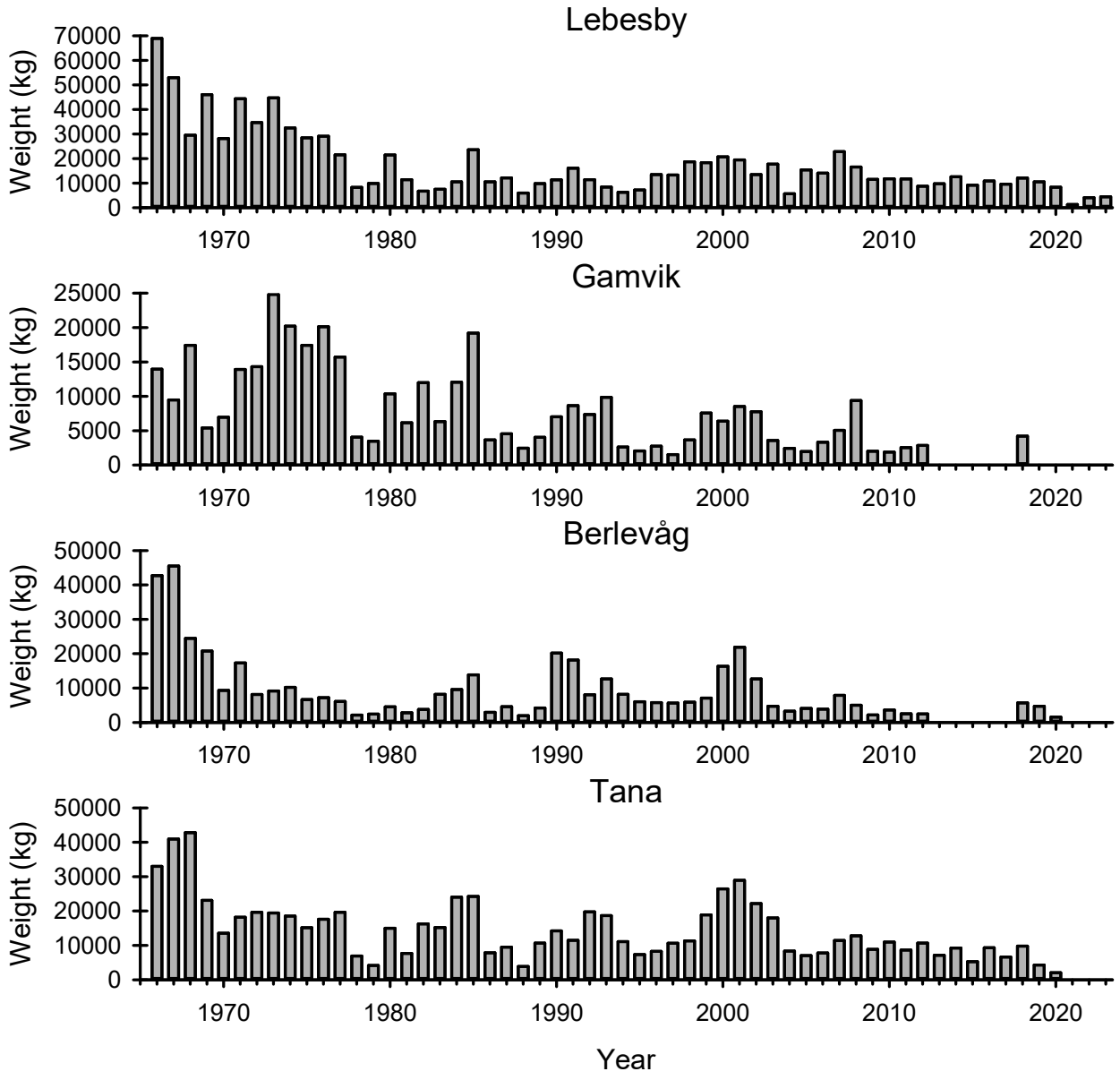


Figure 35. Long-term salmon catches at sea in the municipalities of Tana salmon district. Only in Lebesby municipality area in Laksefjord it was salmon fishing with bag nets in the years 2022-2023. Source; SSB (Norway).

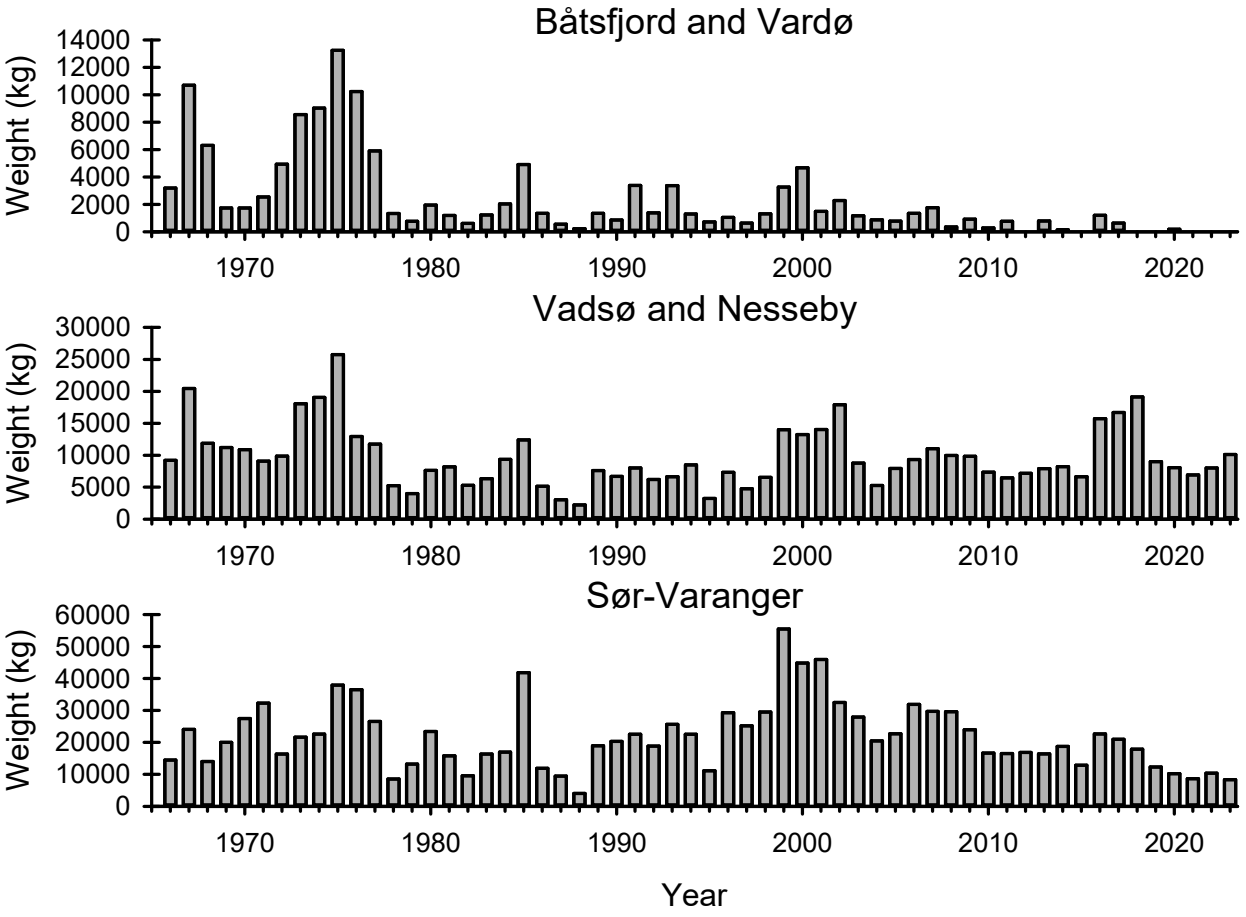


Figure 36. Long-term salmon catches at sea in the municipalities of Varanger salmon district. Source; SSB (Norway).

8. Annual variations in salmon catches in numbers and in kilos between the municipalities since 1993

Salmon catches differ between municipalities in Finnmark like size distributions in the annual catches also does (Figs. 37-40).

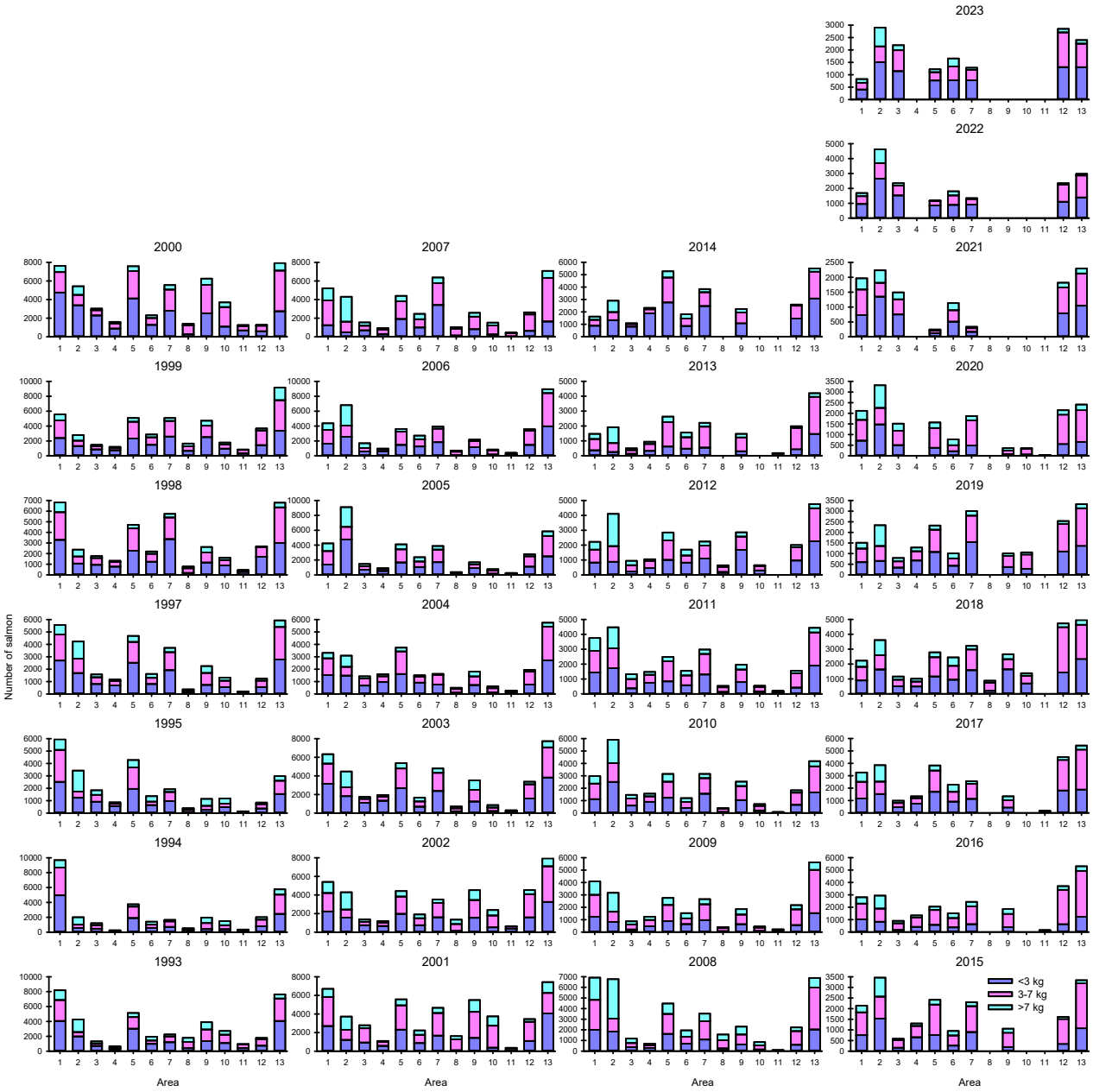


Figure 37. Annual catches in numbers, bag net and bend net catches combined, for municipalities in Finnmark in size groups <3kg, 3-7 kg and >7 kg salmon. The municipalities are Loppa-Hasvik 1, Alta 2, Hammerfest 3, Kvalsund 4, Måsøy-Nordkapp 5, Porsanger 6, Lebesby 7, Gamvik 8, Tana 9, Berlevåg 10, Båtsfjord-Vardø 11, Vadsø-Nesseby 12, Sør-Varanger 13. Source; SSB (Norway). The lack of catch data indicates that there was three or less fishers in the given municipality. In the year 2021 salmon fishery was prohibited in Tana, Gamvik, Berlevåg and partly in Lebesby and in Nordkapp municipalities.

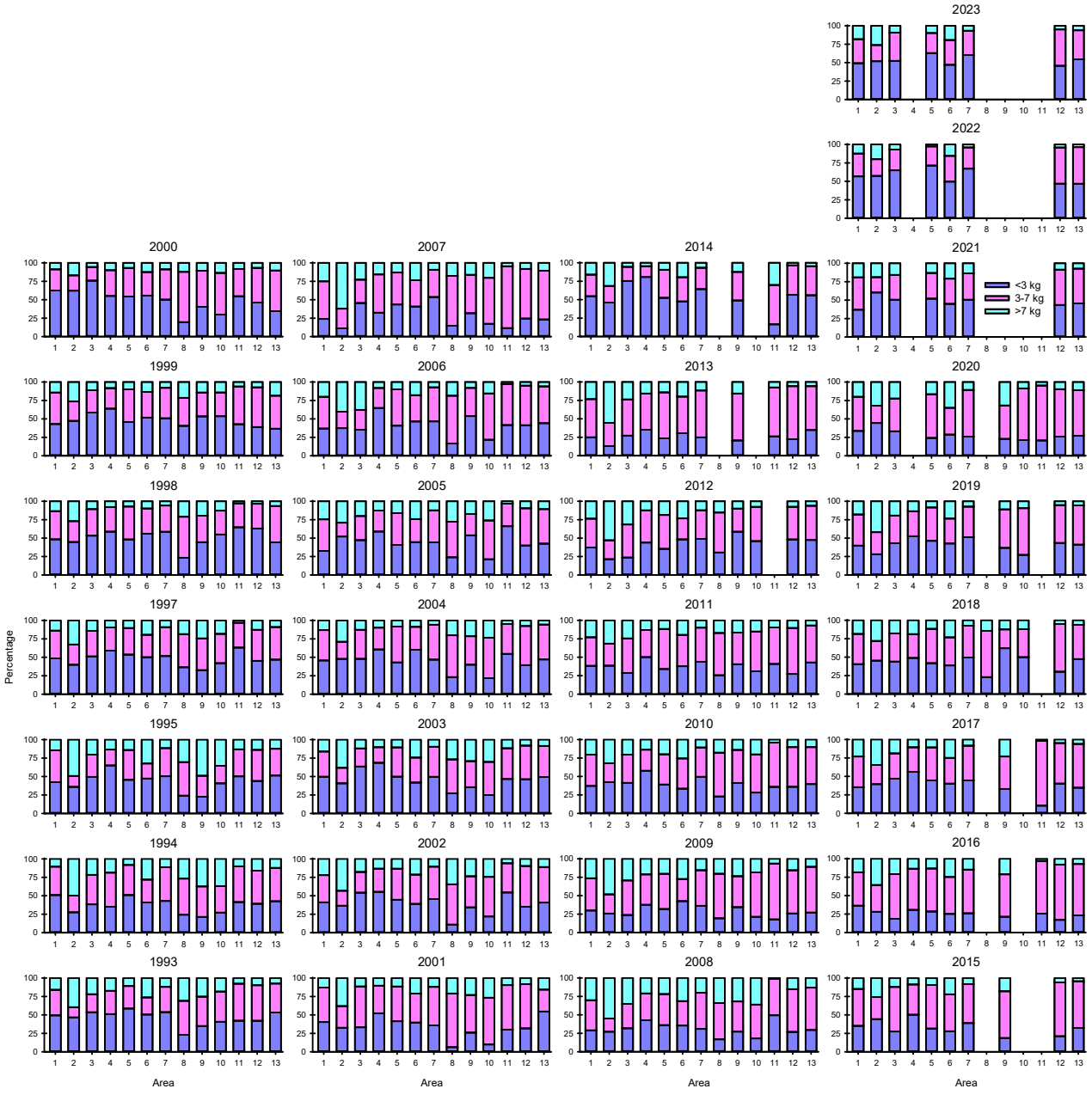


Figure 38. Annual variations in the size distributions of salmon catches (in numbers) for all the municipalities in Finnmark, bag net and bend net catches combined. Source; SSB (Norway). Area numbers are referring to the name of municipalities; See figure 37.

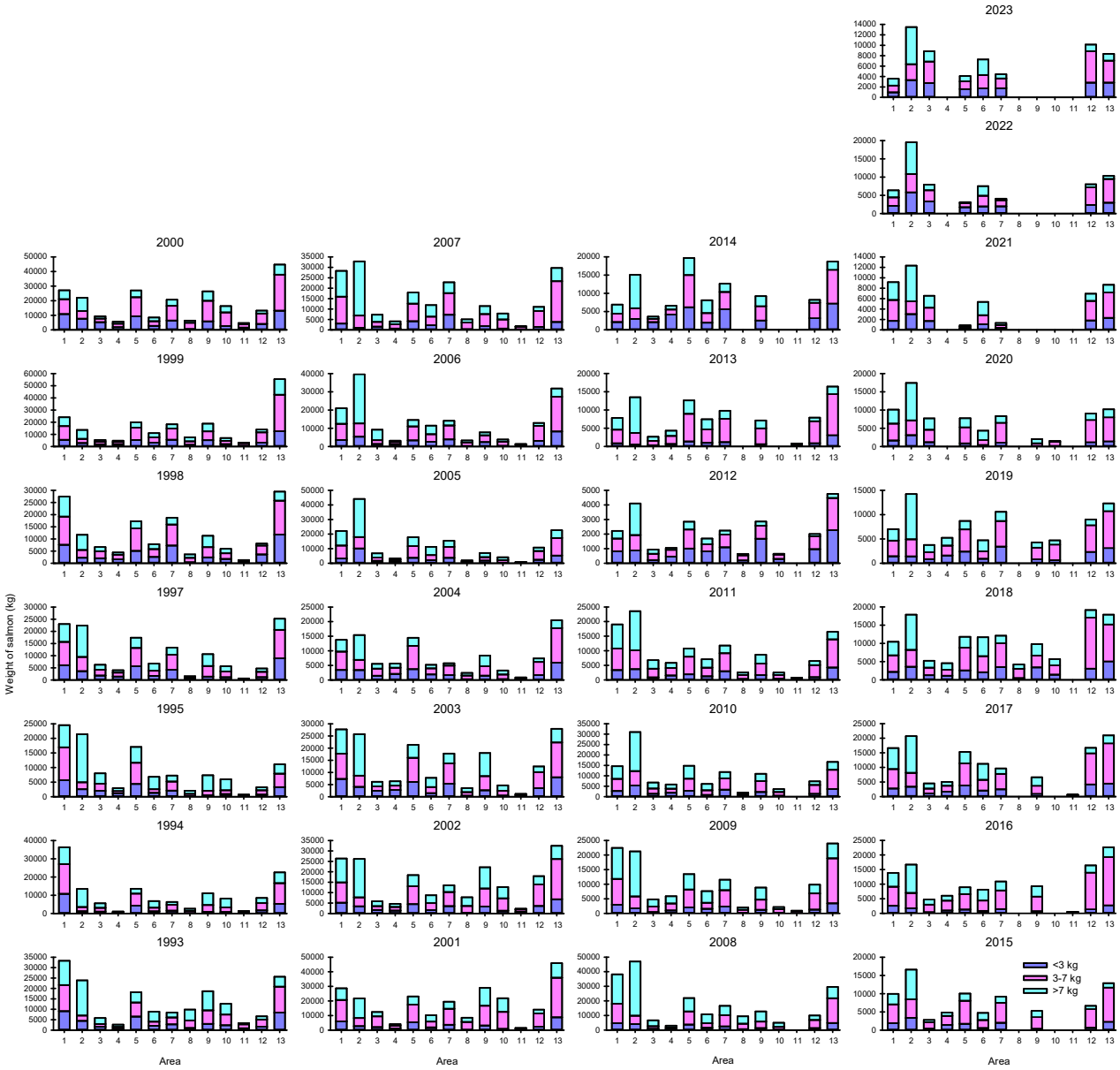


Figure 39. Annual catches in kilos, bagnet and bendnet catches combined, for municipalities in Finnmark in the size groups <3kg, 3-7 kg and >7 kg salmon. Source; SSB (Norway). Area numbers are referring to the name of municipalities; See figure 37.

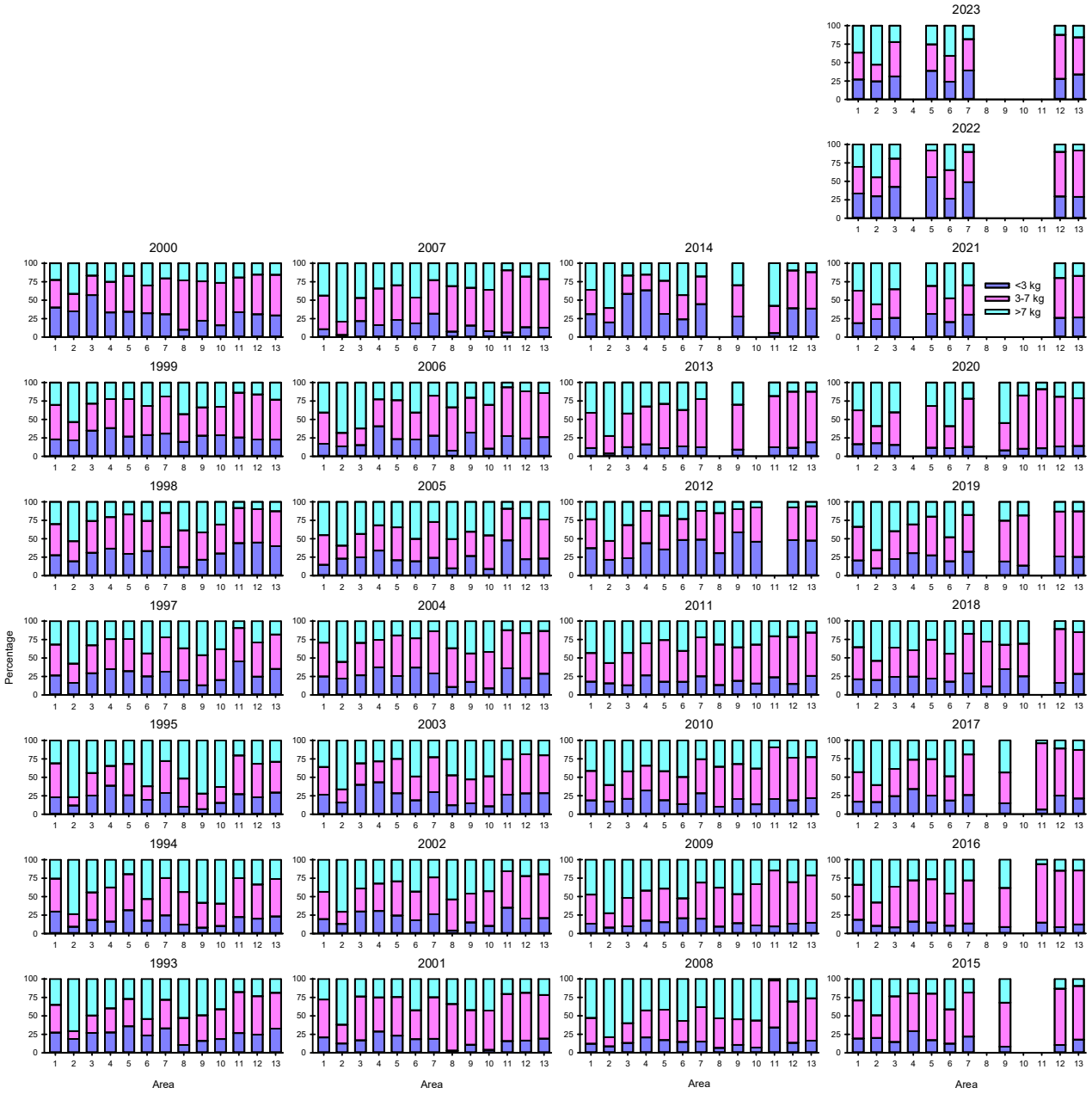


Figure 40. Annual variations in the size distributions of salmon catches in kilos, for the municipalities in Finnmark, bag net and bend net catches combined. Source; SSB (Norway). Area numbers are referring to the name of municipalities; See figure 37.

9. Long-term development in the salmon catches, divided into three size groups for municipalities in Finnmark; bag net and bend net catches combined

In the salmon catches at sea, medium size and large size salmon made up the largest proportions and that is true especially in terms of total weight of fish (Figs. 41 - 44). Salmon catches have clearly declined in most of the municipality areas after the last good salmon stocks in the years 2005-2008.

Photo 3. Local fishermen in Varanger area. Photo: Eero Niemelä.

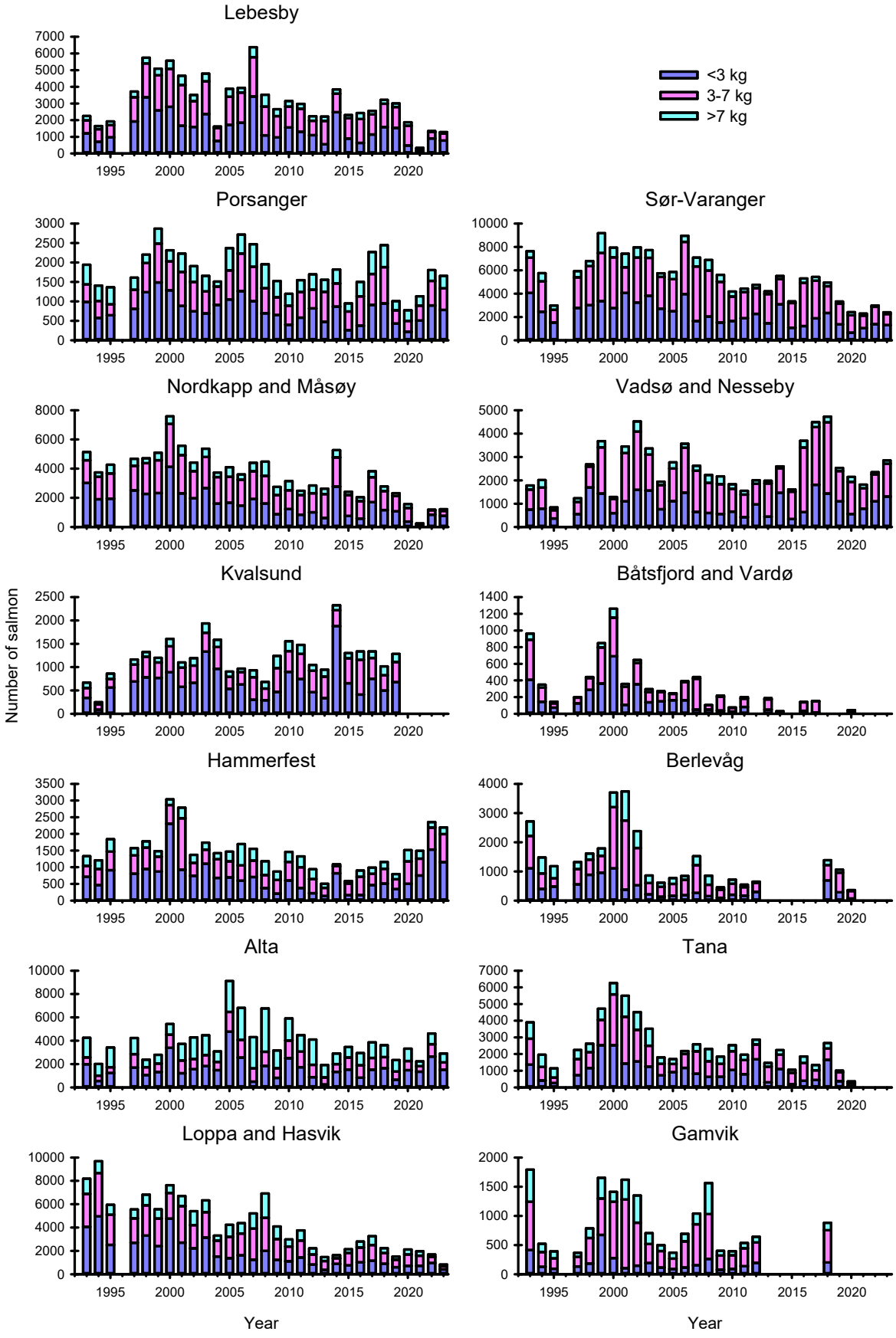


Figure 41. Reported salmon catches (numbers of salmon for three size groups) in combined bag net and bend net fishery in Finnmark's municipalities after catch reporting has been improved in the year 1993. Source; SSB (Norway).

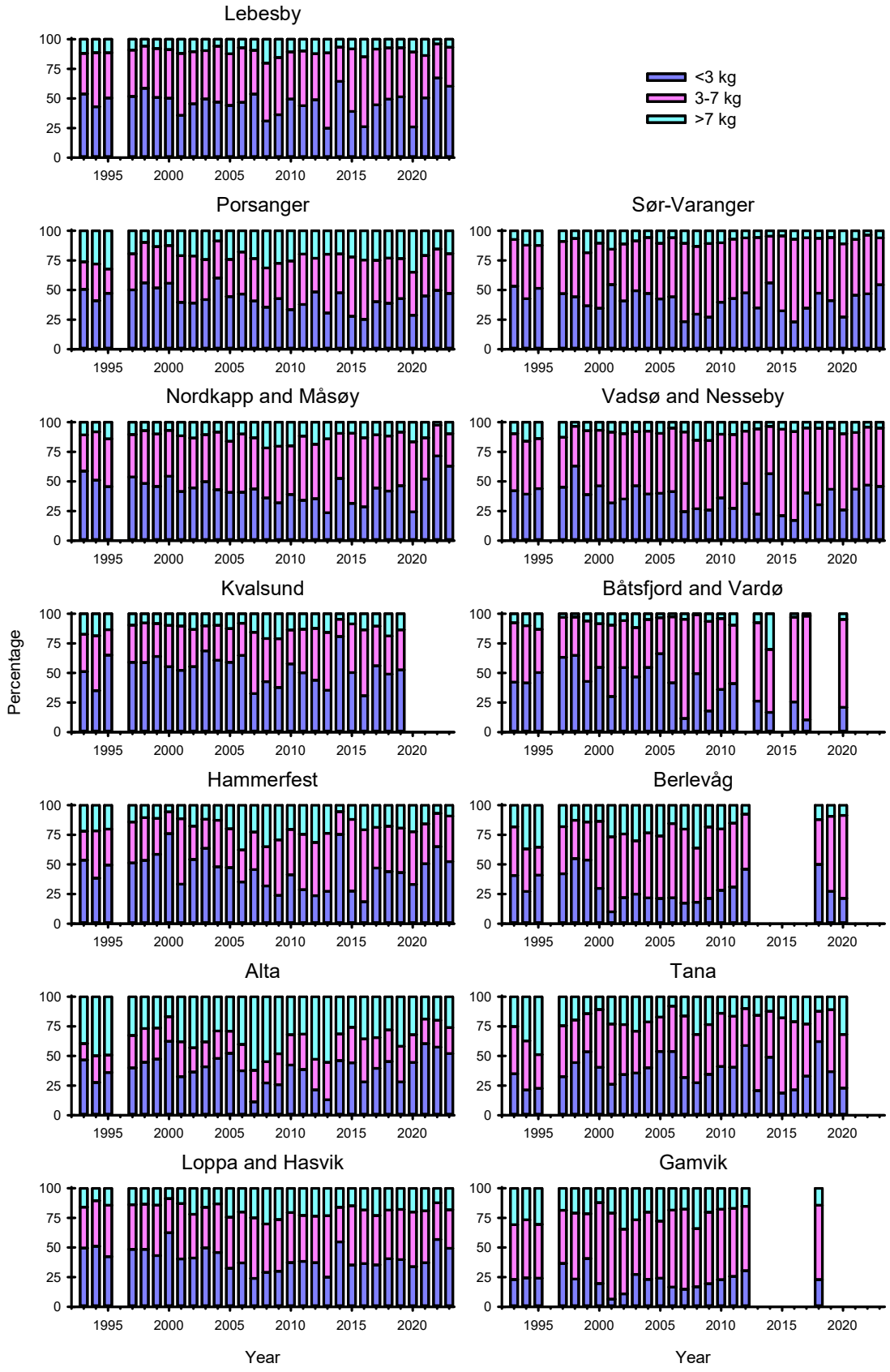


Figure 42. Reported salmon catches (percentages calculated from salmon numbers), combining bag net and bend net fishery in Finnmark's municipalities after the catch reporting was improved in the year 1993. Source; SSB (Norway).

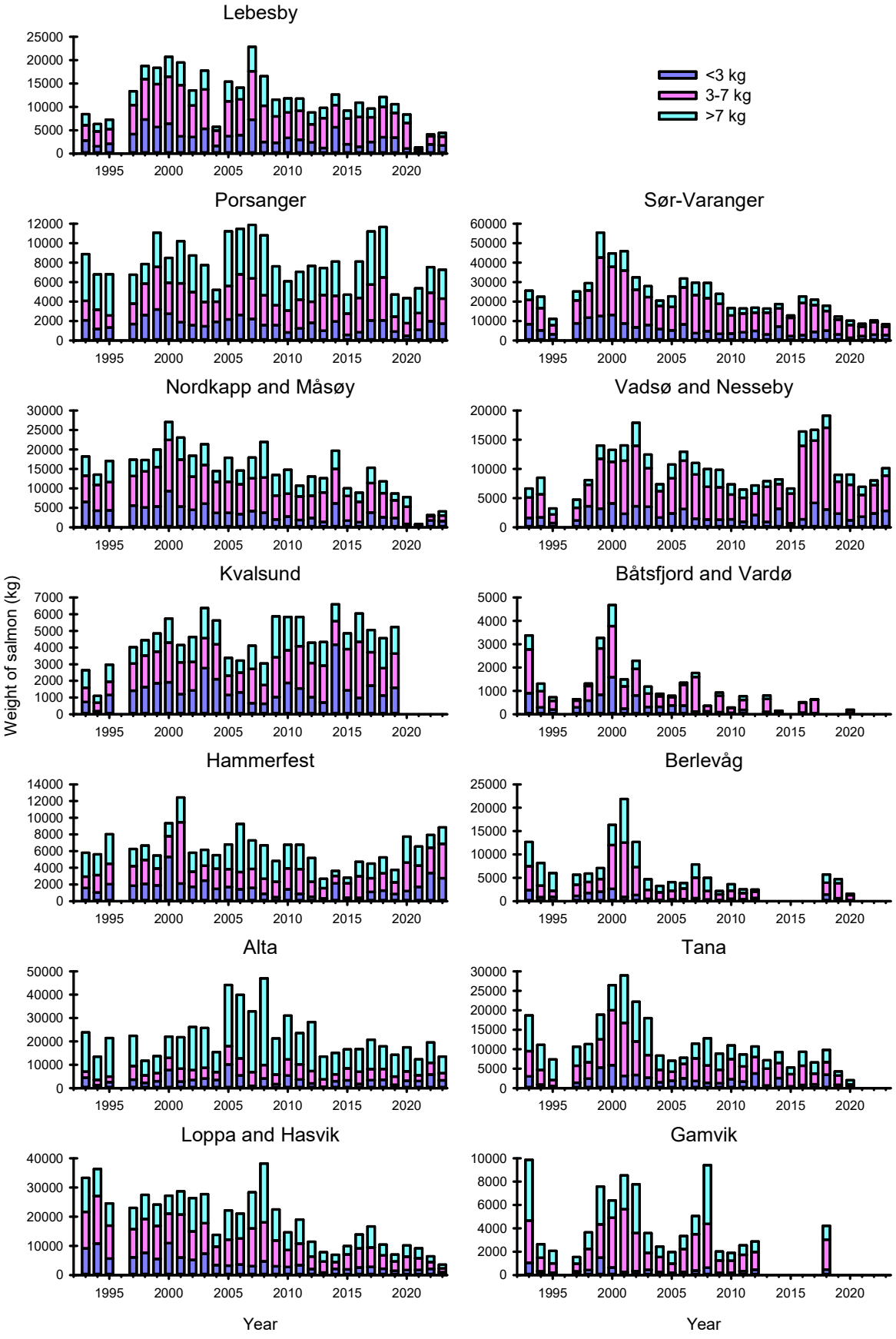


Figure 43. Reported salmon catches (kg of salmon for three size groups), combining bag net and bend net fishery in Finnmark's municipalities after the catch reporting was improved in the year 1993. Source; SSB (Norway).

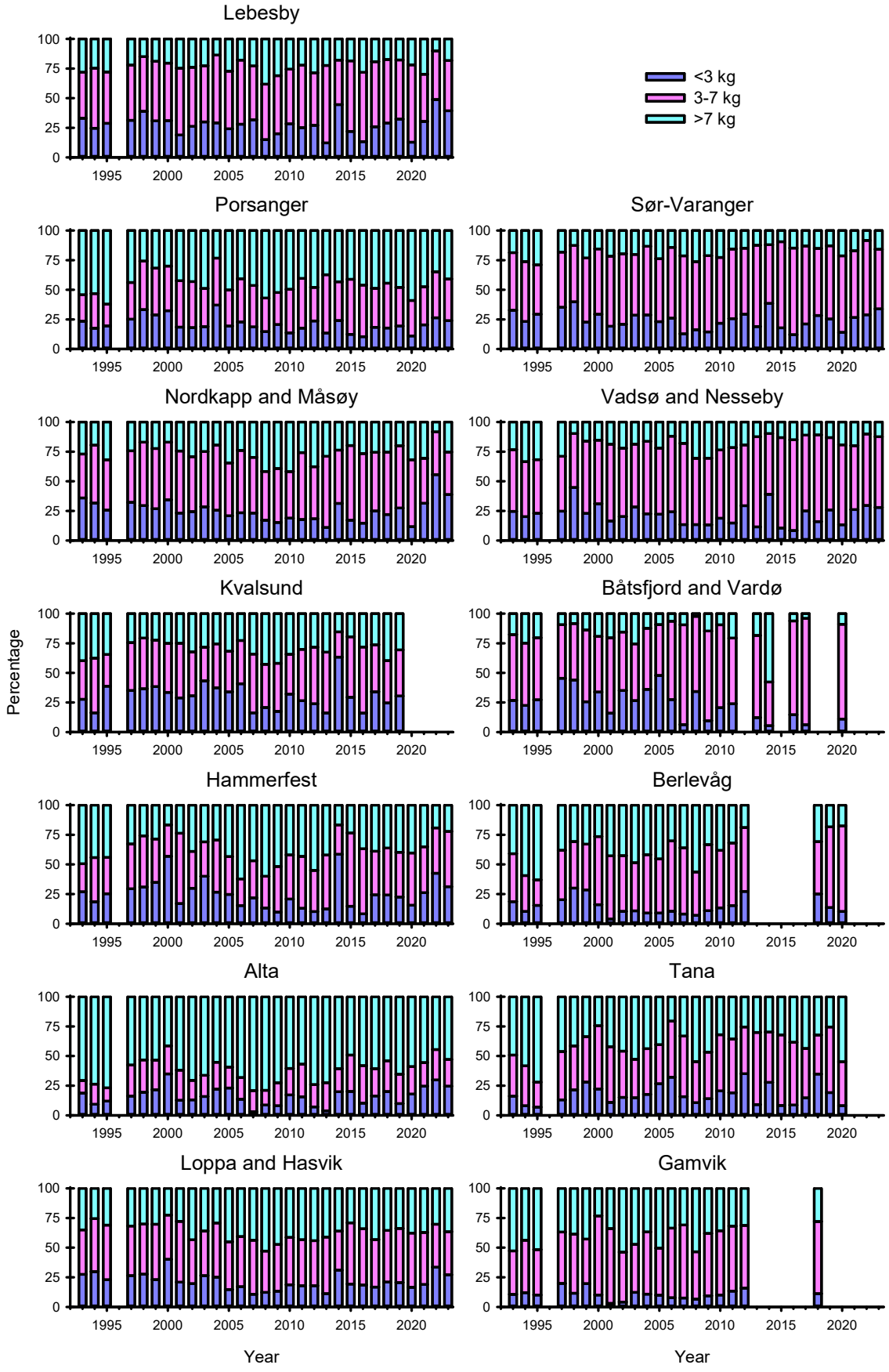


Figure 44. Reported salmon catches (percentages calculated from salmon weight) in combined bag net and bend net fishery in Finnmark's municipalities after the catch reporting was improved in the year 1993. Source; SSB (Norway).

10. Long-term development in the salmon bag net catches divided into three size groups for municipalities in Finnmark

Salmon catches caught with bag nets increased significantly in most of the municipalities in Finnmark after the prohibition of bend net in fishing in the year 2022. Catches increased clearly in the municipalities Loppa, Alta, Måsøy, Hammerfest, Porsanger, Vadsø, Nesseby and Sør-Varanger. It was expected that the prohibition could result in the changes in the proportions of the salmon size groups but that was not observed in municipalities (Figs. 45-48).

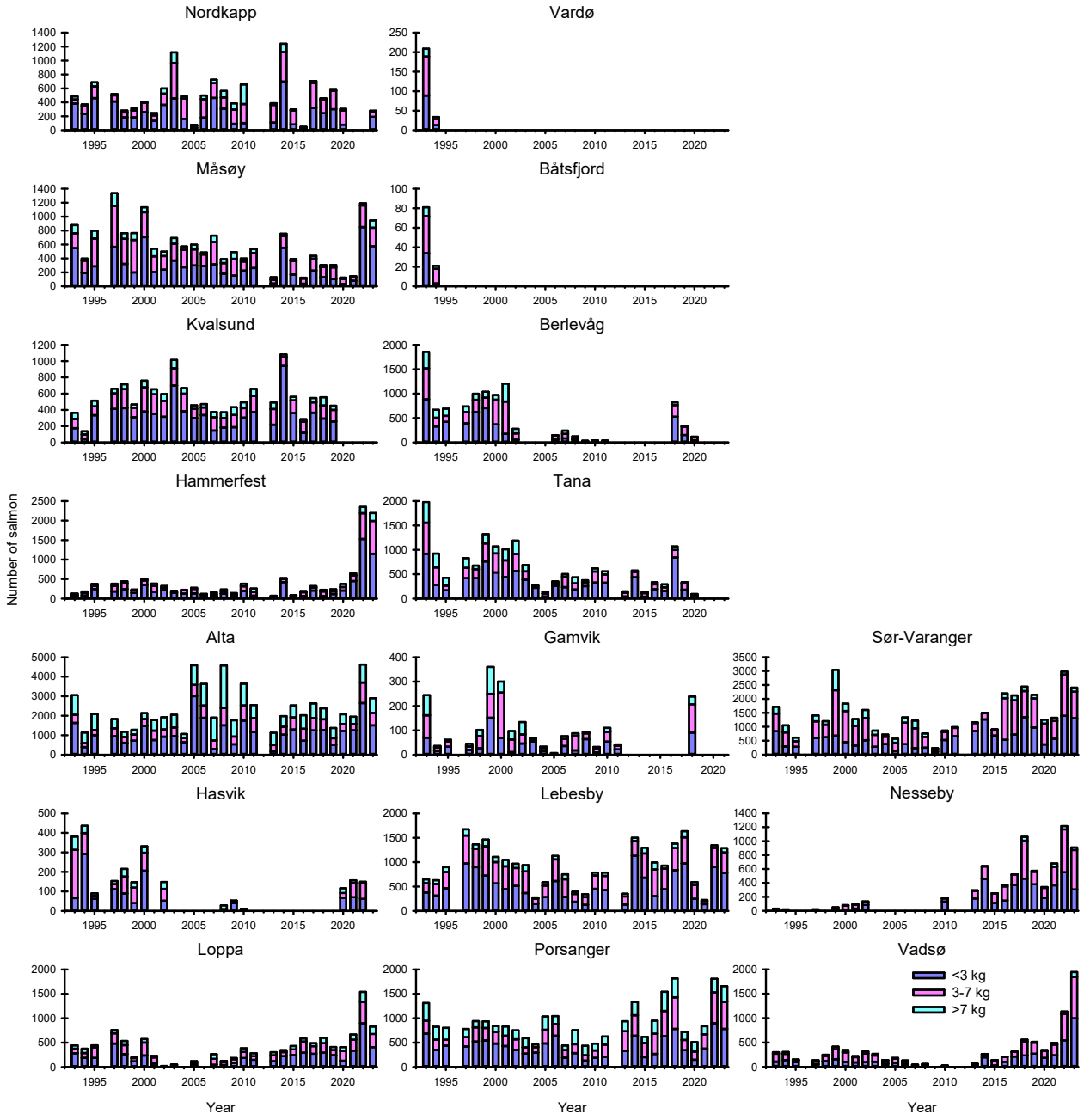


Figure 45. Reported salmon catches (numbers of salmon for three size groups) in bag net fishery in Finnmark's municipalities. Source; SSB (Norway).

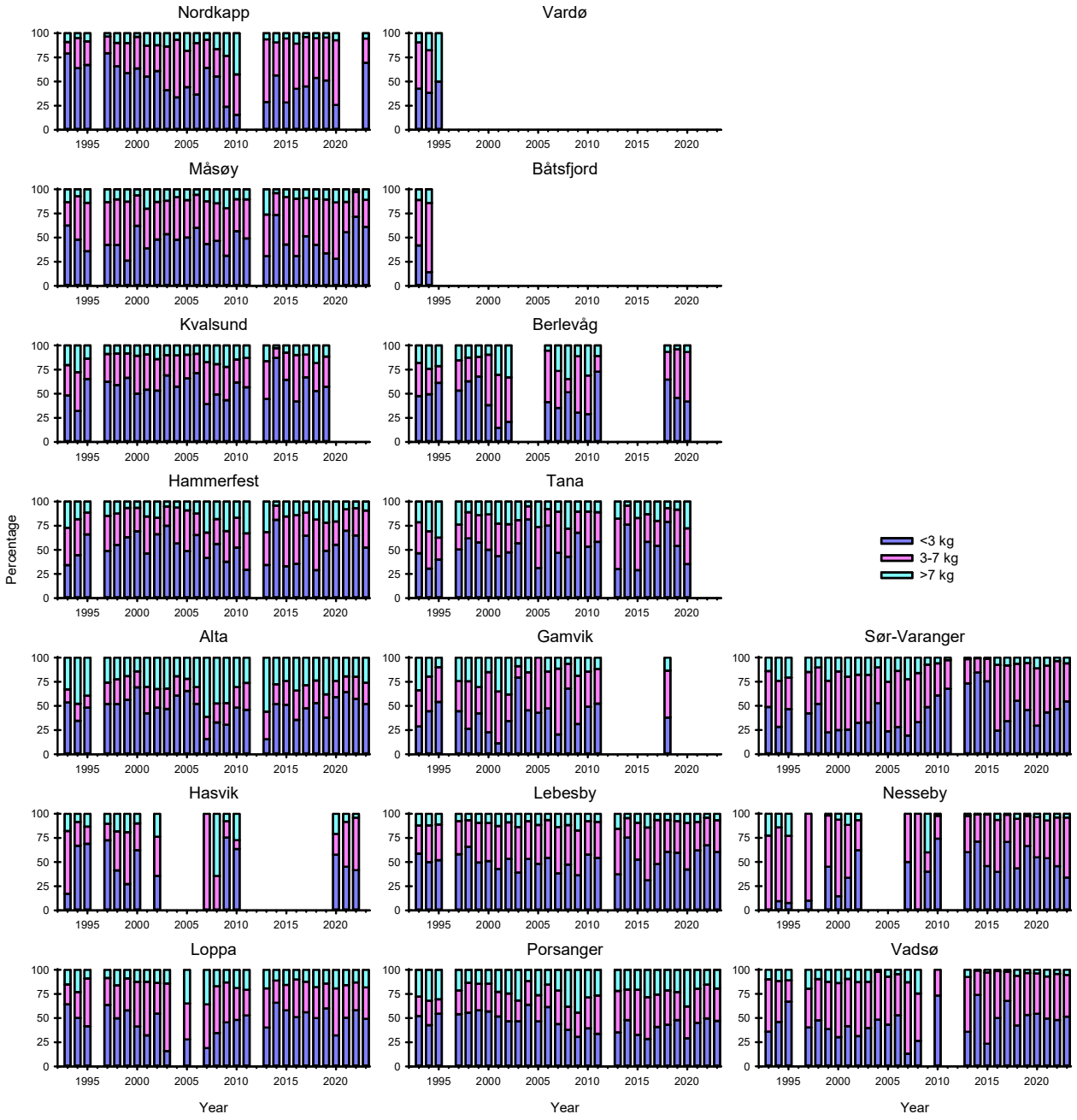


Figure 46. Reported salmon catches (percentages from the numbers) in bag net fishery in Finnmark's municipalities. Source; SSB (Norway).

Figure 47. Reported salmon catches (kg for three size groups) in bag net in Finnmark's municipalities. Source; SSB (Norway).

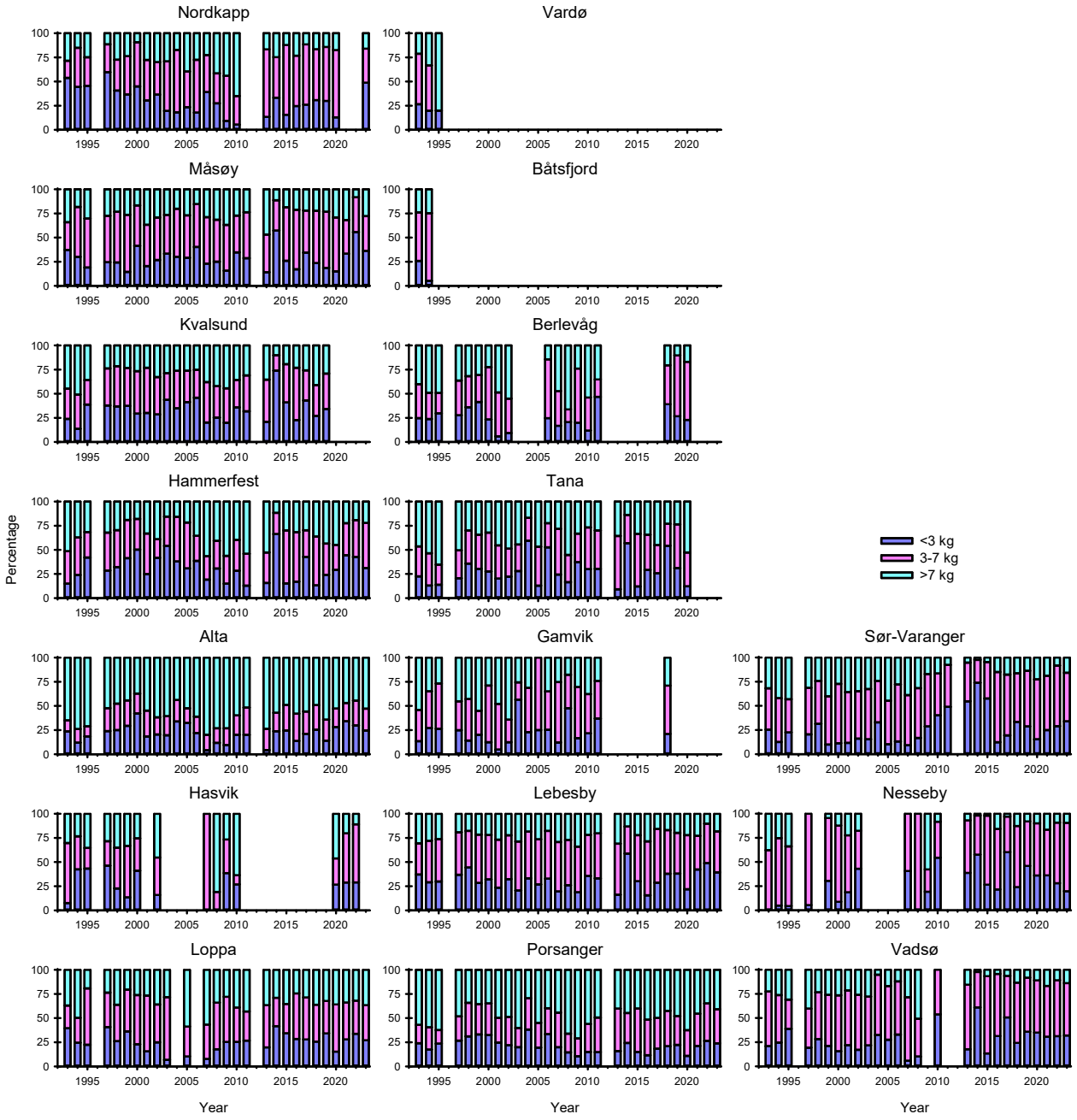


Figure 48. Reported salmon catches (percentages of salmon from the kg) in bag net fishery in Finnmark's municipalities. Source; SSB (Norway).

11. Long-term development in the salmon bend net catches divided into three size groups for municipalities in Finnmark

Figure 49. Reported salmon catches (numbers of salmon for three size groups) in bend net fishery in Finnmark's municipalities. Source; SSB (Norway).

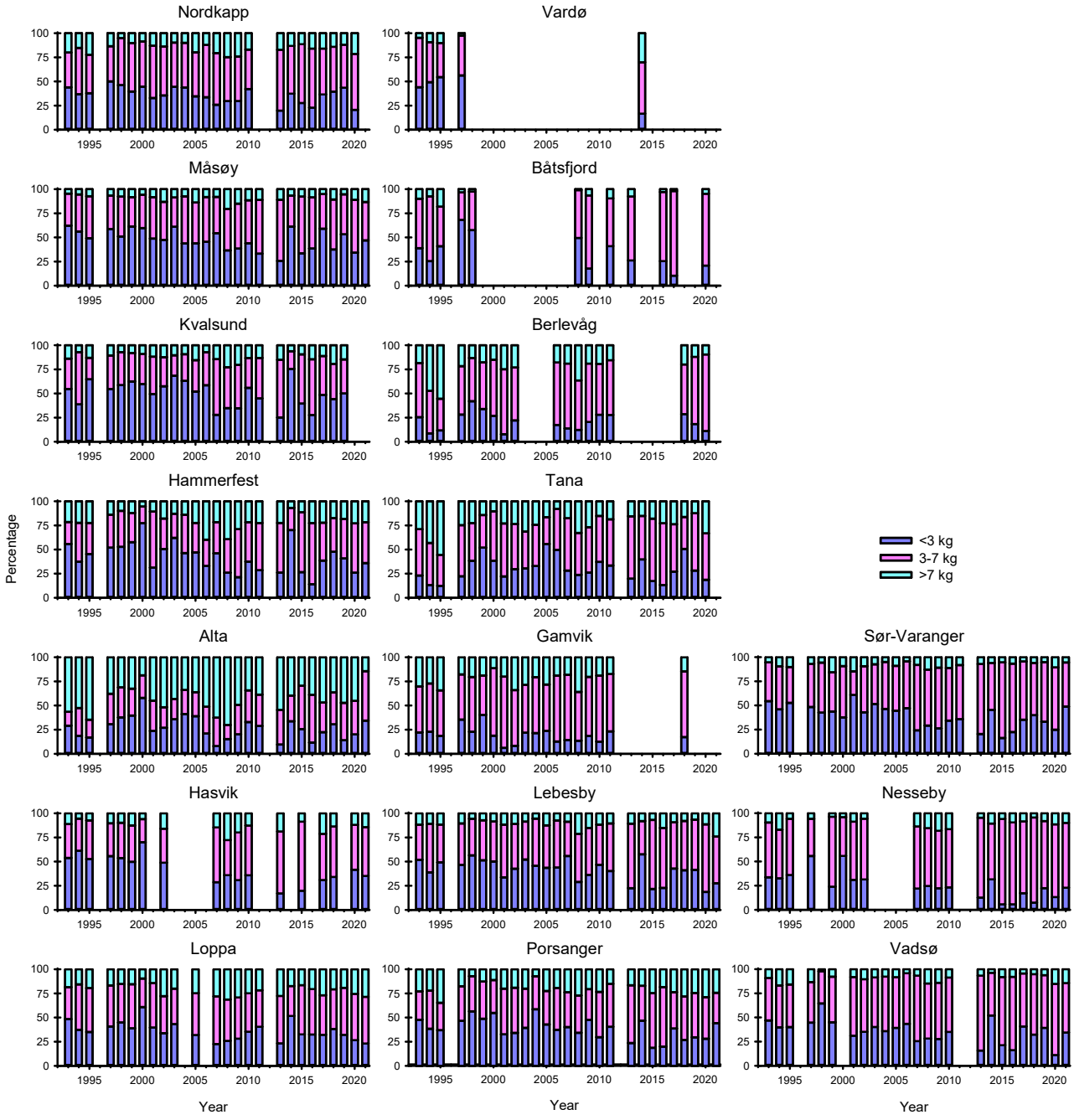


Figure 50. Reported salmon catches (percentages of salmon from the numbers) in bend net fishery in Finnmark's municipalities. Source; SSB (Norway).

Figure 51. Reported salmon catches (kg of salmon for three size groups) in bend net fishery in Finnmark's municipalities. Source; SSB (Norway).

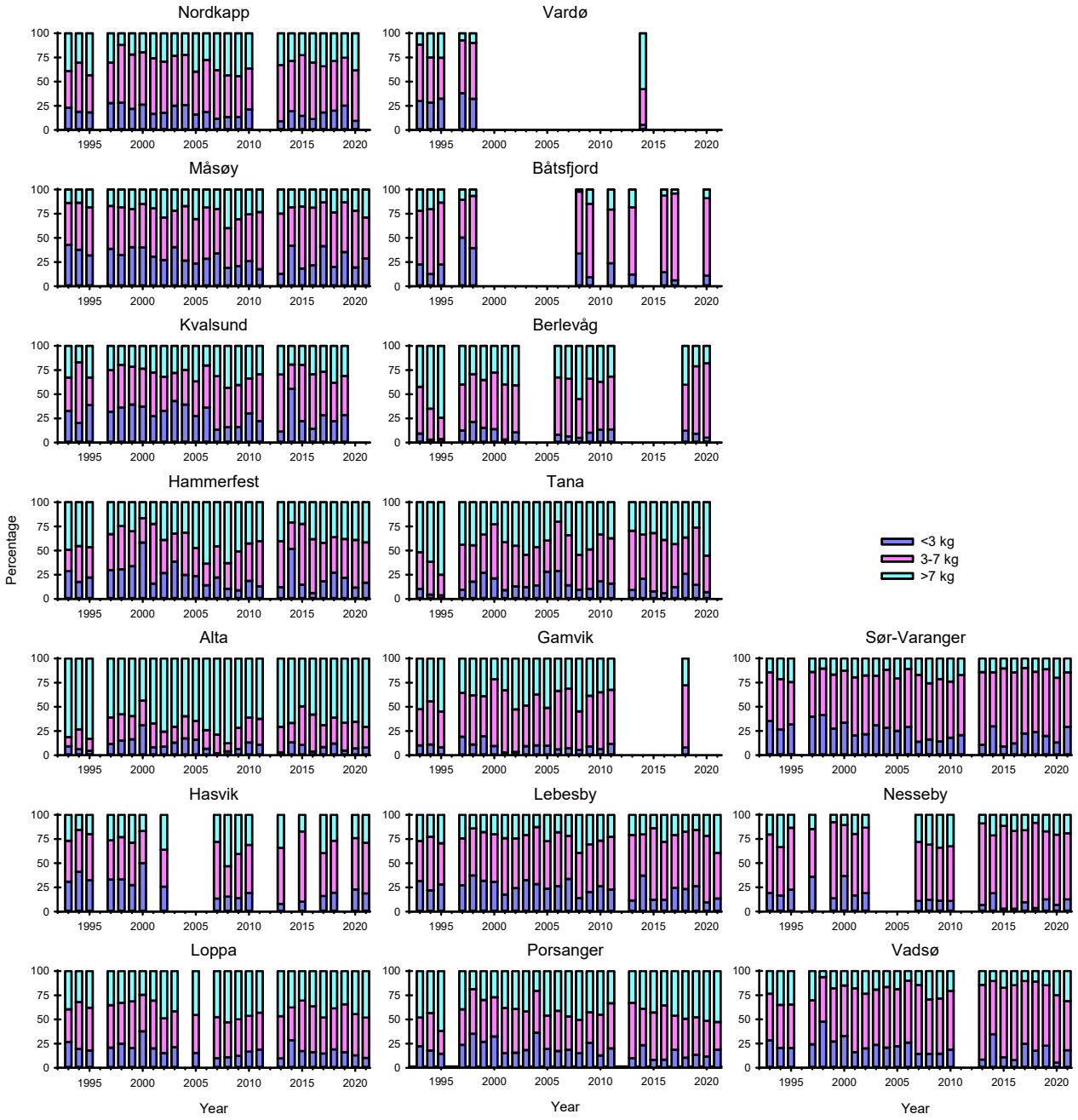


Figure 52. Reported salmon catches (percentages of salmon from kg) in bend net fishery in Finnmark's municipalities. Source; SSB (Norway).

12. Annual mean weights of salmon (<3kg, 3-7kg, >7kg) in bag net and bend net catches in Finnmark salmon districts

The mesh size (distance from knot to knot) of the bend nets is usually 64-75 mm while the mesh size of bag nets is between 58-62 mm. Minimum mesh size in fishery for anadromous fish is 58 mm in both fishing gears. Bend net is a fishing gear where salmon is caught in a capturing net. In bag nets, medium size and large size salmon usually stays alive in the catching part of the bag. Small size salmon is caught in a capturing net in bend nets. Bend net has been prohibited since 2022.

Some fishermen use bend nets with larger mesh sizes early in the summer in order to obtain large sized salmon. Later in the summer they use smaller mesh sizes in order to catch smaller salmon. Smaller mesh sized bend nets do not catch large salmon effectively.

Figure 53 indicates that during the last 15-20 years, the mean size of small salmon (<3 kg) has been larger in bend net fishery than in bag net fishery, in all salmon districts. This indicates selective size dependent fishery between the two salmon fishing methods. The mean sizes of larger salmon are approx. the same over the years in bag net and bend net fisheries in all salmon districts.

Annual variations are obvious in the mean sizes for small, medium and large size salmon in both fishing methods. These annual variations in the sizes are depending on the environmental factors like sea temperatures and amount of food at sea (Figs. 53 and 54).

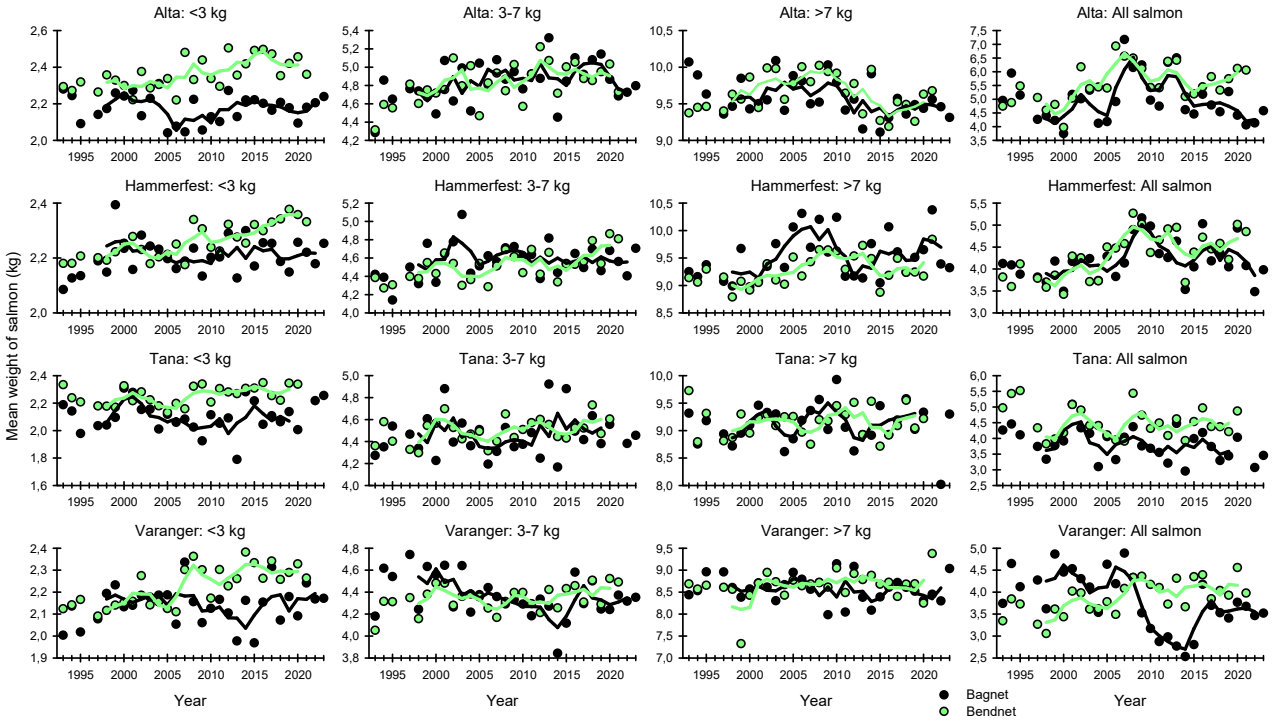


Figure 53. Variations in the long-term annual mean weights of small, medium and large salmon caught in bag net and bend net fisheries in four salmon districts in Finnmark: only bag net in the years 2022-2023. Source; SSB.

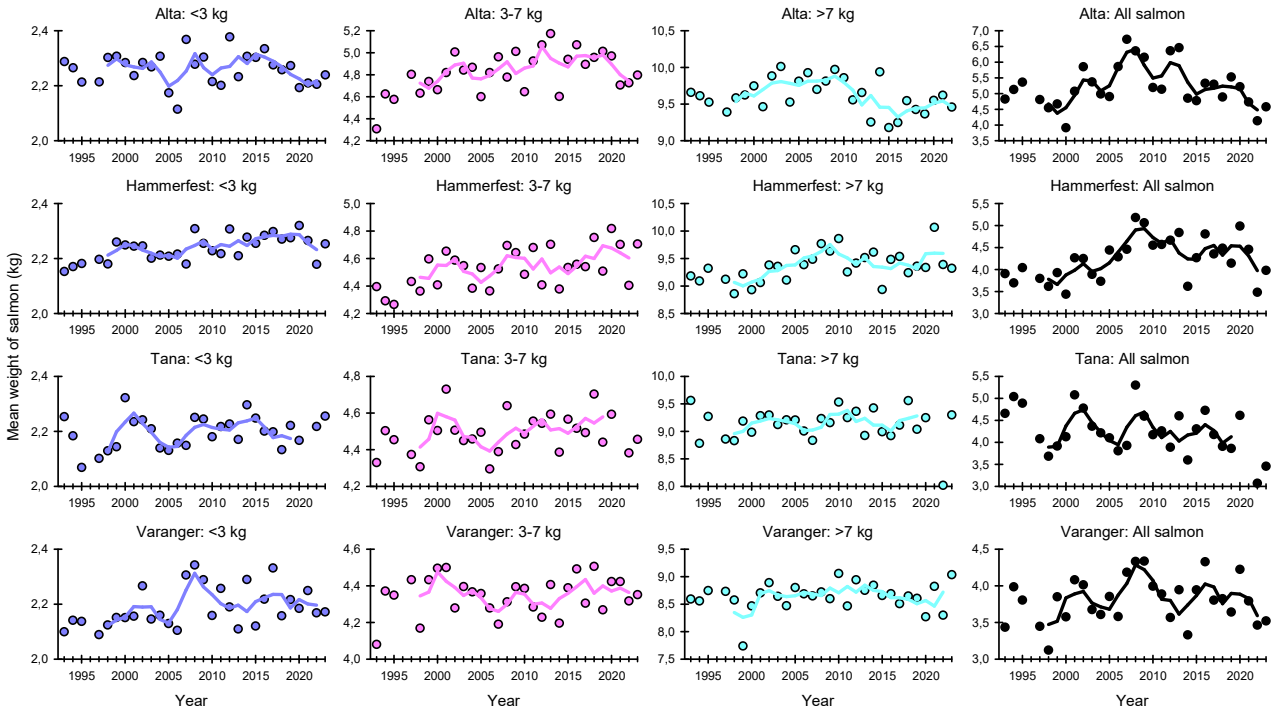


Figure 54. Variations in the long-term annual mean weights of small, medium and large salmon caught in four salmon districts in Finnmark (bag net and bend net catches combined; only bag net in the years 2022-2023). Source; SSB.

Photo 4. Single bagnet. Photo: Eero Niemelä.

13. Weekly mean weights of salmon in bag net and bend net catches in Alta salmon district

Mean weights of captured salmon are varying during the summer in both fishing methods. Very early in the summer at least in some years the mean weights are quite small. The reason for that is the fact that early in the summer small size previous spawned salmon are on their way to their home rivers in late May and very early June and they are smaller than first time spawners 3-7 kg and over 7 kg salmon. Mean weights are getting smaller towards the end of fishing season and the reason for that is that quite early in the season the oldest and largest (>7 kg) salmon have their homeward migration followed by medium size (3-7 kg) salmon and finally in the middle of July the smallest (<3 kg) salmon are migrating along the coastal areas (Figs. 55-62). The declining of the mean size of salmon from June to early August is normal phenomenon and depends from the migration time of small, medium and large size salmon.

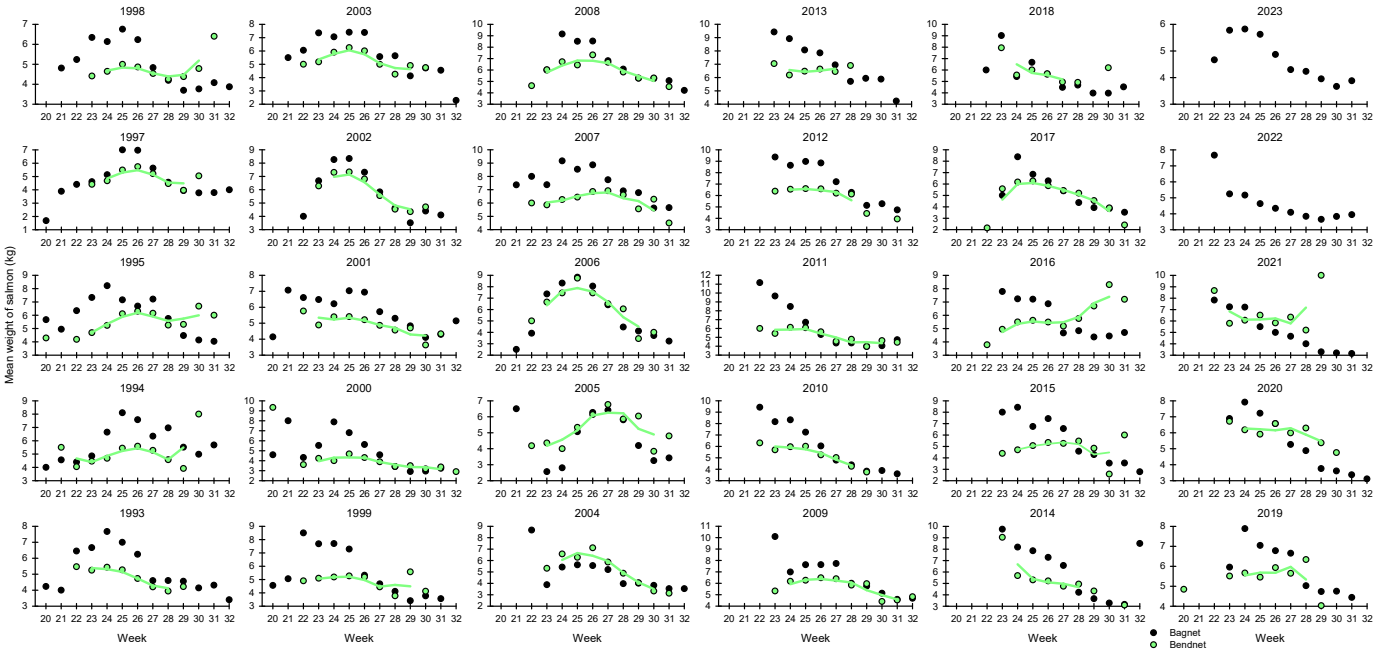


Figure 55. Variations in the weekly mean weights of salmon caught in bag net and bend net fisheries in the years 1993-2021 in Alta salmon district in Finnmark; only bag net in the years 2022-2023. Source; SSB.

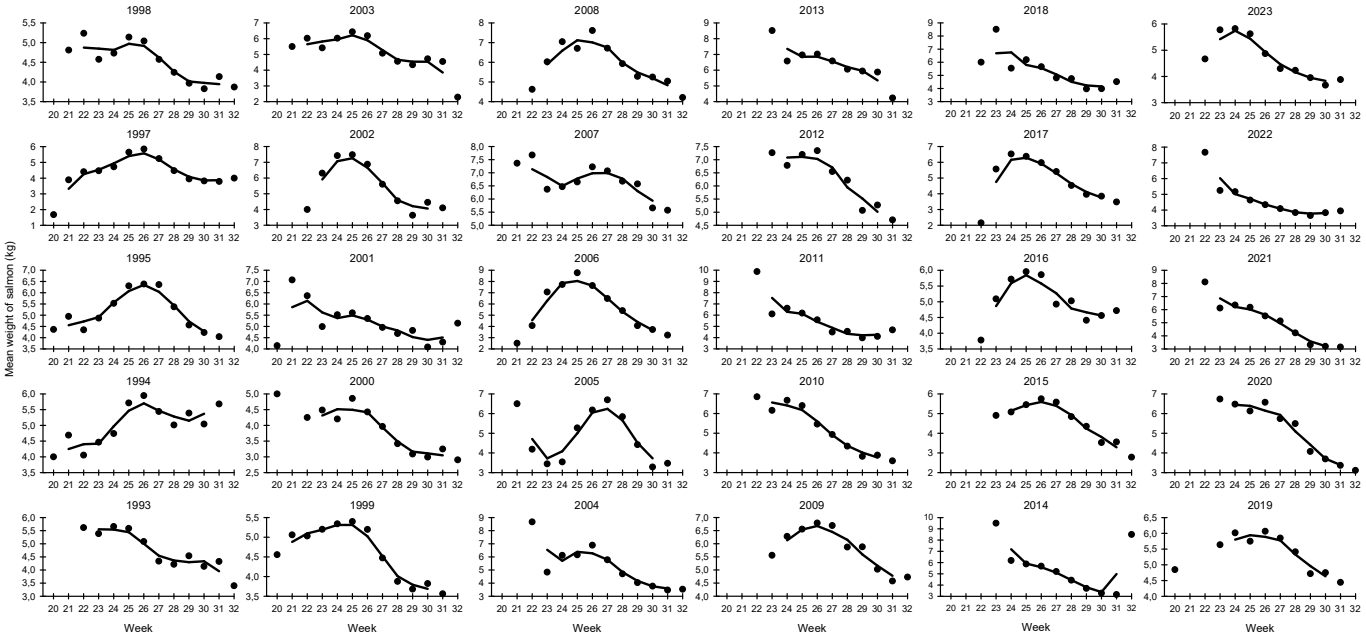


Figure 56. Variations in the weekly mean weights of salmon caught in Alta salmon district in Finnmark (bag net and bend net catches combined in the years 1993-2021; only bag net in the years 2022-2023). Source; SSB.

Photo 5. Scale sampling in CoASal project. Photo: Eero Niemelä.

14. Weekly mean weights of salmon in bag net and bend net catches in Hammerfest salmon district

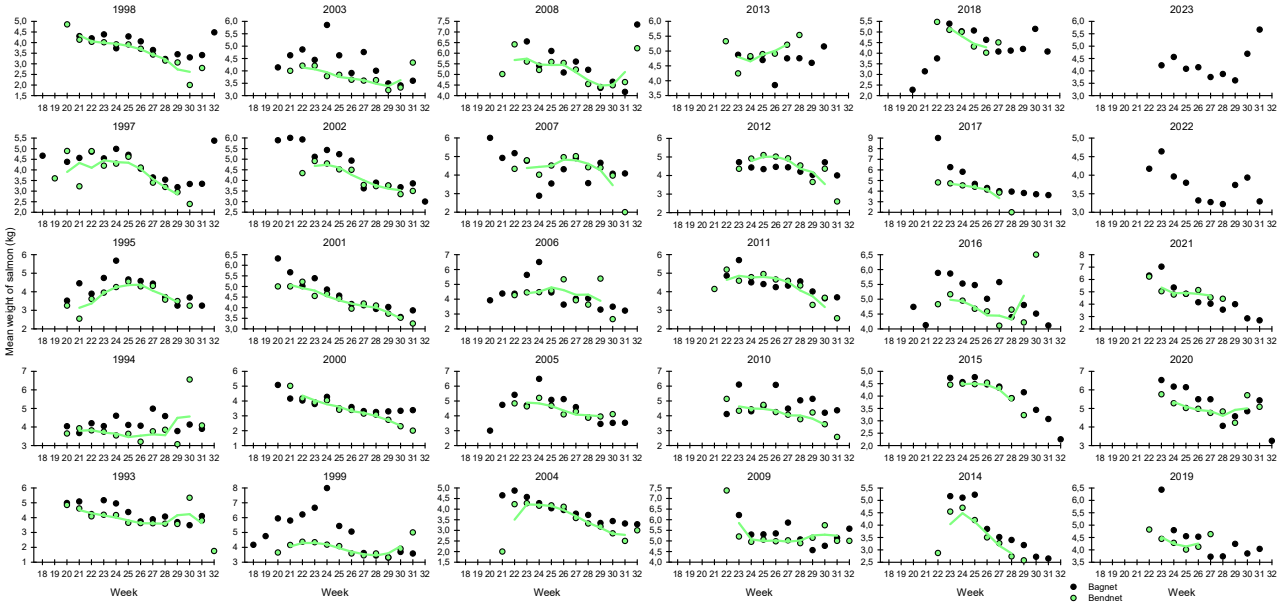


Figure 57. Variations in the weekly mean weights of salmon caught in bag net and bend net fisheries in Hammerfest salmon district in Finnmark; only bag net in the years 2022-2023. Source; SSB.

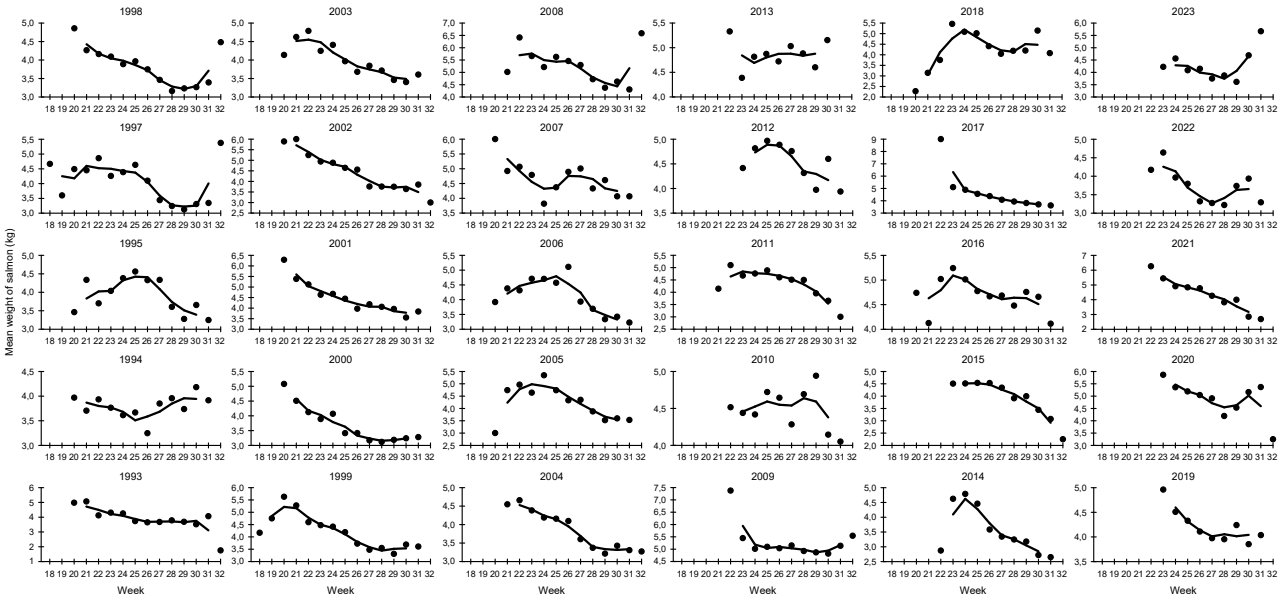


Figure 58. Variations in the weekly mean weights of salmon caught in Hammerfest salmon district in Finnmark (bag net and bend net catches combined; only bag net in the years 2022-2023). Source; SSB

15. Weekly mean weights of salmon in bag net and bend net catches in Tana salmon district

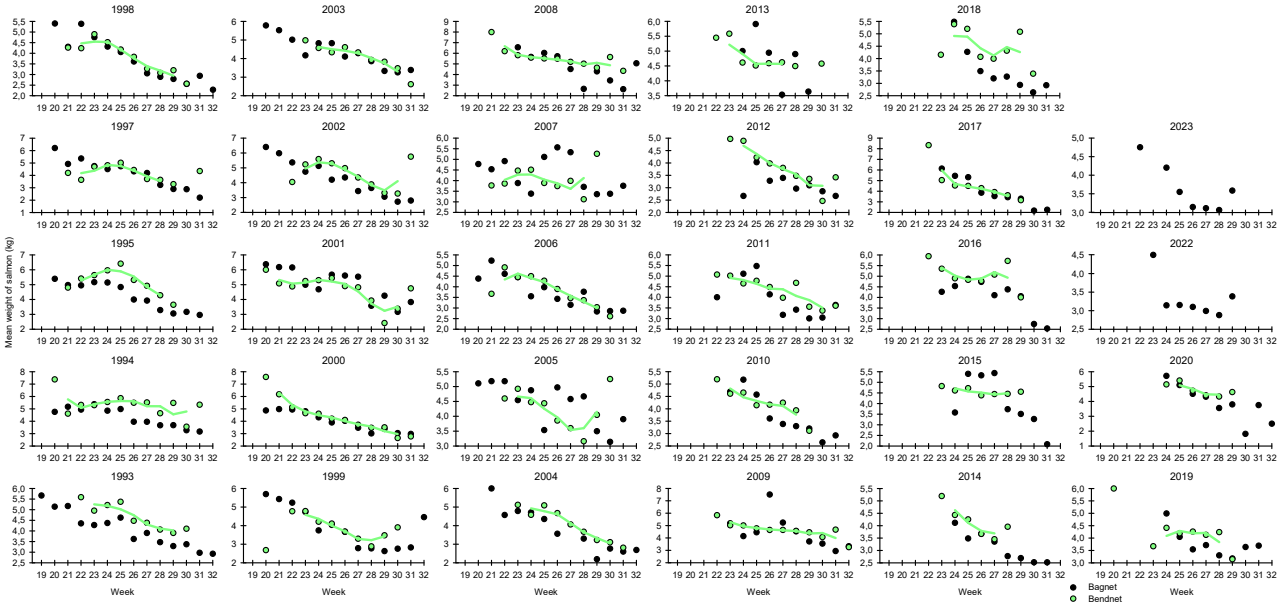


Figure 59. Variations in the weekly mean weights of salmon caught in bag net and bend net fisheries in Tana salmon district in Finnmark; only bag net in the years 2022-2023. Source; SSB.

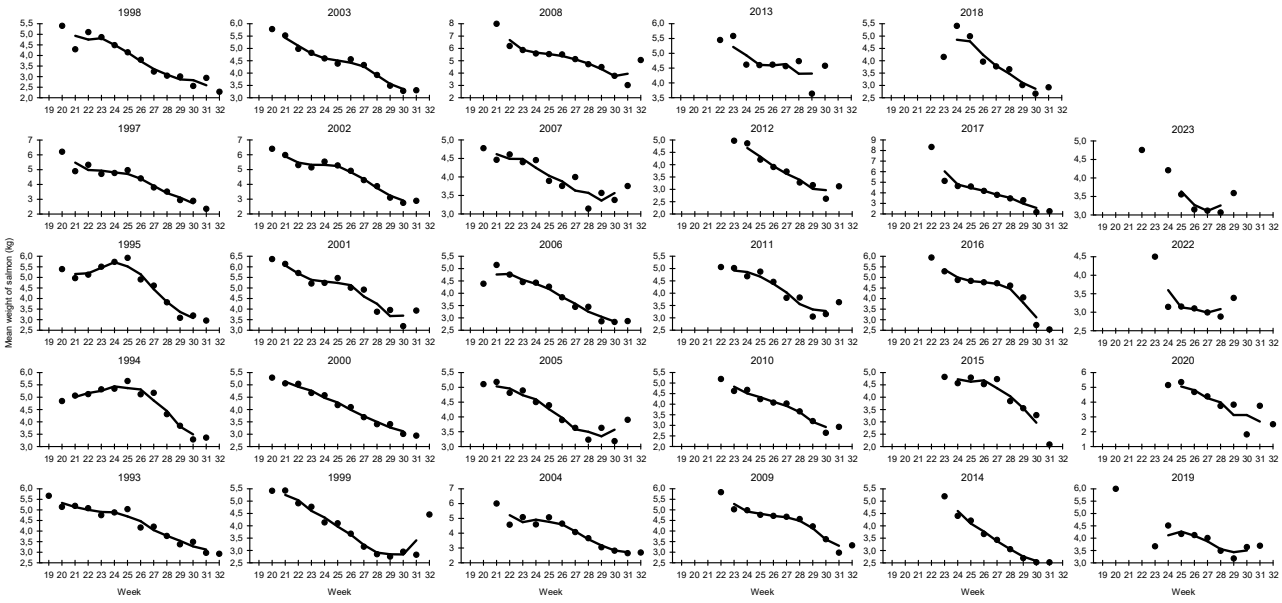


Figure 60. Variations in the weekly mean weights of salmon caught in Tana salmon district in Finnmark (bag net and bend net catches combined; only bag net in the years 2022-2023). Source; SSB.

16. Weekly mean weights of salmon in bag net and bend net catches in Varanger salmon district

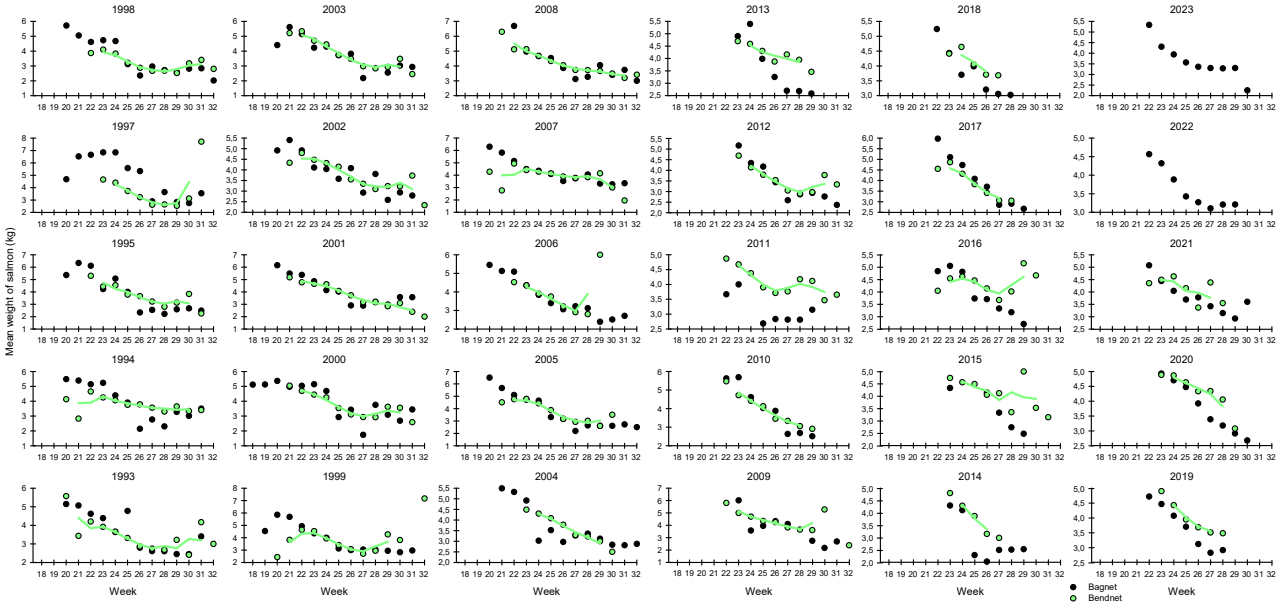


Figure 61. Variations in the weekly mean weights of salmon caught in bag net and bend net fisheries in Varanger salmon district in Finnmark; only bag net in the years 2022-2023. Source; SSB.

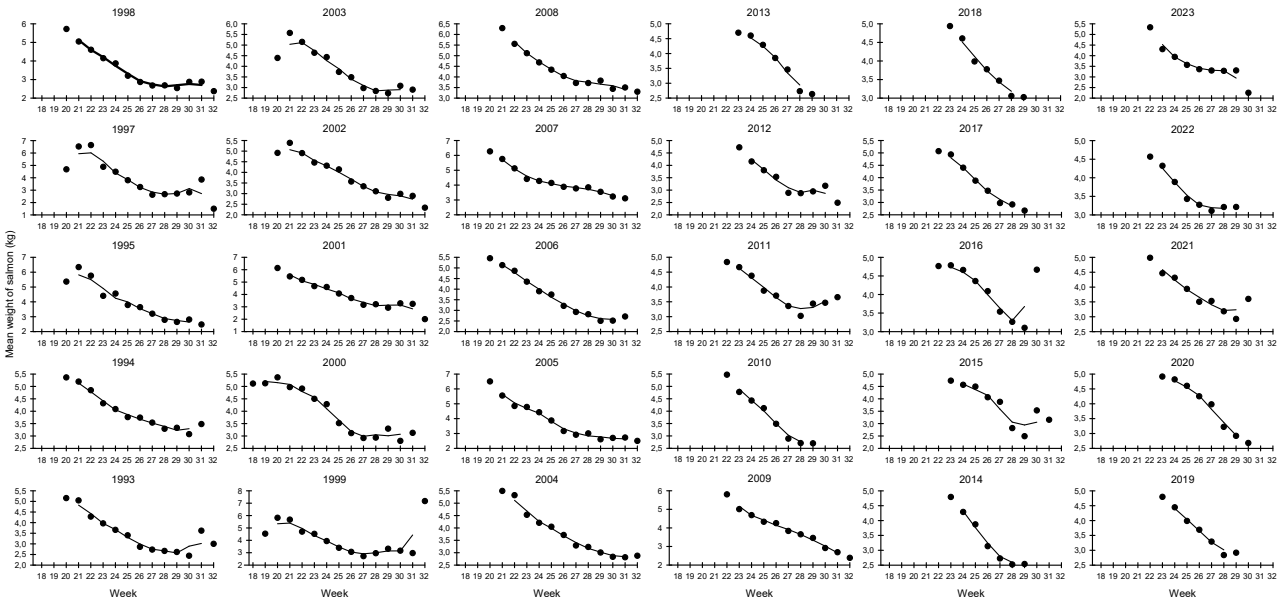


Figure 62. Variations in the weekly mean weights of salmon caught in Varanger salmon district in Finnmark (bag net and bend net catches combined; only bag net in the years 2022-2023). Source; SSB.

17. Long-term variations in the mean weights of salmon in the municipalities in Finnmark

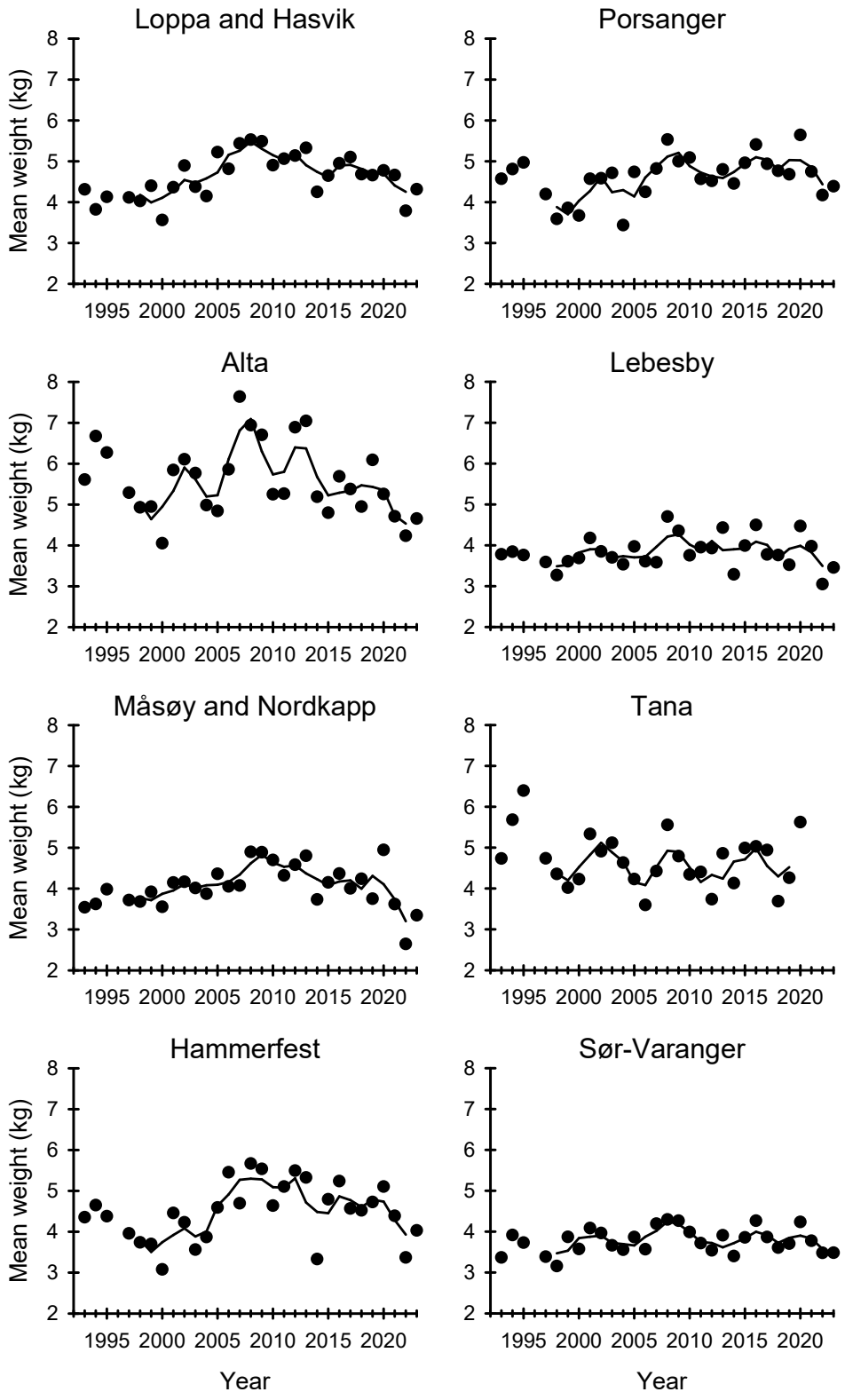
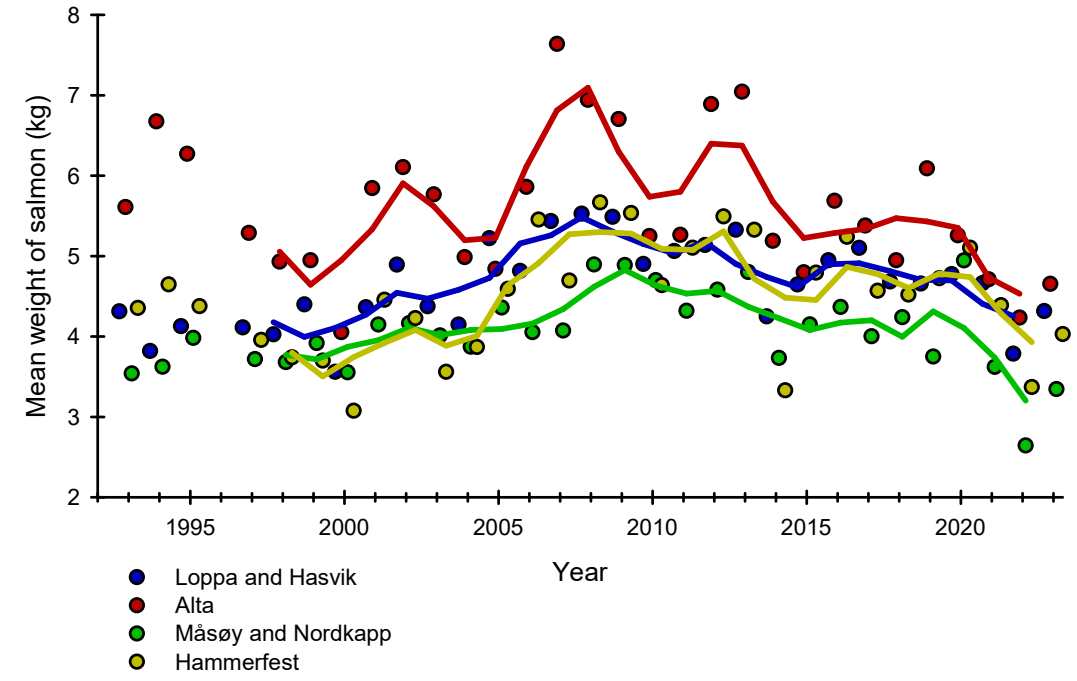


Figure 63. Variations in the long-term annual mean weights of salmon caught in the municipalities in Finnmark in the years 1993-2021 (bag net and bend net catches combined; only bag net in the years 2022-2023). Source; SSB.



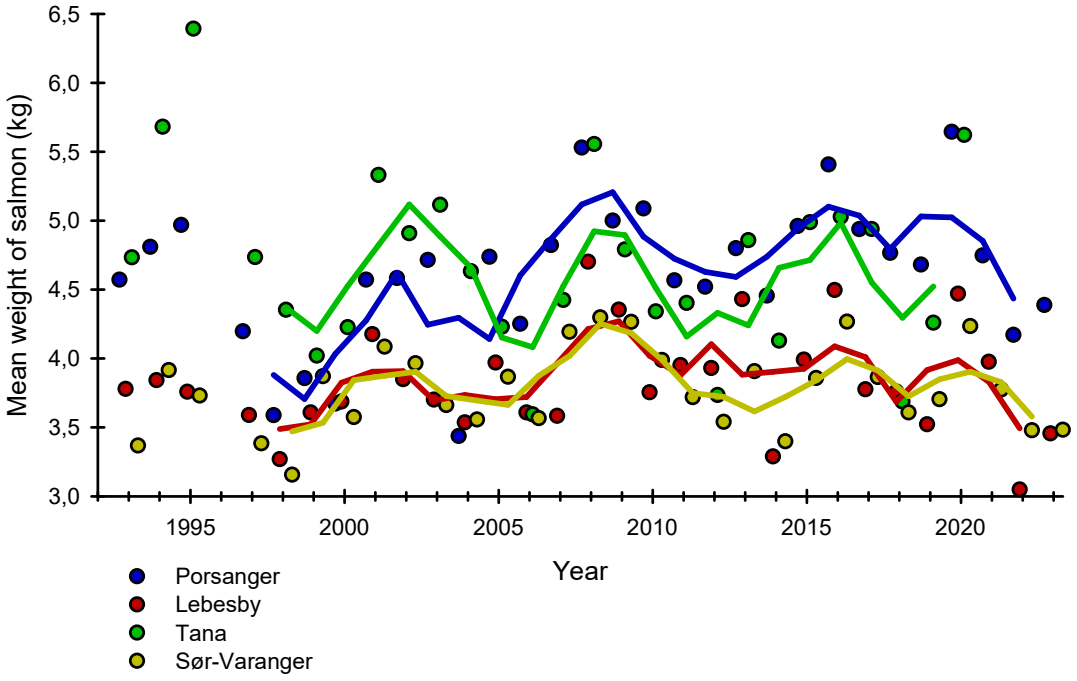


Figure 64. Variations in the long-term annual mean weights of salmon caught in West Finnmark municipalities (upper figure) and in East Finnmark municipalities (lower figure) in the years 1993-2021 (bag net and bend net catches combined; only bag net in the years 2022-2023). Source; SSB.

18. Long-term weekly mean weights of salmon caught in the municipalities in West and East Finnmark

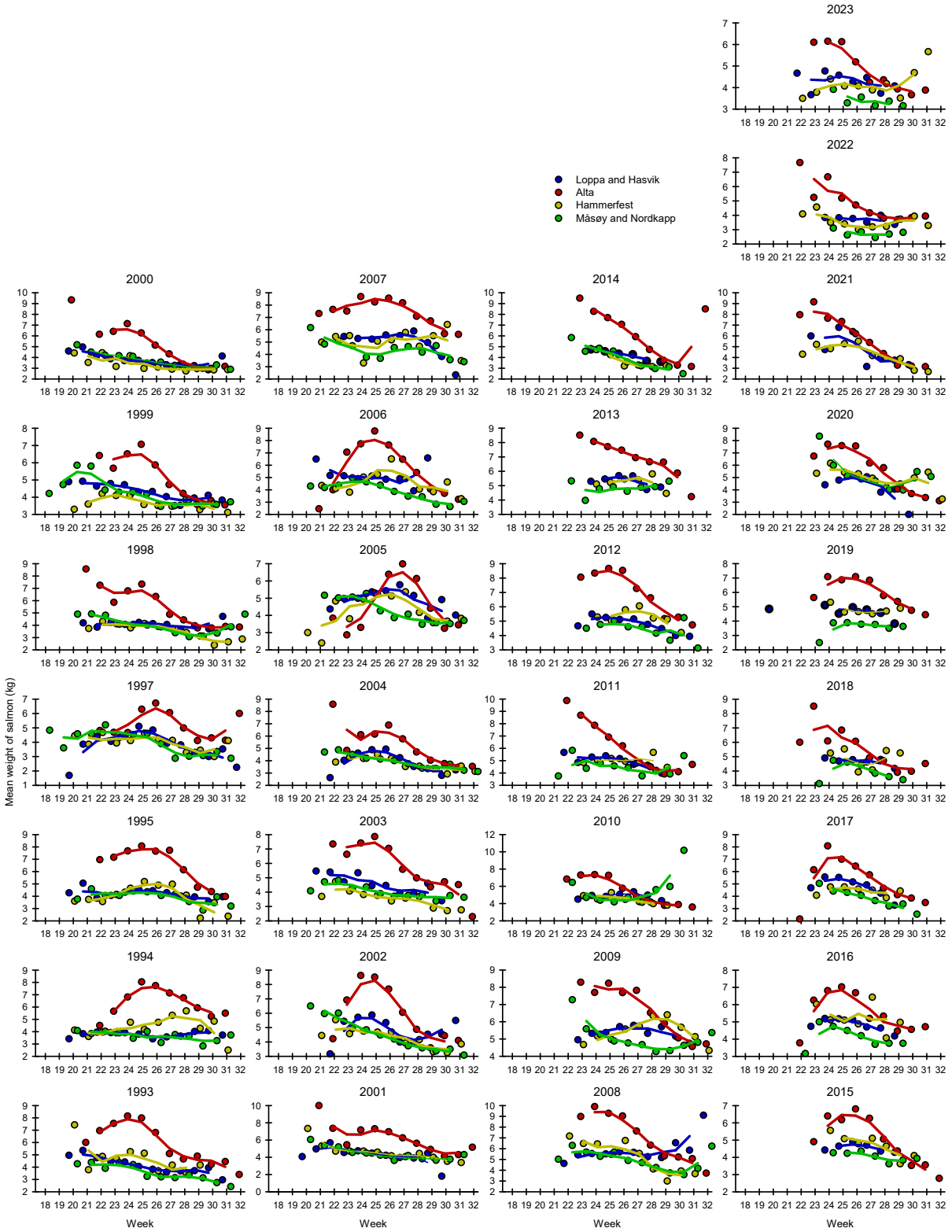


Figure 65. Variations in the weekly mean weights of salmon caught in West Finnmark municipalities (bag net and bend net catches combined; only bag net in the years 2022-2023). Source; SSB.

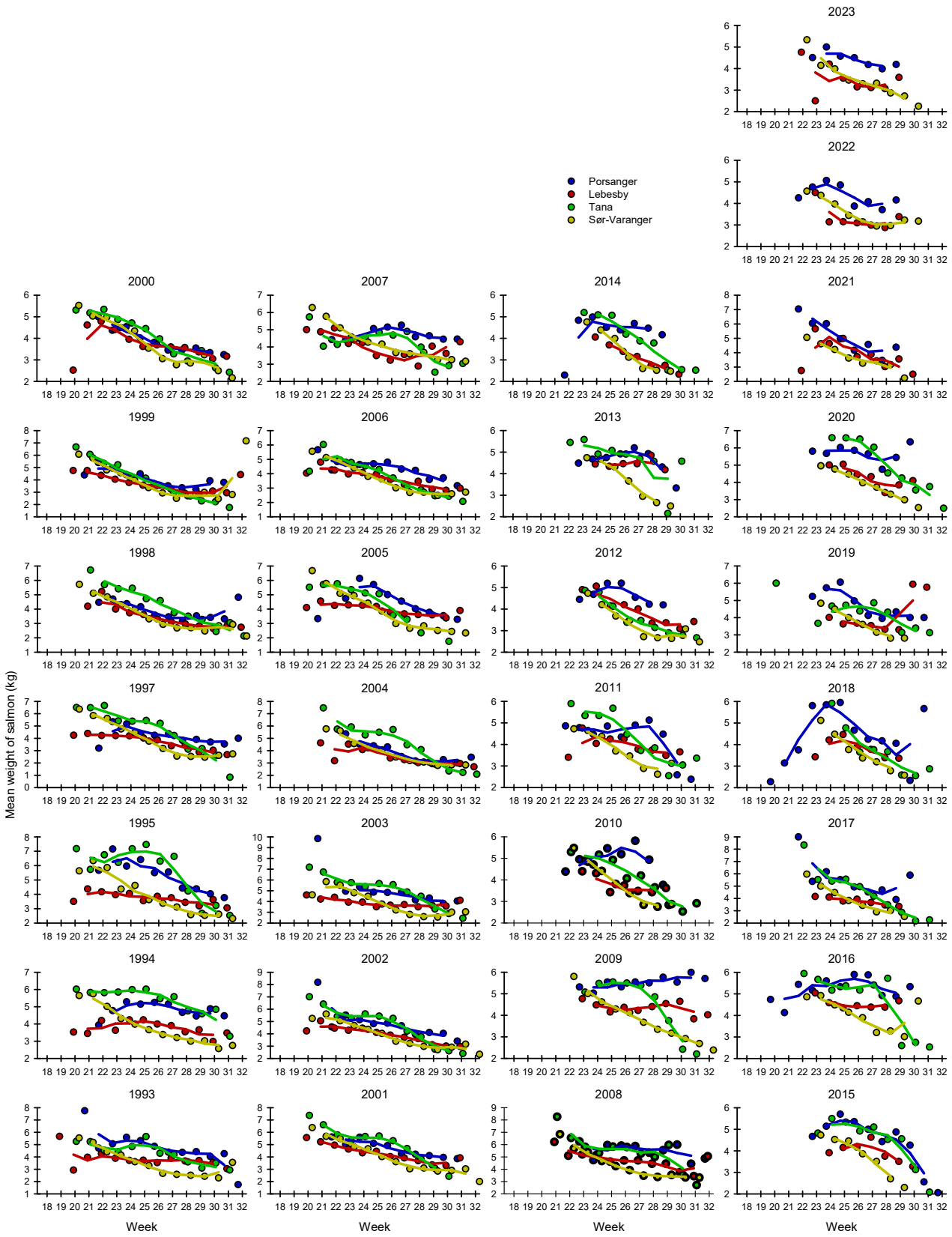


Figure 66. Variations in the weekly mean weights of salmon caught in East Finnmark municipalities (bag net and bend net catches combined; only bag net in the years 2022-2023). Source; SSB.

19. Long-term annual median dates of capture with higher and lower quartiles for small, medium and large salmon in four salmon districts in Finnmark, the fishing methods bag net and bend net combined

The median date of capture for different sizes of salmon from the cumulative curves can be used to compare differences in the median dates of capture between areas. Median dates of capture for small, medium and large salmon differs between the years 1993-2021 in all salmon districts in Finnmark (Figs. 67-69). Differences between the years can be caused by changes in the legal fishing period and annual differences in the timing of salmon migration along the coastal areas. Based on the catch reporting data and median dates of capture it is apparent that medium and large salmon have been caught first every year in Varanger salmon district. This difference can be observed extra clearly in the median date of capture for large salmon. Nowadays, the median dates of capture for medium and large size salmon take place later than in 1990's, due to the later start of fishery compared to the earlier start in 1990's (Fig. 69). There is no clear change in the median date of capture for small salmon along the years because they usually occur in the catches in the middle of summer. Therefore, median date of capture is not affected by the changes in the start of fishing season. Median dates of capture for small, medium and large salmon are taking place lastly in the Alta salmon district.

Photo 6. Local fisher scale sampling in CoASal project. Photo: Eero Niemelä

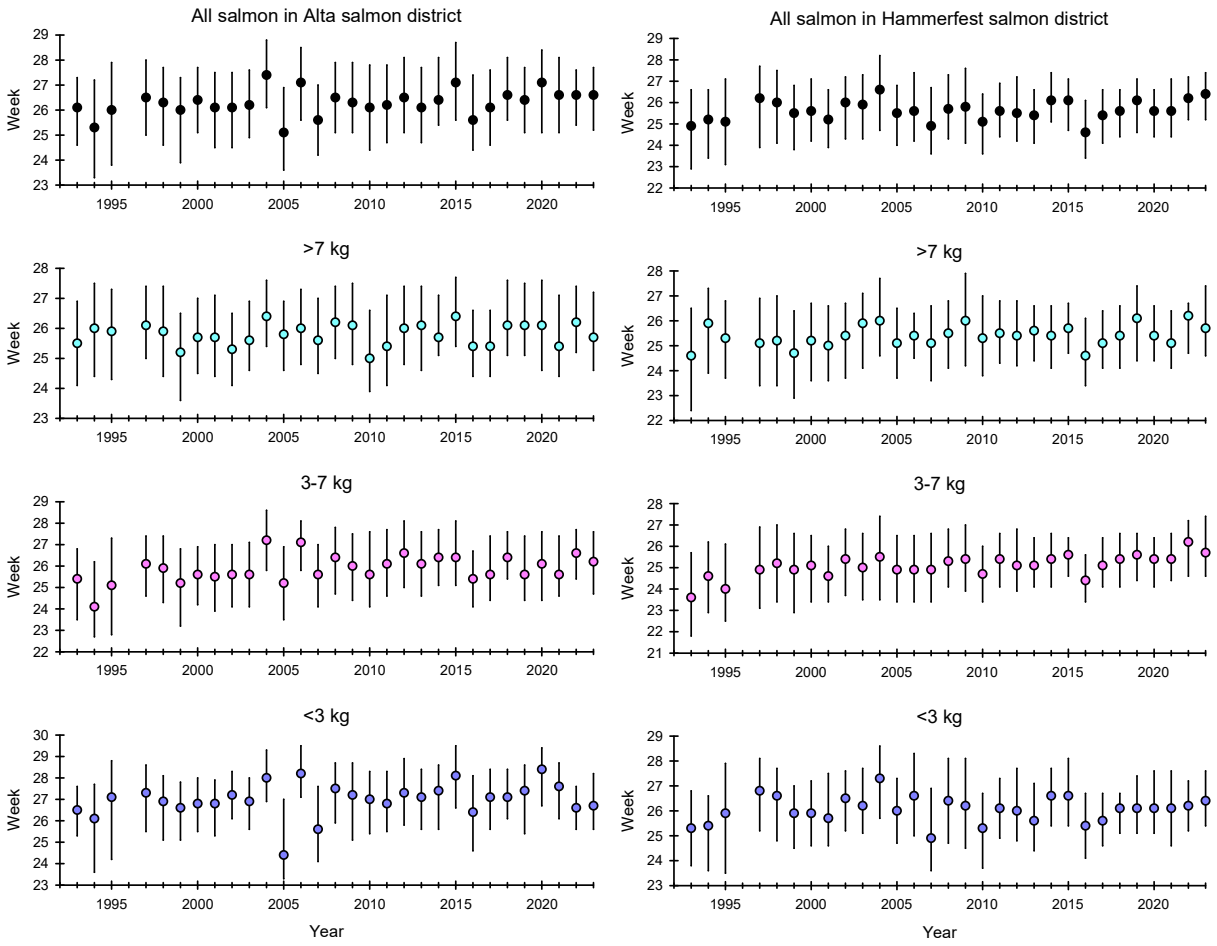


Figure 67. Annual median dates of capture with higher and lower quartiles for small, medium and large salmon in Alta and Hammerfest salmon districts, bag net and bend net fishing methods combined. Bag net only in the years 2022-2023. Source; SSB.

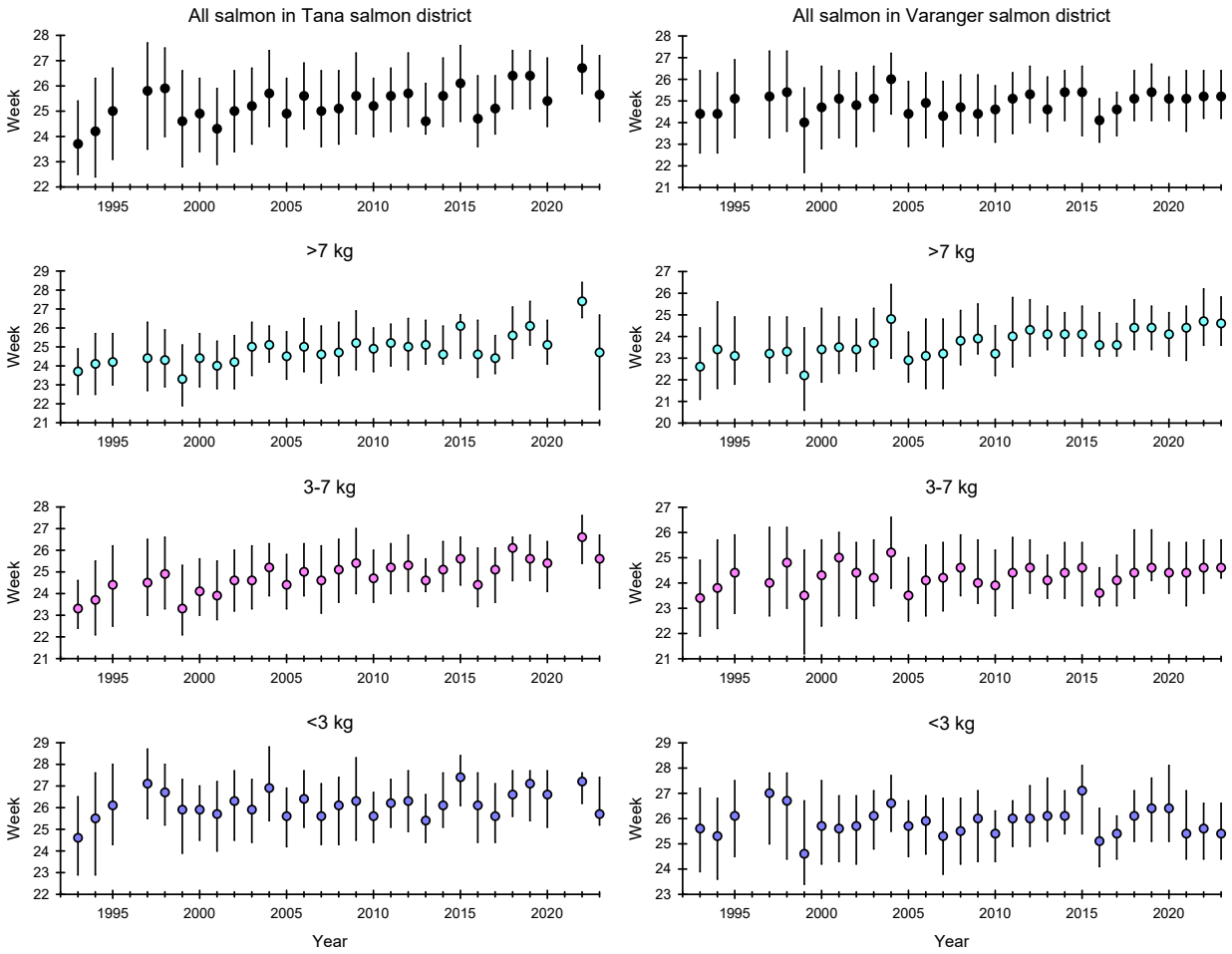


Figure 68. Annual median dates of capture with higher and lower quartiles for small, medium and large salmon in Tana and Varanger salmon districts in Finnmark, bag net and bend net fishing methods combined. Bag net only in the years 2022-2023.Source; SSB.

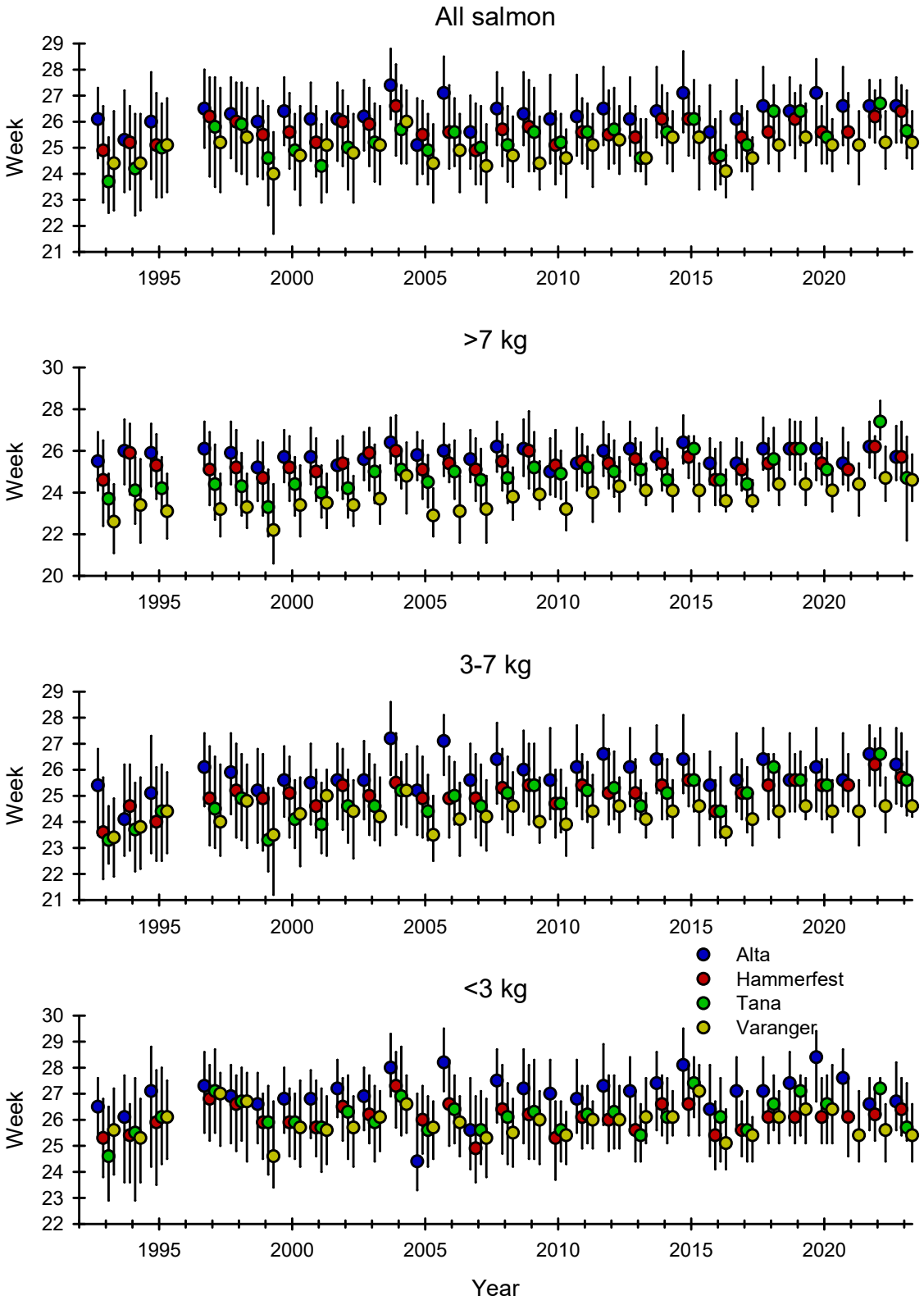


Figure 69. Differences in the annual median dates of capture with higher and lower quartiles for small, medium and large salmon between four salmon districts in Finnmark, bag net and bend net fishing methods combined. Bag net only in the years 2022-2023.Source; SSB.

20. Cumulative catches for salmon below 3 kg in bag net and bend net fishery in Finnmark salmon districts.

Cumulative catch curves can be used to clarify differences in the capturing time for small, medium and large salmon in larger areas like in salmon districts (Figs. 70-78). Cumulative curves also indicate the difference and overlapping of the capture dates between small, medium and large size salmon (Figs. 79-90).

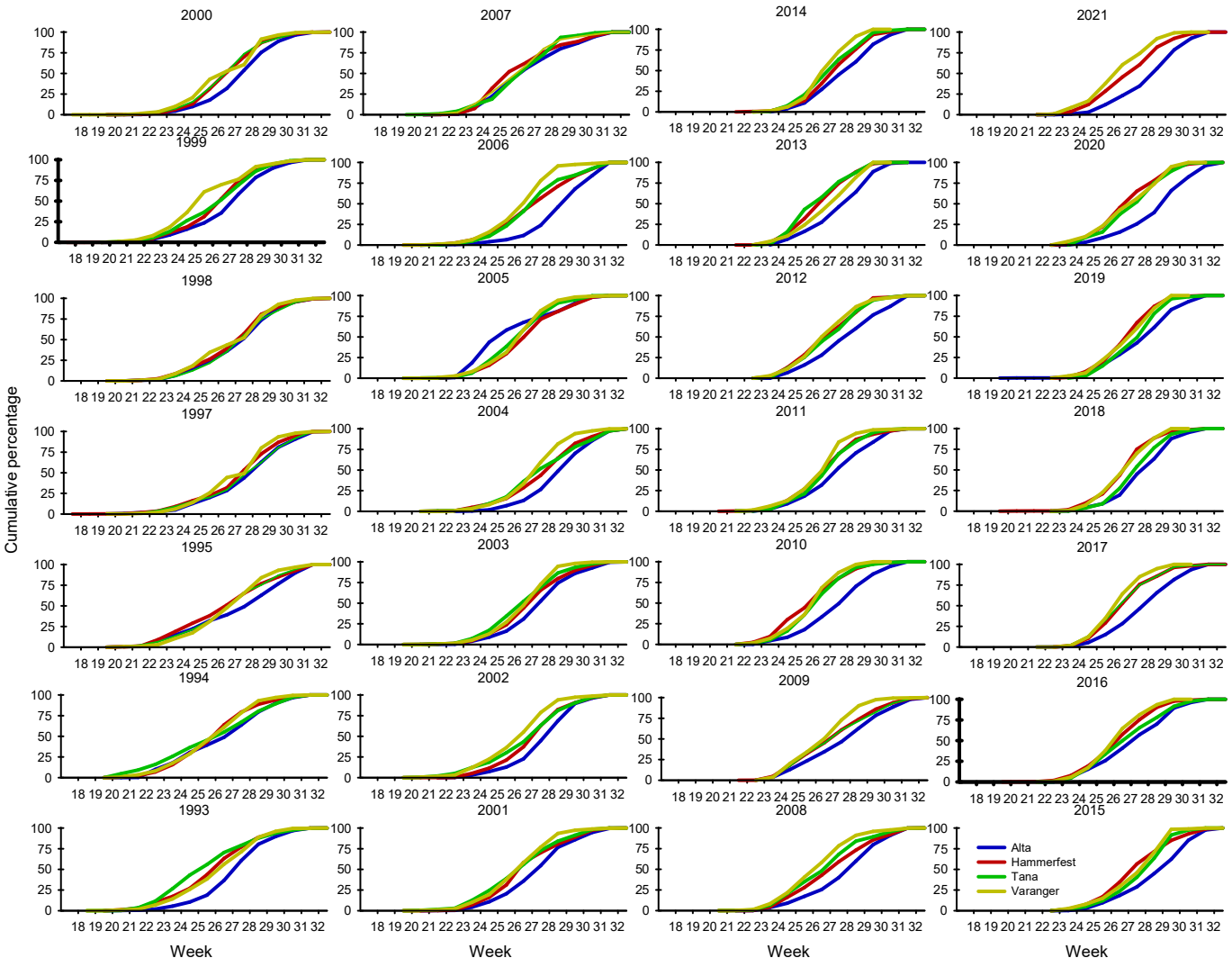


Figure 70. Cumulative catches from combined bag net and bend net fishery for salmon below 3 kg in Finnmark salmon districts. Source; SSB.

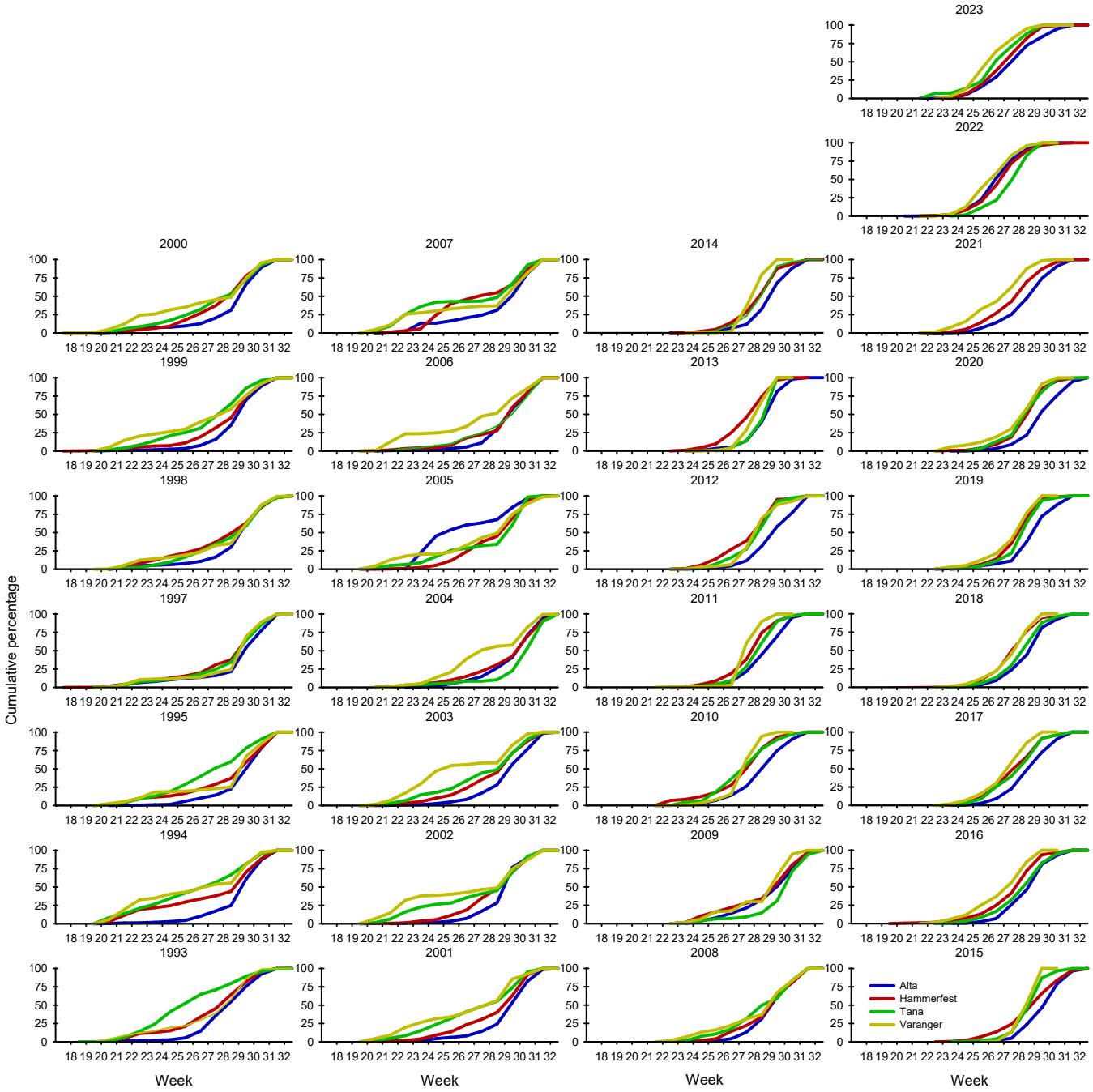


Figure 71. Cumulative bag net catches for salmon below 3 kg salmon in Finnmark salmon districts. Source; SSB.

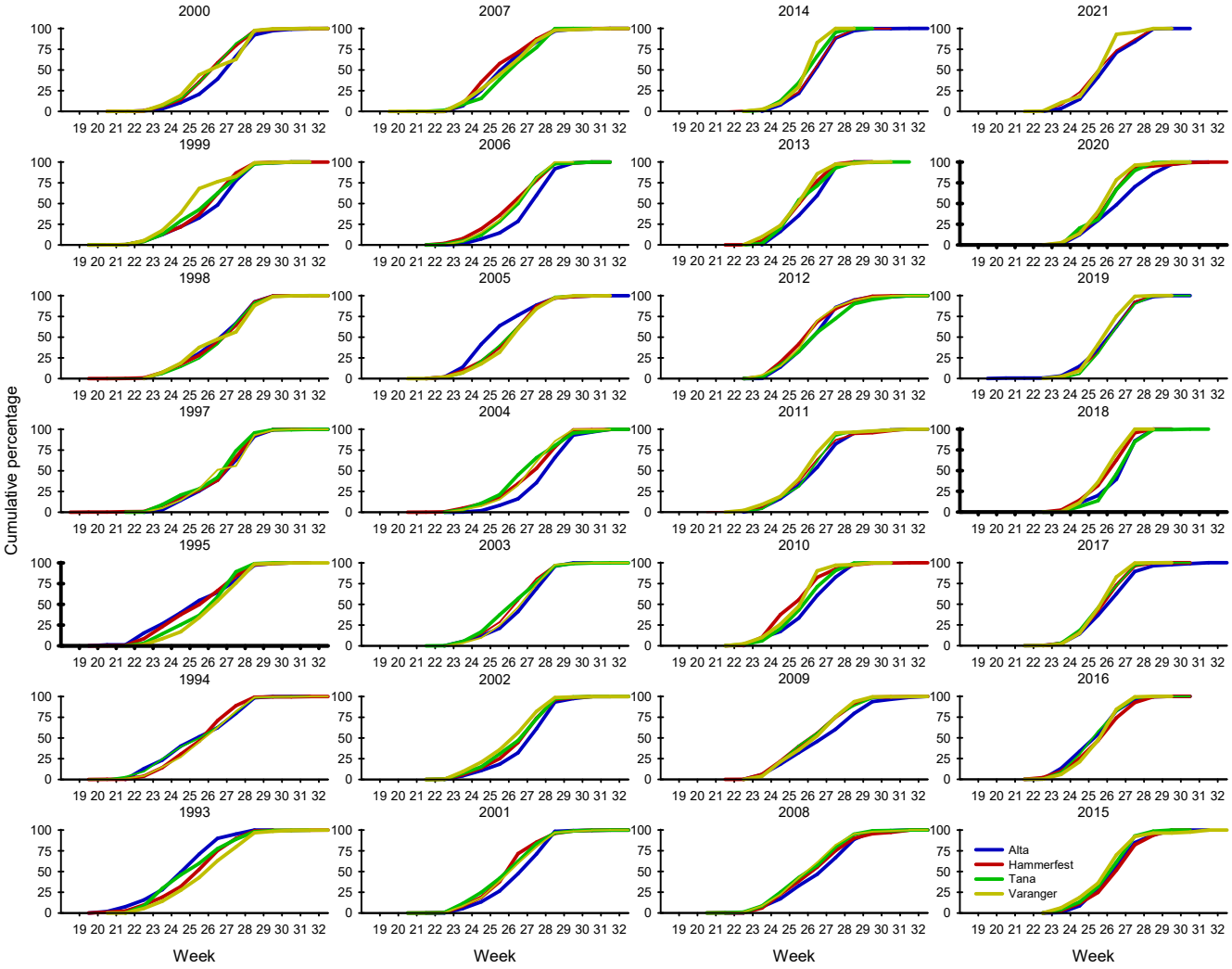


Figure 72. Cumulative bend net catches for salmon below 3 kg salmon in Finnmark salmon districts. Source; SSB.

21. Cumulative catches for salmon between 3–7 kg in bag net and bend net fishery in Finnmark salmon districts

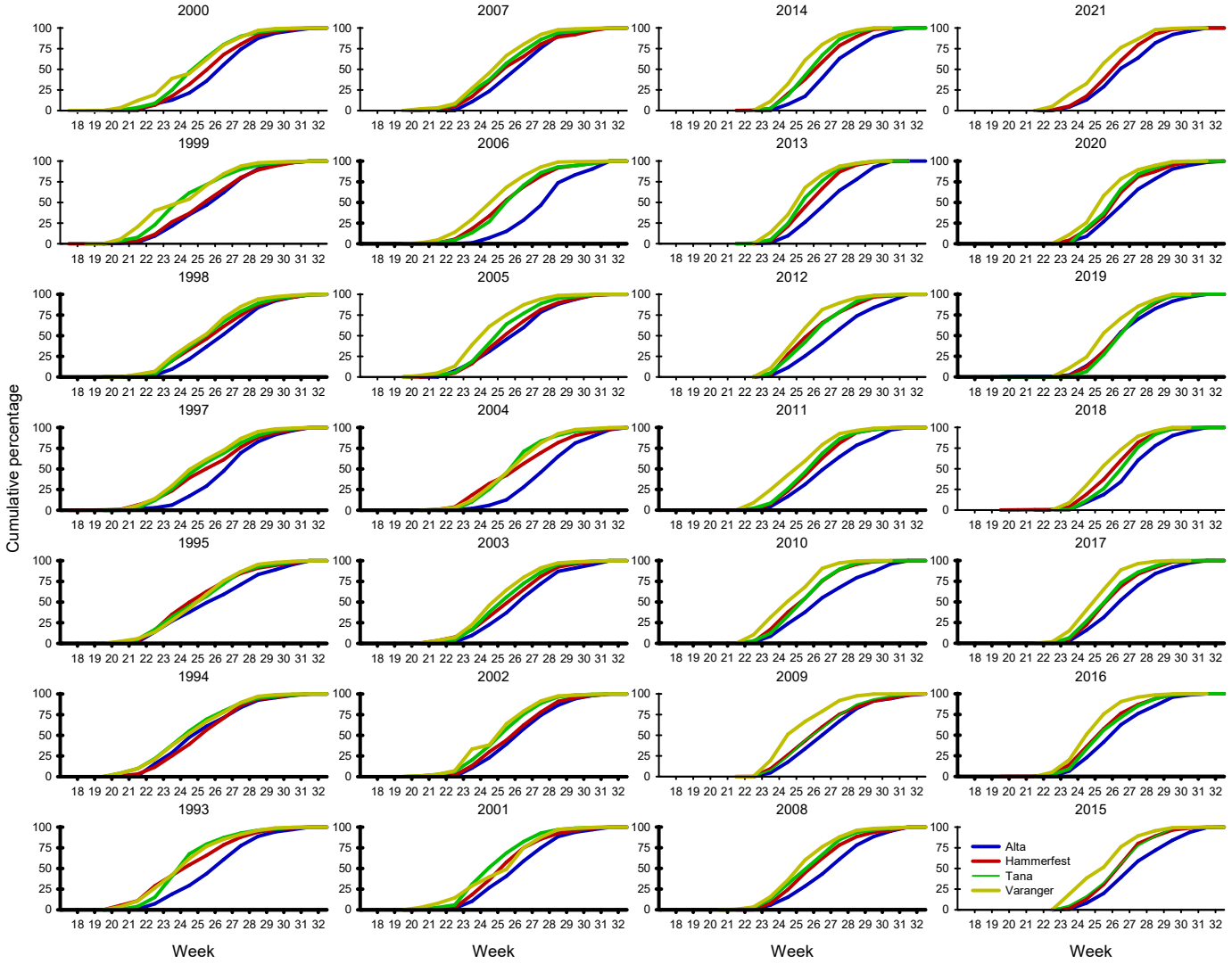


Figure 73. Cumulative catches from combined bag net and bend net fishery for salmon between 3-7 kg in Finnmark salmon districts. Source; SSB.

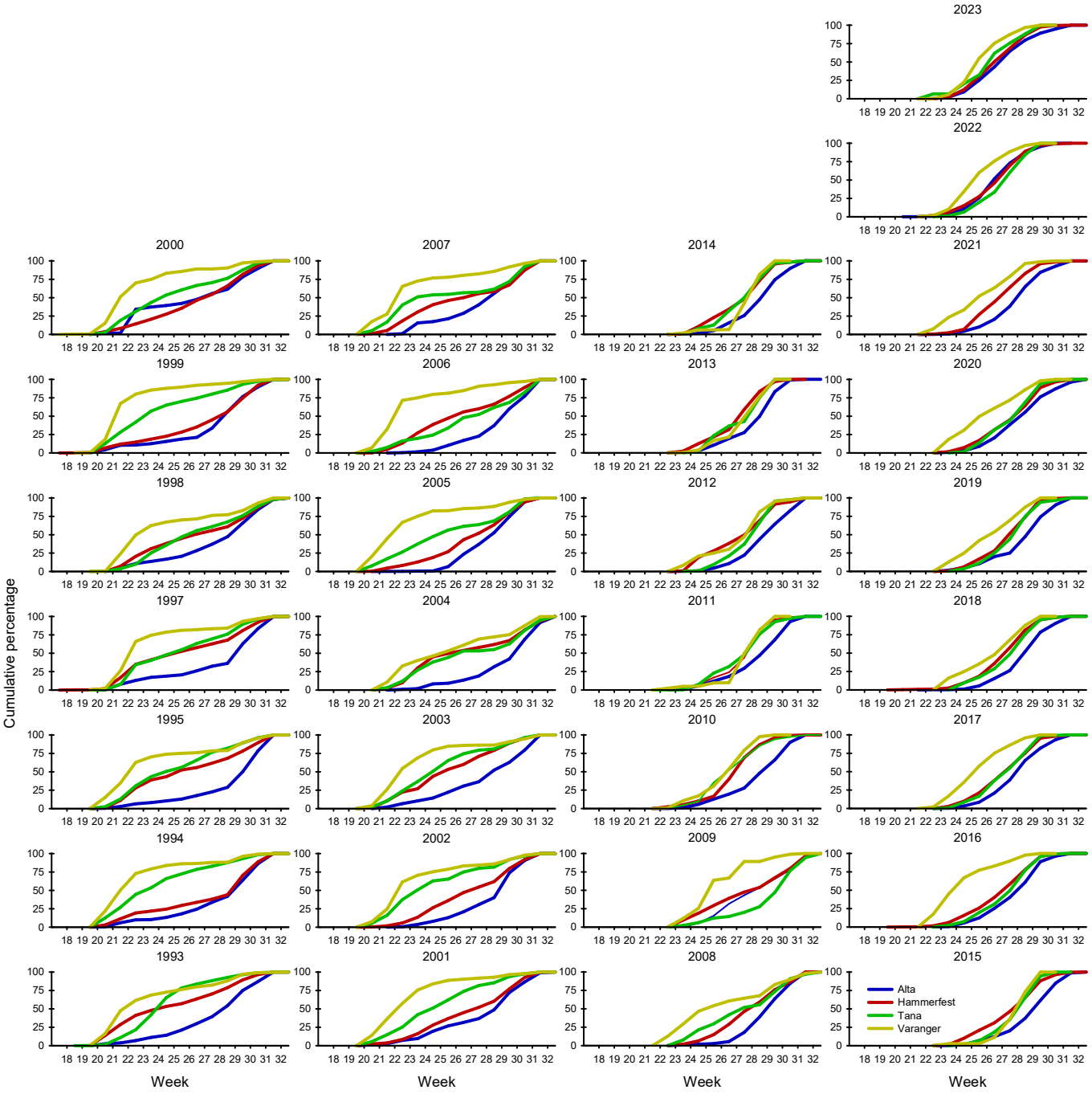


Figure 74. Cumulative bag net catches for salmon between 3-7 kg in Finnmark salmon districts. Source; SSB.

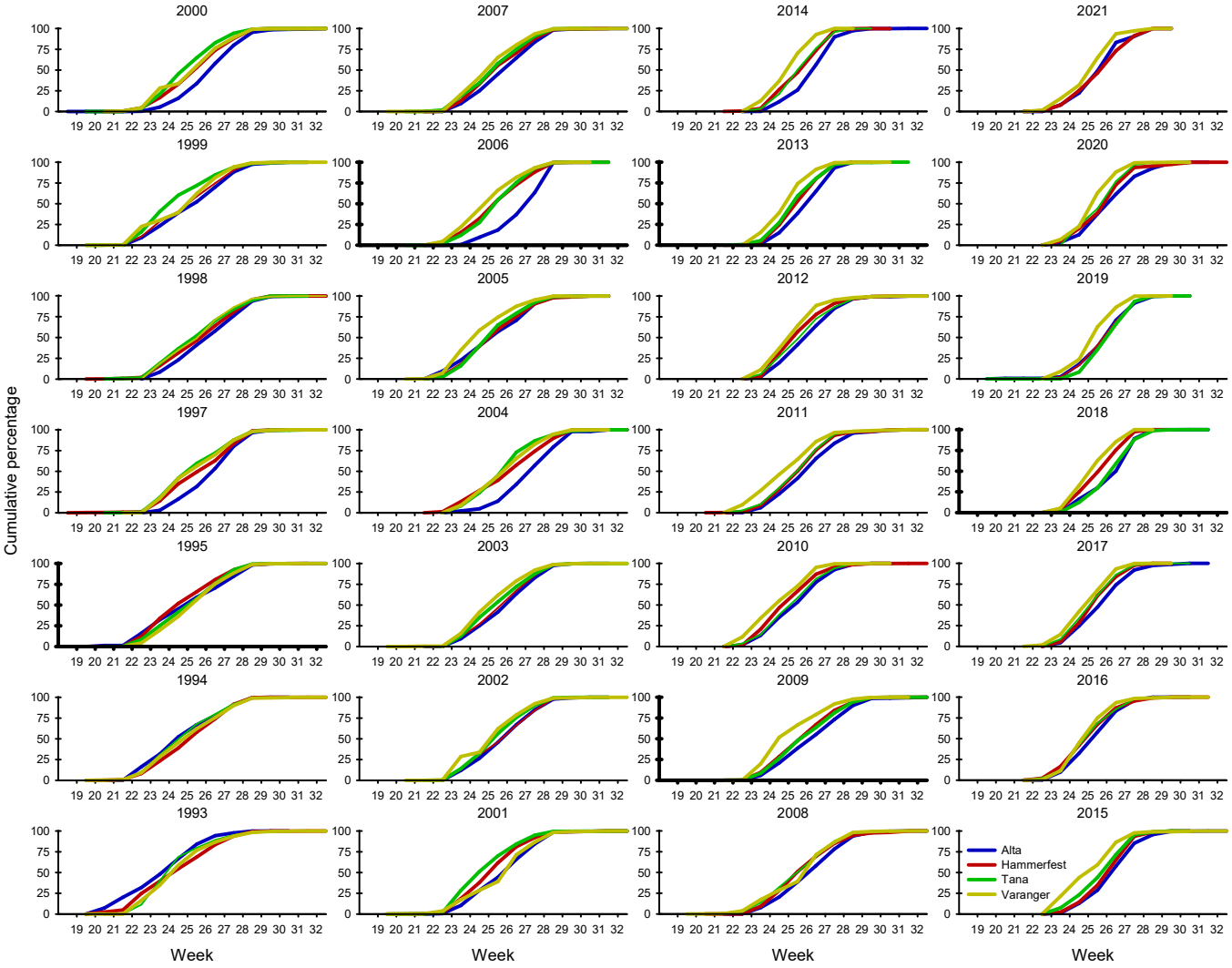


Figure 75. Cumulative bend net catches for salmon between 3-7 kg in Finnmark salmon districts. Source; SSB.

22. Cumulative catches for salmon above 7 kg in bag net and bend net fishery in Finnmark salmon districts

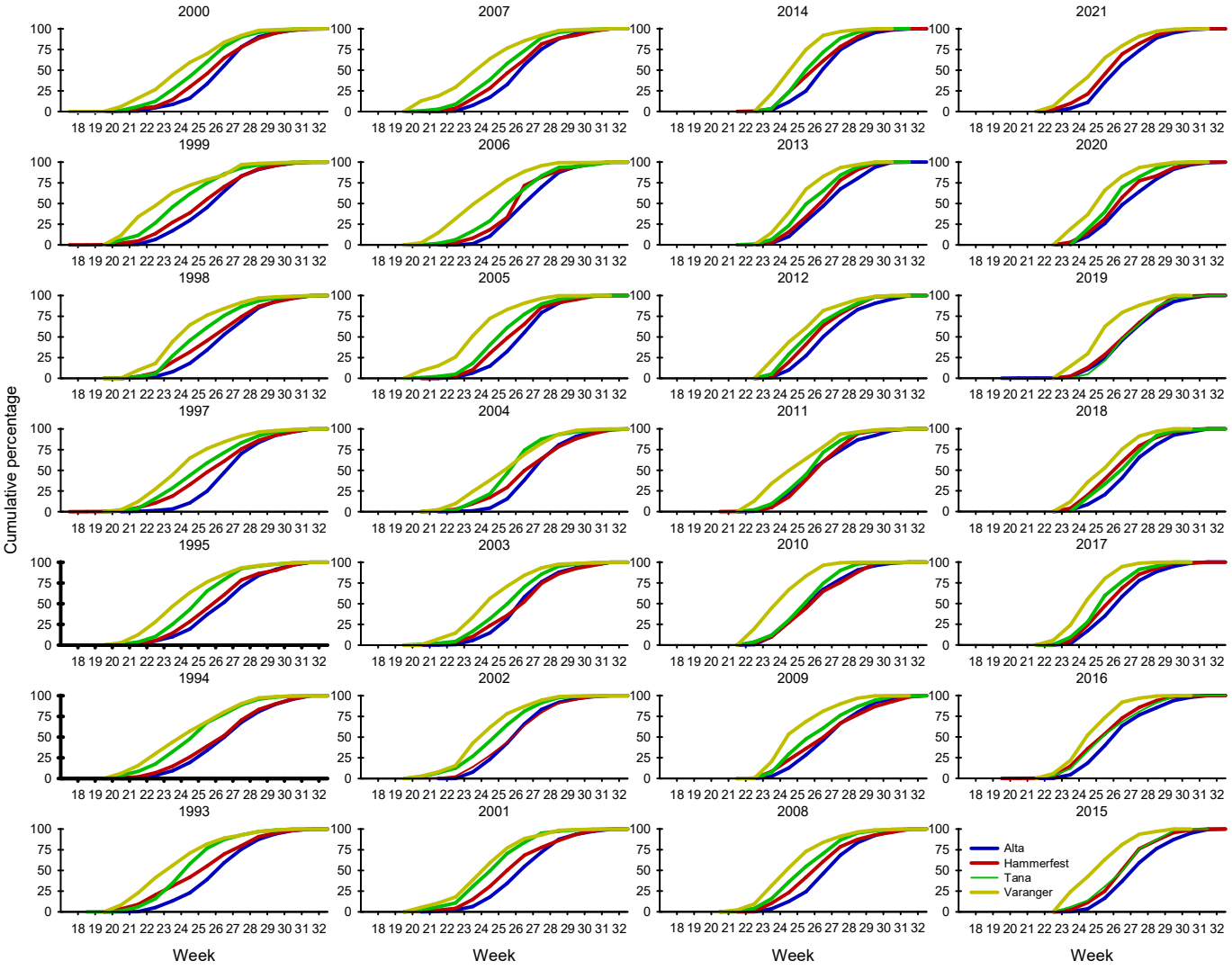


Figure 76. Cumulative catches from combined bag net and bend net fishery for salmon above 7 kg in Finnmark salmon districts. Source; SSB.

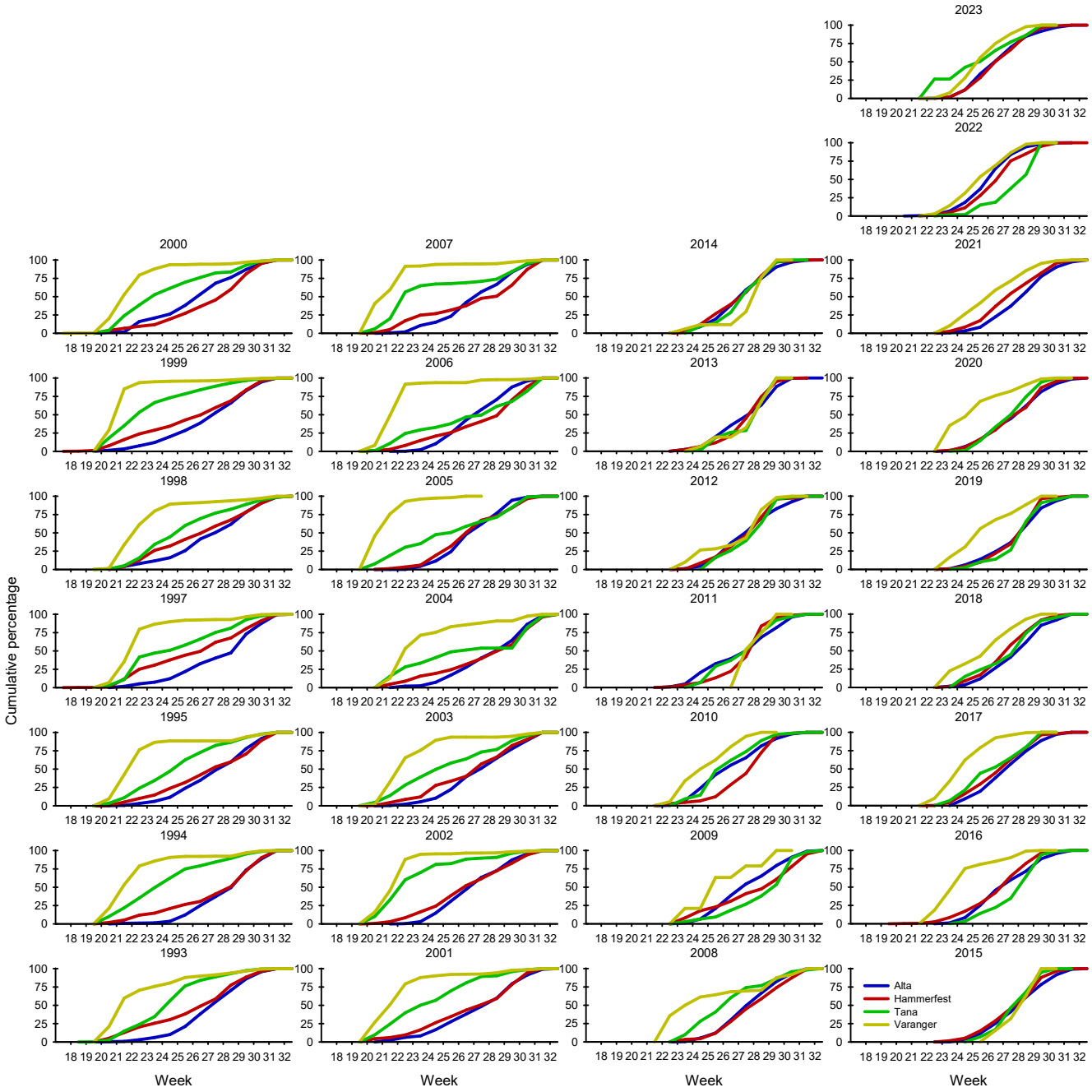


Figure 77. Cumulative bag net catches for salmon above 7 kg in Finnmark salmon districts. Source; SSB.

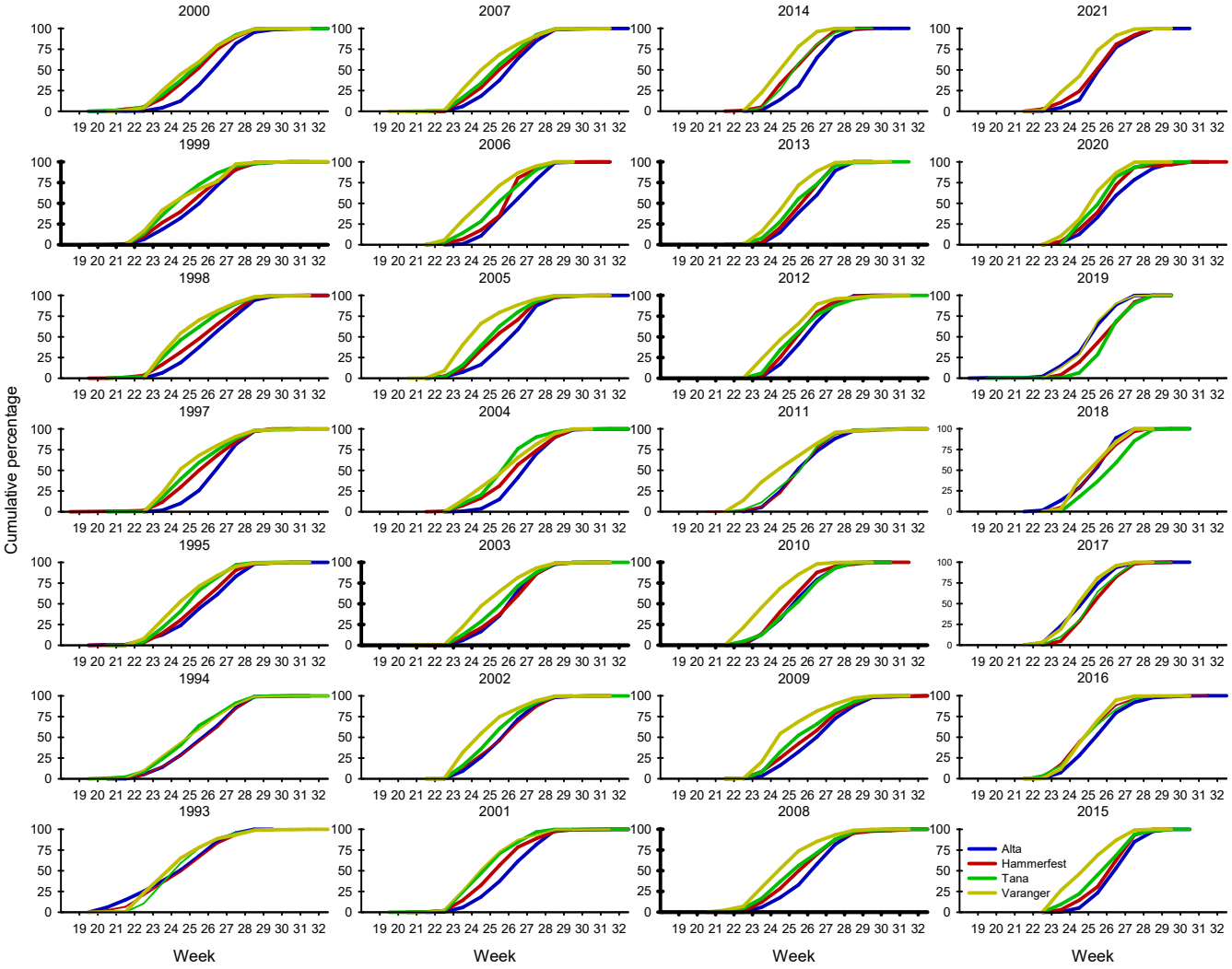


Figure 78. Cumulative bend net catches for salmon above 7 kg in Finnmark salmon districts. Source; SSB.

23. Annual cumulative catches between three size groups of salmon in bag net and bend net fishery in four salmon districts in Finnmark

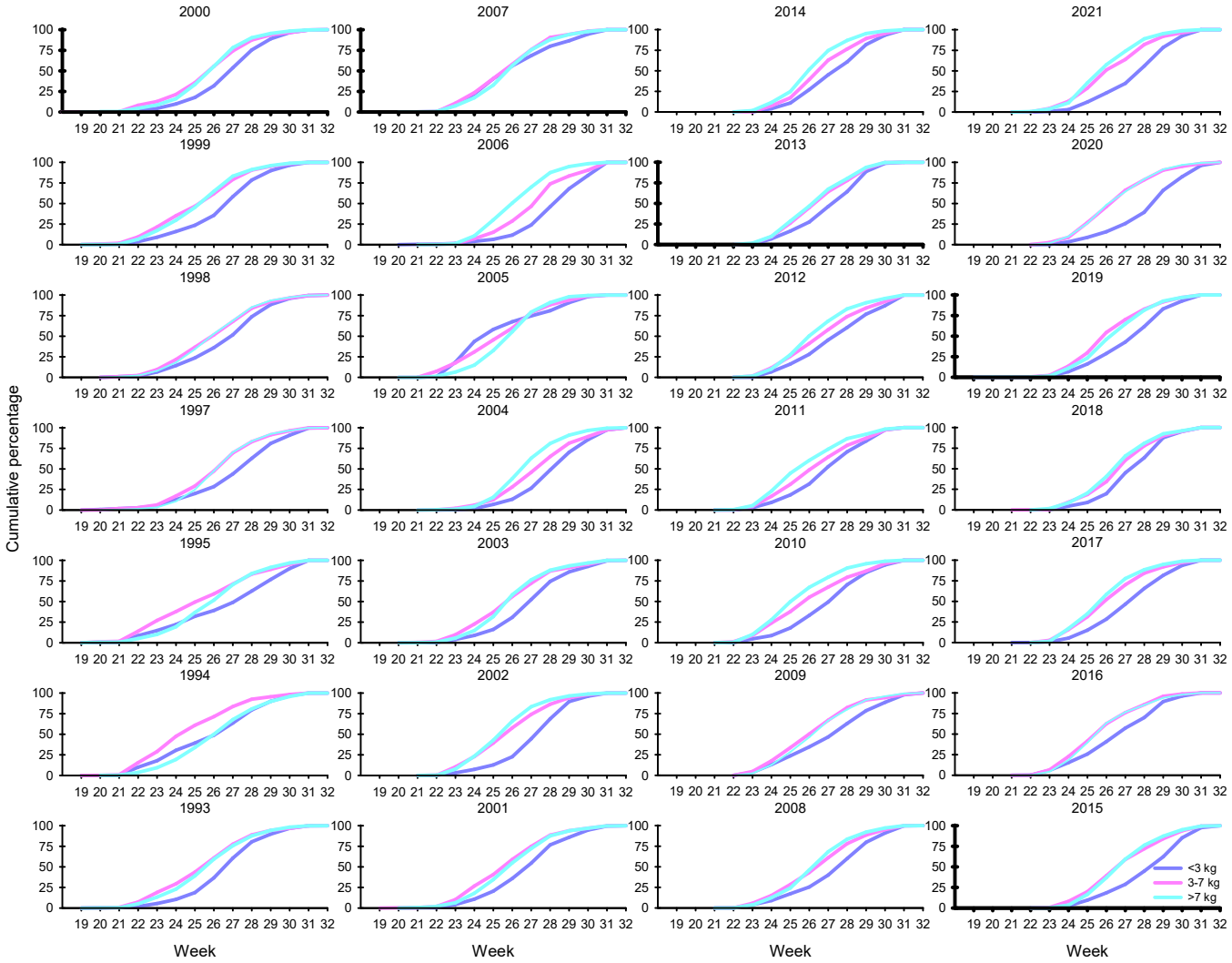


Figure 79. Annual cumulative catches from combined bag net and bend net fishery for three size groups of salmon in Alta salmon district. Source; SSB.

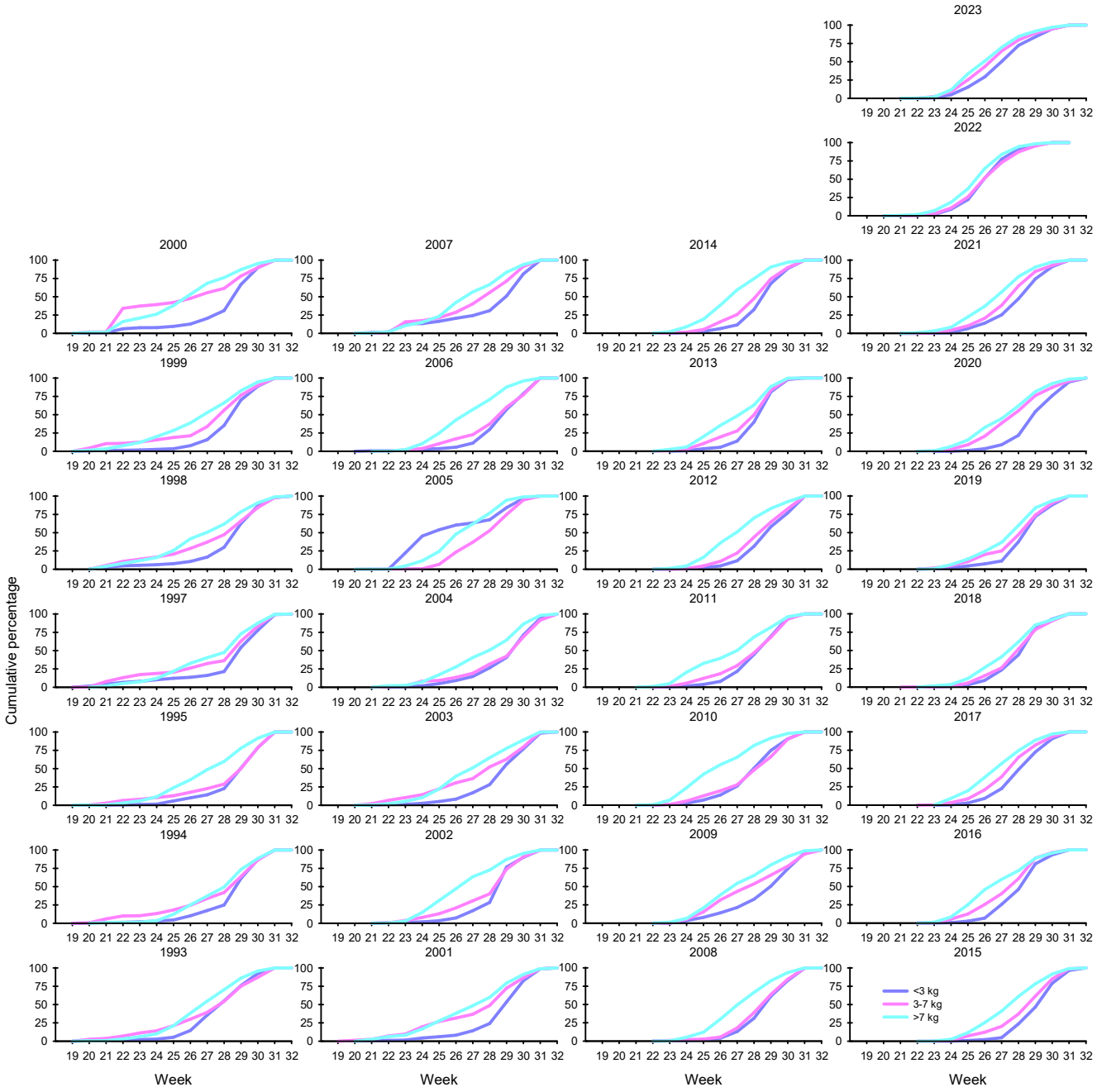


Figure 80. Annual cumulative bag net catches for three size groups of salmon in Alta salmon district. Source; SSB.

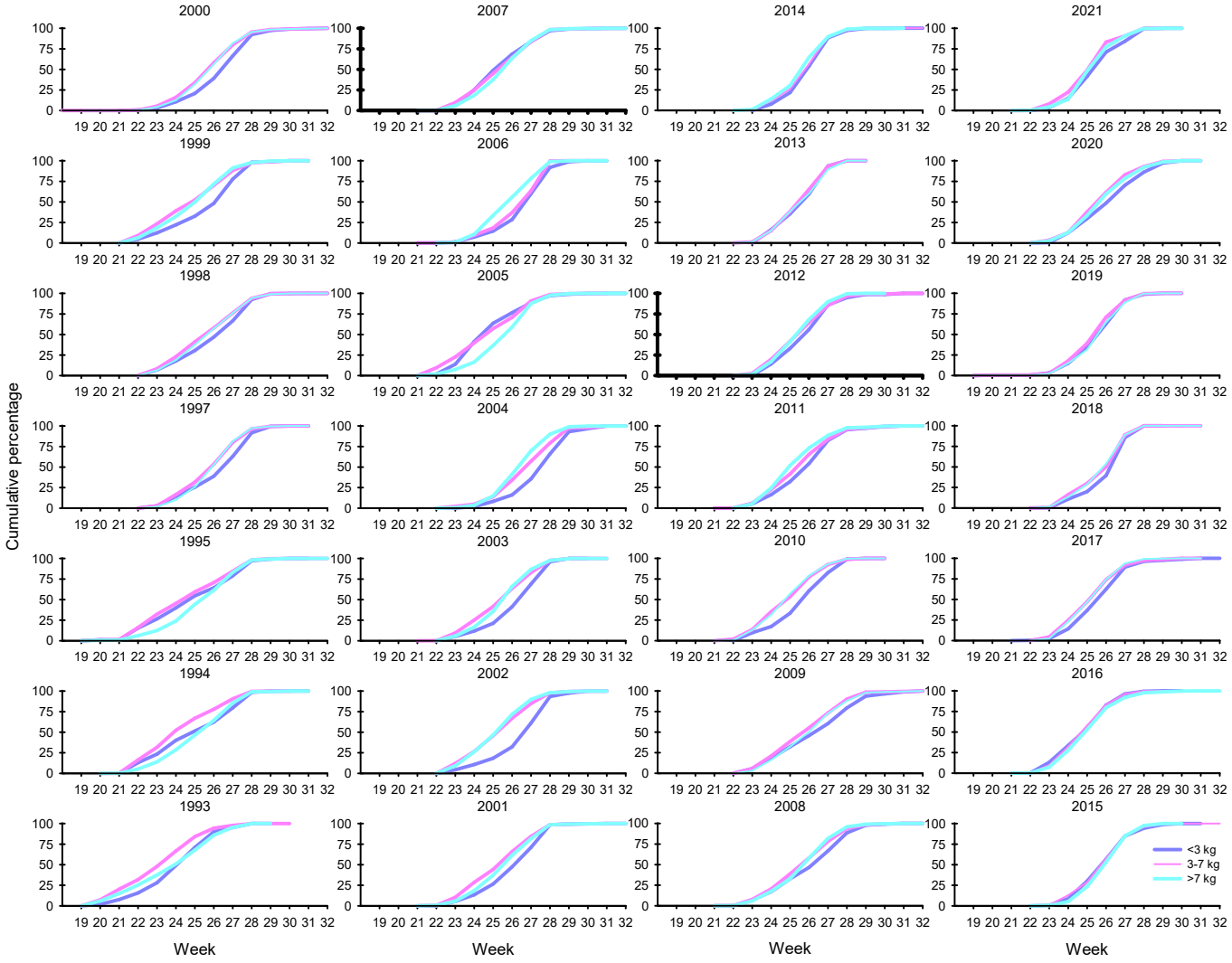


Figure 81. Annual cumulative bend net catches for three size groups of salmon in Alta salmon district. Source; SSB.

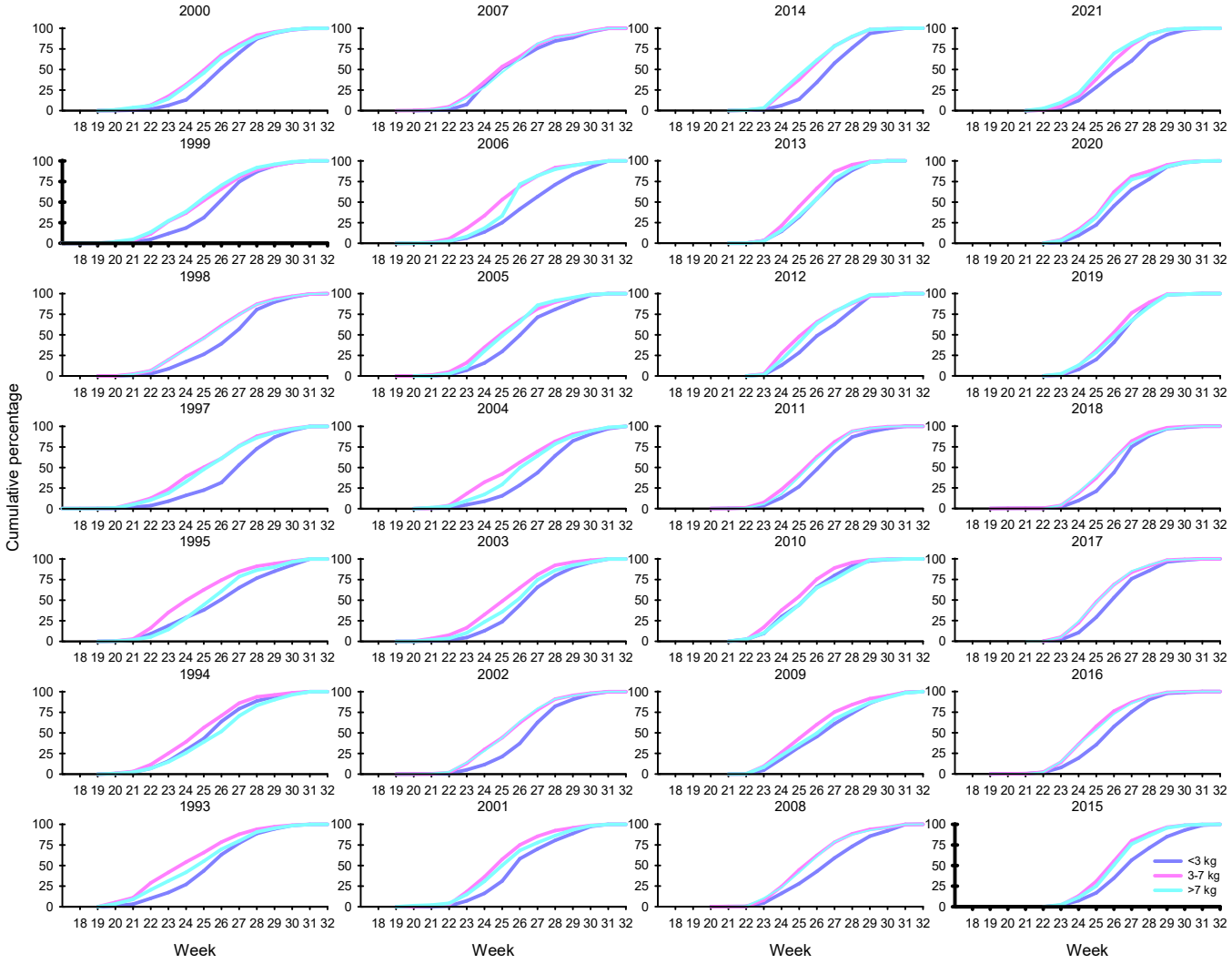


Figure 82. Annual cumulative catches from combined bag net and bend net fishery for three size groups of salmon in Hammerfest salmon district. Source; SSB.

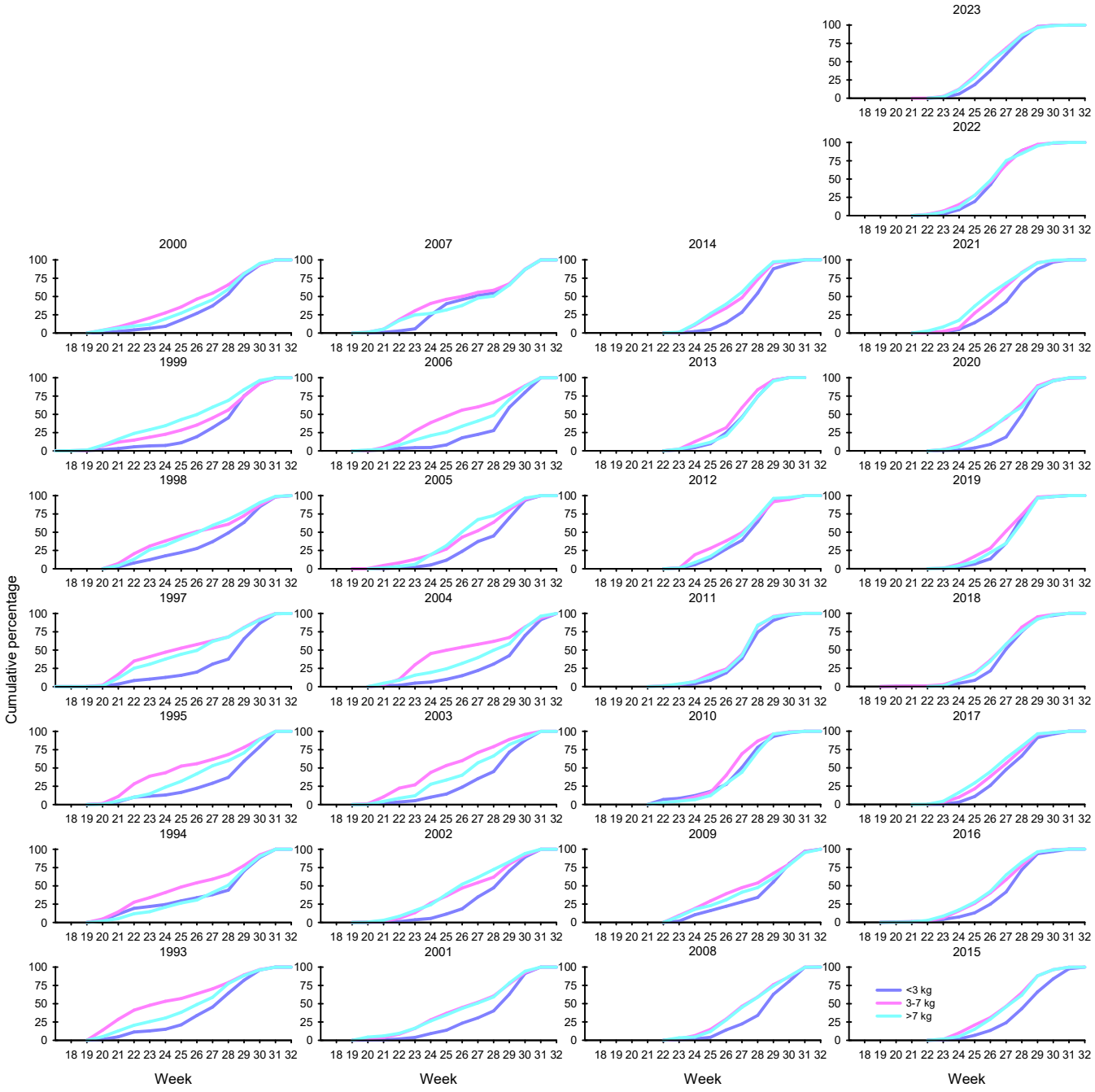


Figure 83. Annual cumulative bag net catches for three size groups of salmon in Hammerfest salmon district. Source; SSB.

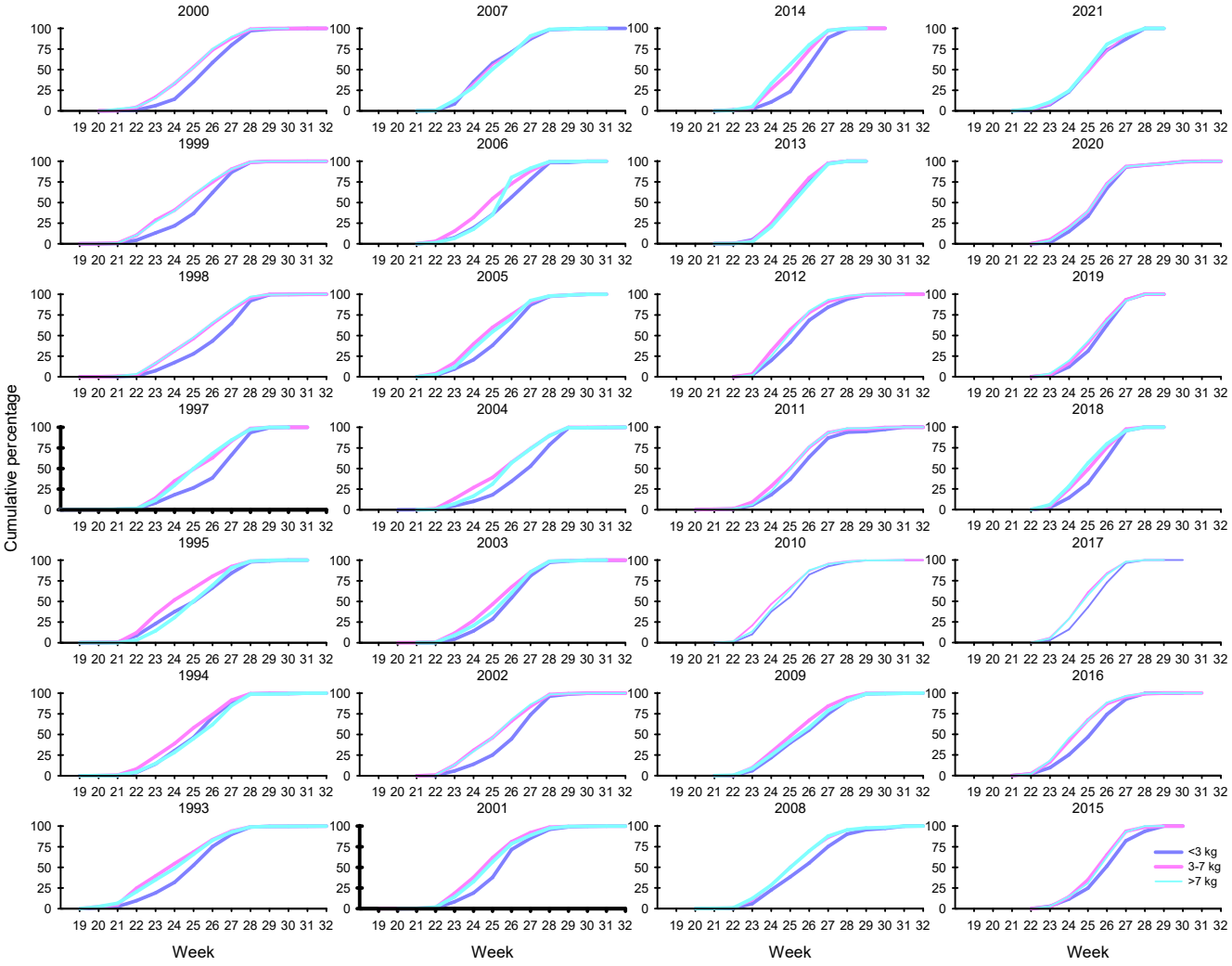


Figure 84. Annual cumulative bend net catches for three size groups of salmon in Hammerfest salmon district. Source; SSB.

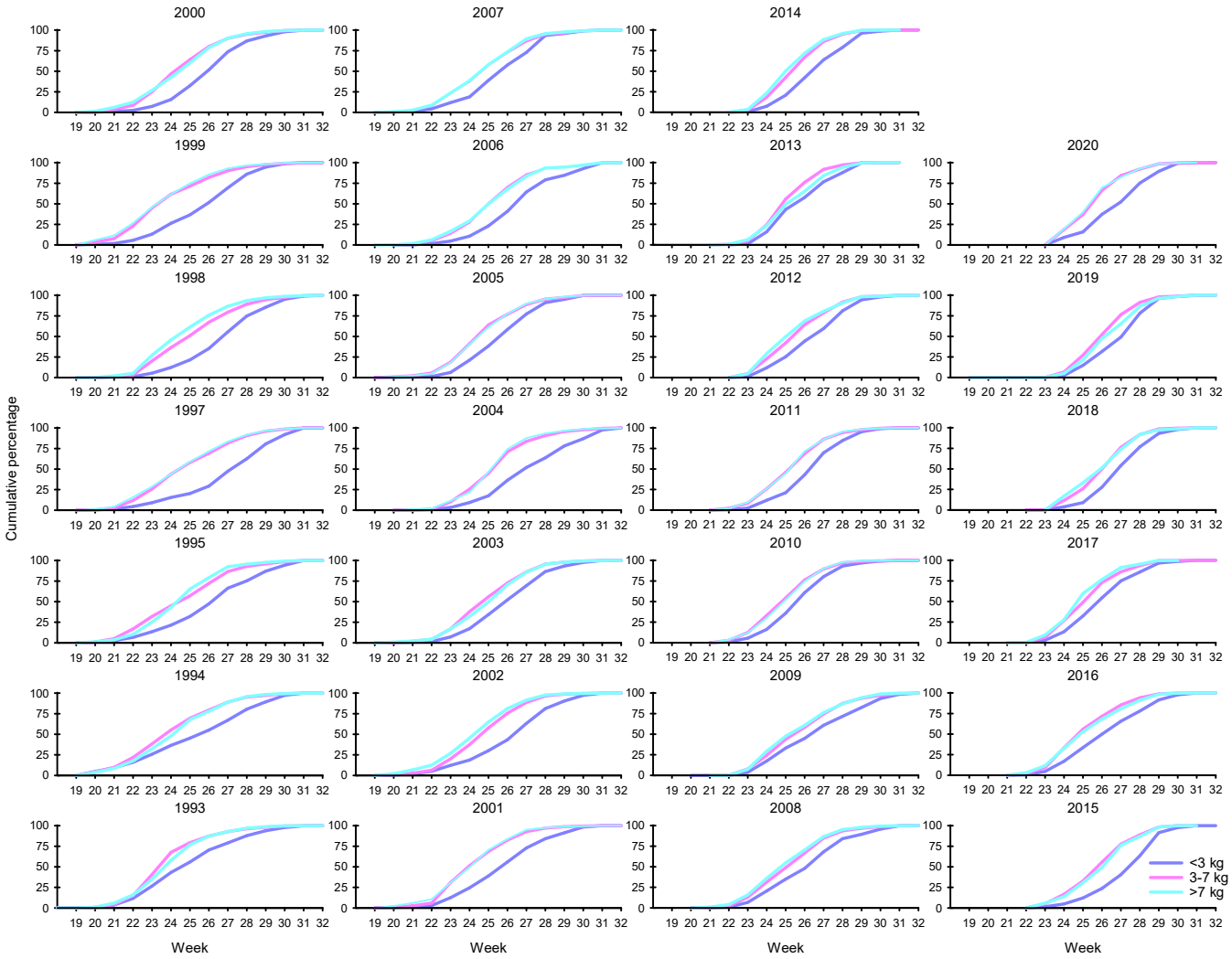


Figure 85. Annual cumulative catches from combined bag net and bend net fishery for three size groups of salmon in Tana salmon district. Source; SSB.

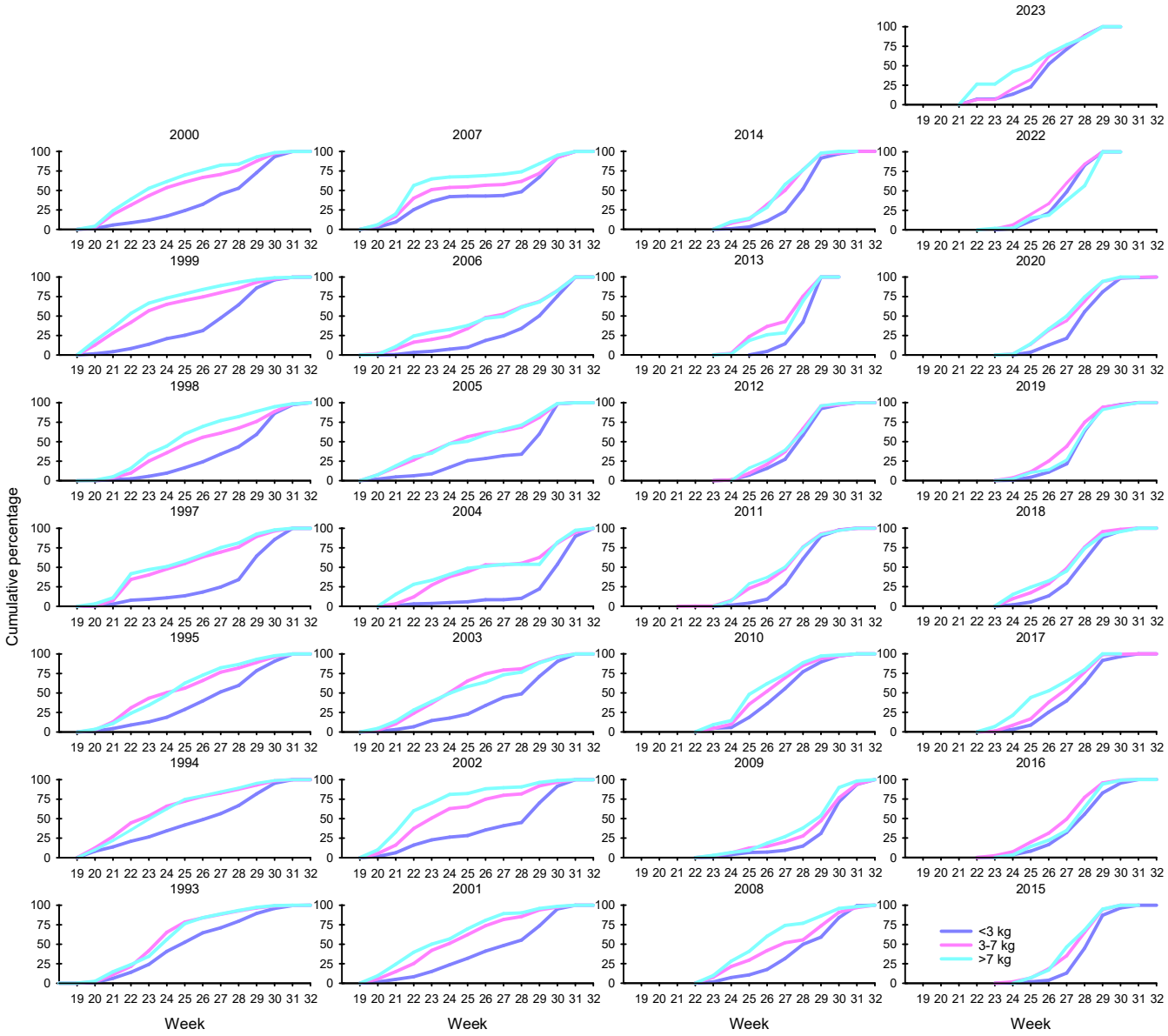


Figure 86. Annual cumulative bag net catches for three size groups of salmon in Tana salmon district. Bag net catches only from Lebesby municipality area. Source; SSB.

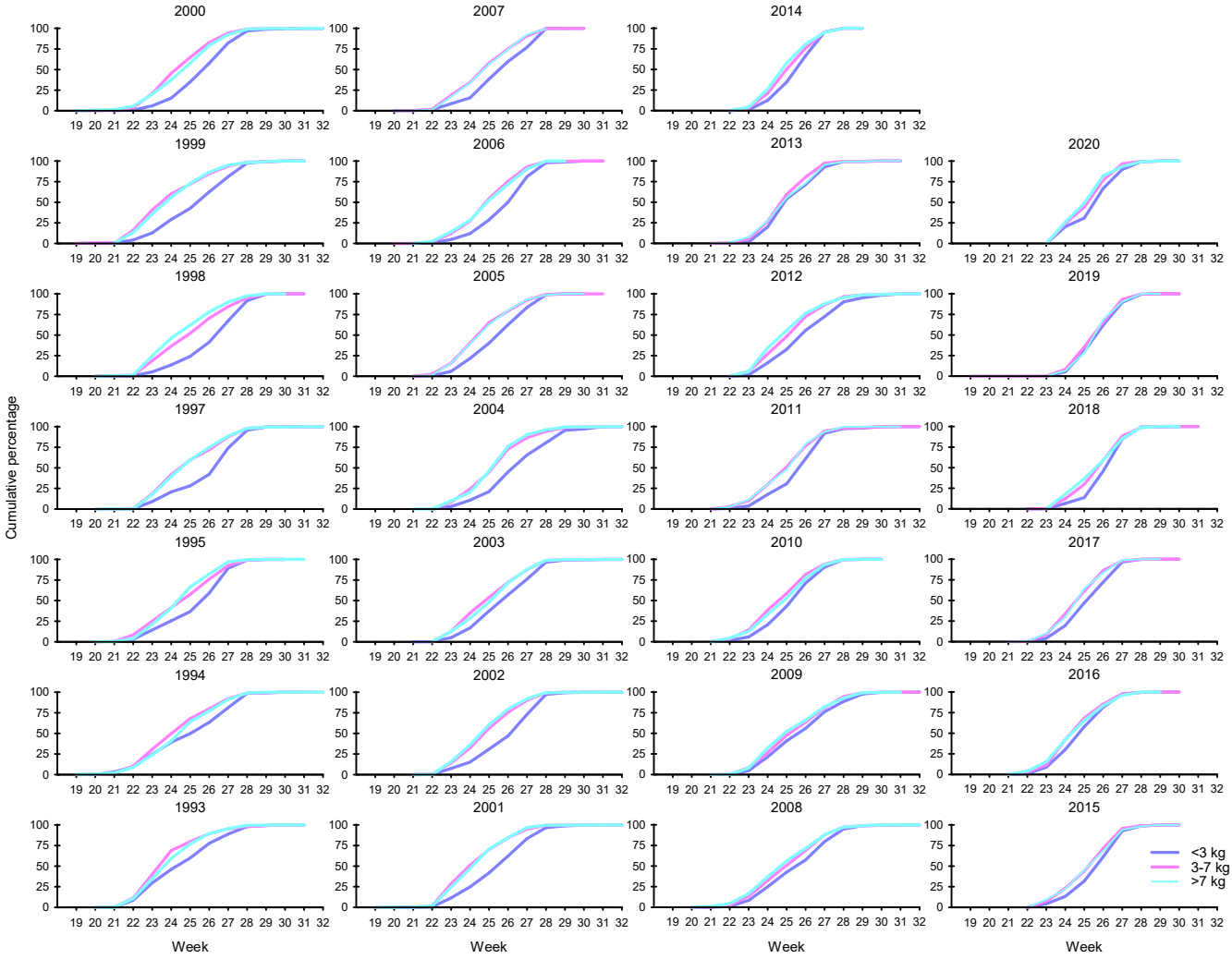


Figure 87. Annual cumulative bend net catches for three size groups of salmon in Tana salmon district. Source; SSB.

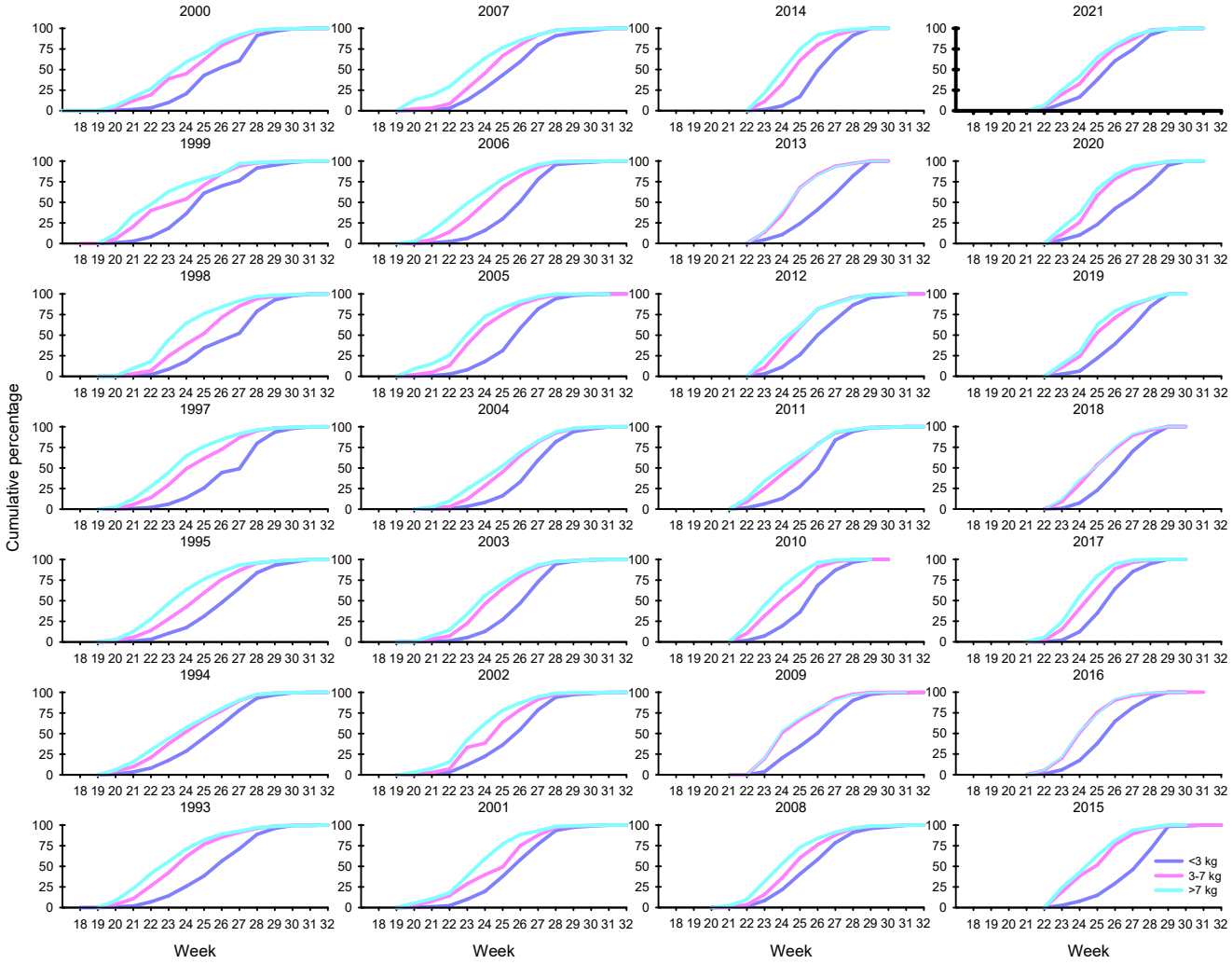


Figure 88. Annual cumulative catches from combined bag net and bend net fishery for three size groups of salmon in Varanger salmon district. Source; SSB.

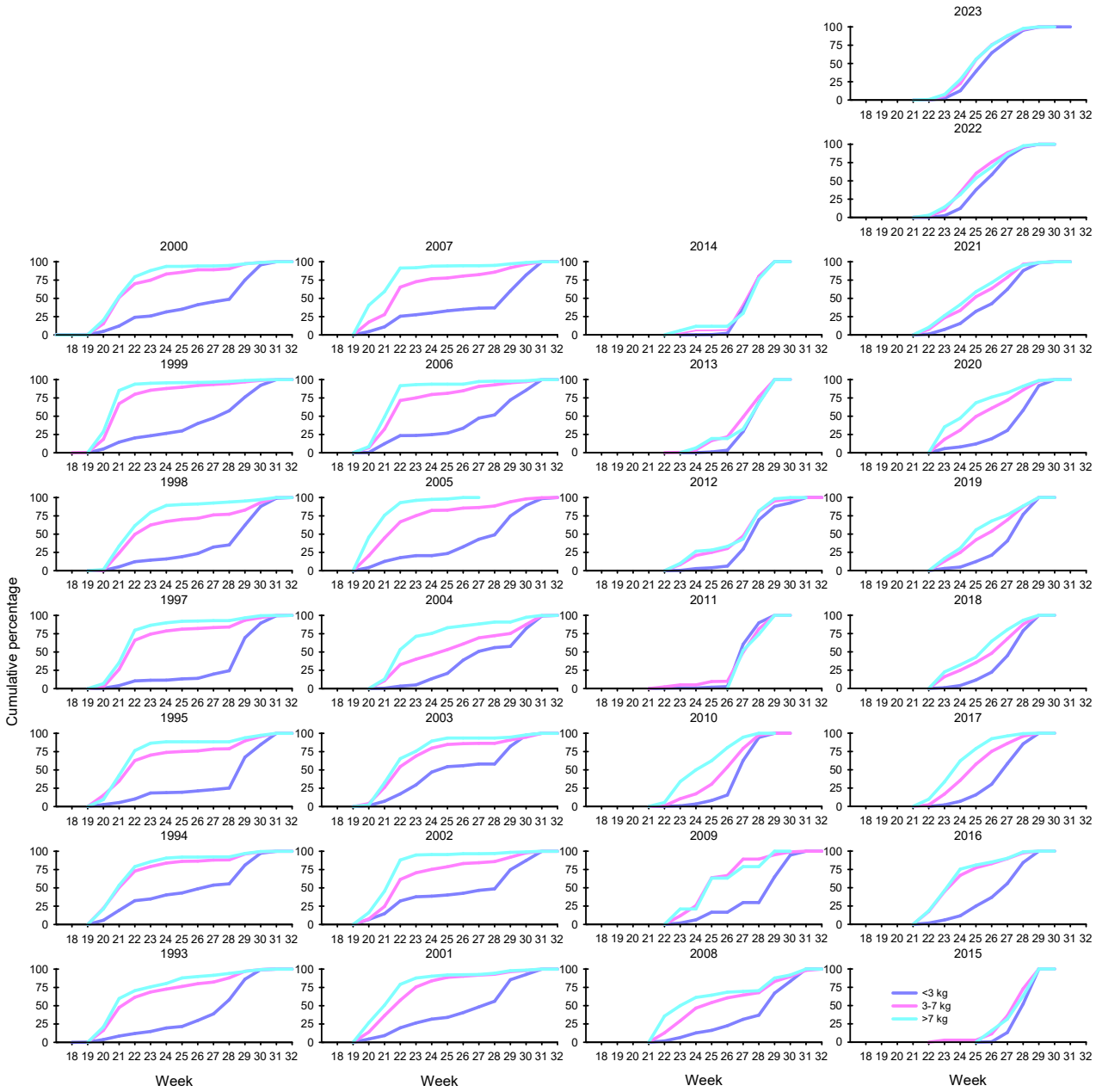


Figure 89. Annual cumulative bag net catches for three size groups of salmon in Varanger salmon district. Source; SSB.

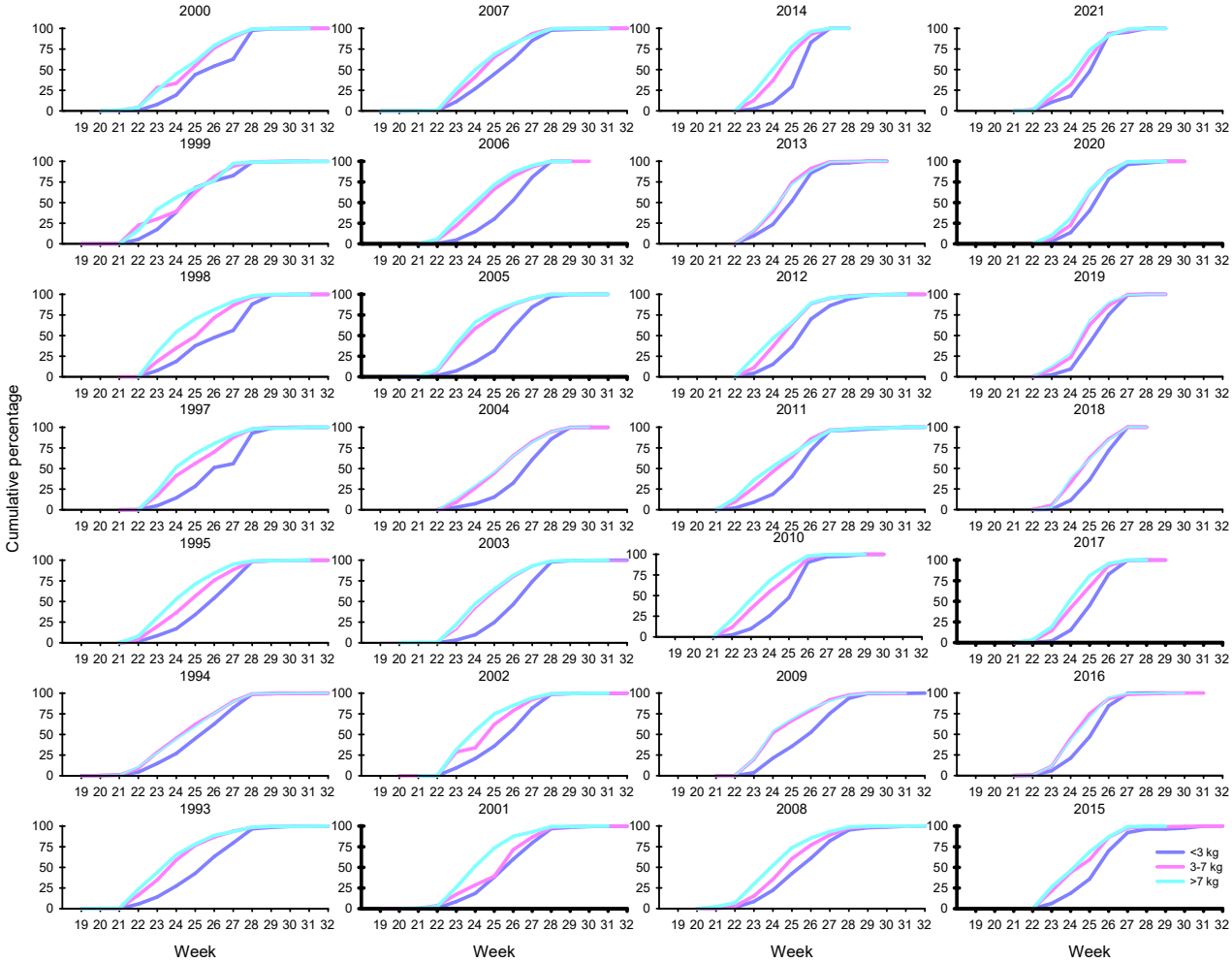


Figure 90. Annual cumulative bend net catches for three size groups of salmon in Varanger salmon district. Source; SSB.

24. Weekly numbers, weight, and proportions of small, medium and large size salmon in bag net and bend net catches in Alta salmon district

Salmon fishery at sea was initiated years ago early in May. Gradually salmon fishery was opened later, in the middle of May and latest from the beginning of June. Per 2024, the regulations in Finnmark are tailored separately for various areas and since the year 2022, only bag net fishery is allowed. In this report catches are described on weekly base separately for bag nets and bend nets and fishing methods combined. Up until 1993, the first reported catches in Alta salmon district took place in week 20 (in the middle of May) in bag net fishery and in the weeks 22 or 23 (first and second week of June) in bend net fishery. In bag net fishery salmon catches in the middle of May and in the end of May consisted only of some tens of salmon in Alta salmon district. In Tana salmon district, catch distribution between the summer weeks has changed a lot when comparing catches between the year 1993-2010 and 2011-2020. Since 2011 until 2020, it has not been reported bag net salmon catches in early June.

Actual weekly salmon catches in numbers and weights, which are demonstrated in graphs, can be used to evaluate the reduction of catches if fishing times are further restricted for bag net fishery.

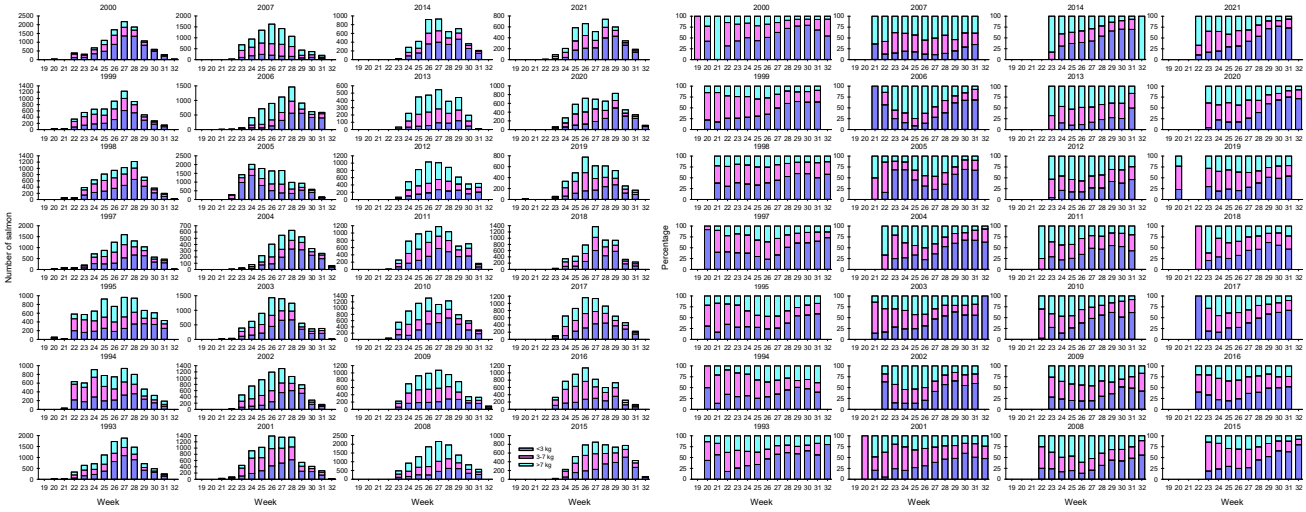


Figure 91. Weekly numbers and proportions of small, medium and large size salmon in the combined bag net and bend net catches in Alta salmon district. Source; SSB

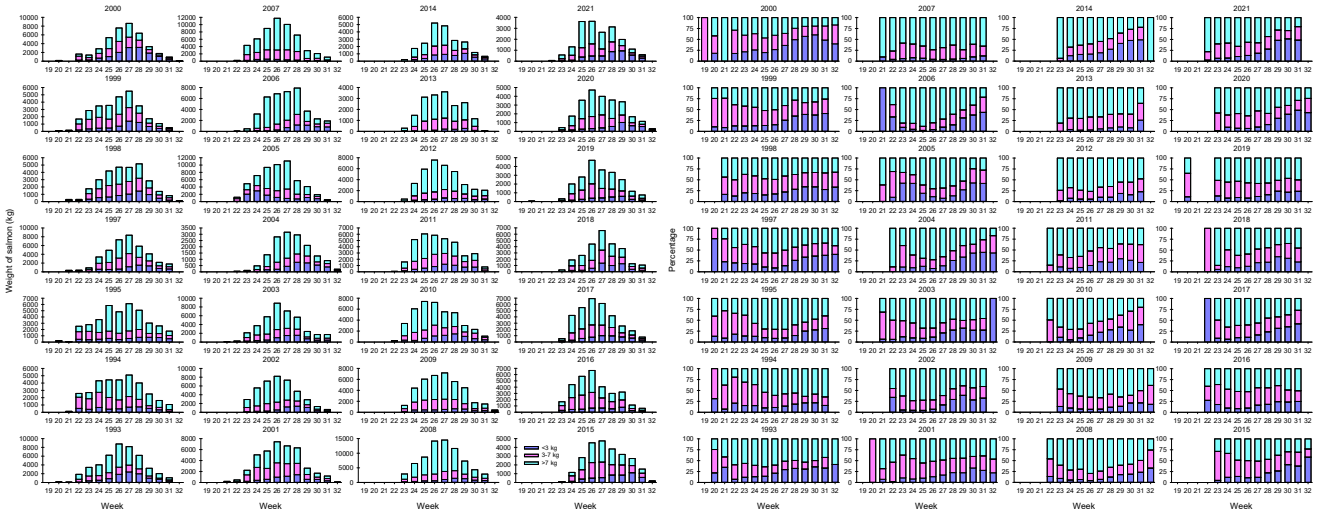


Figure 92. Weekly total weights and proportions of small, medium and large size salmon in the combined bag net and bend net catches in Alta salmon district. Source; SSB

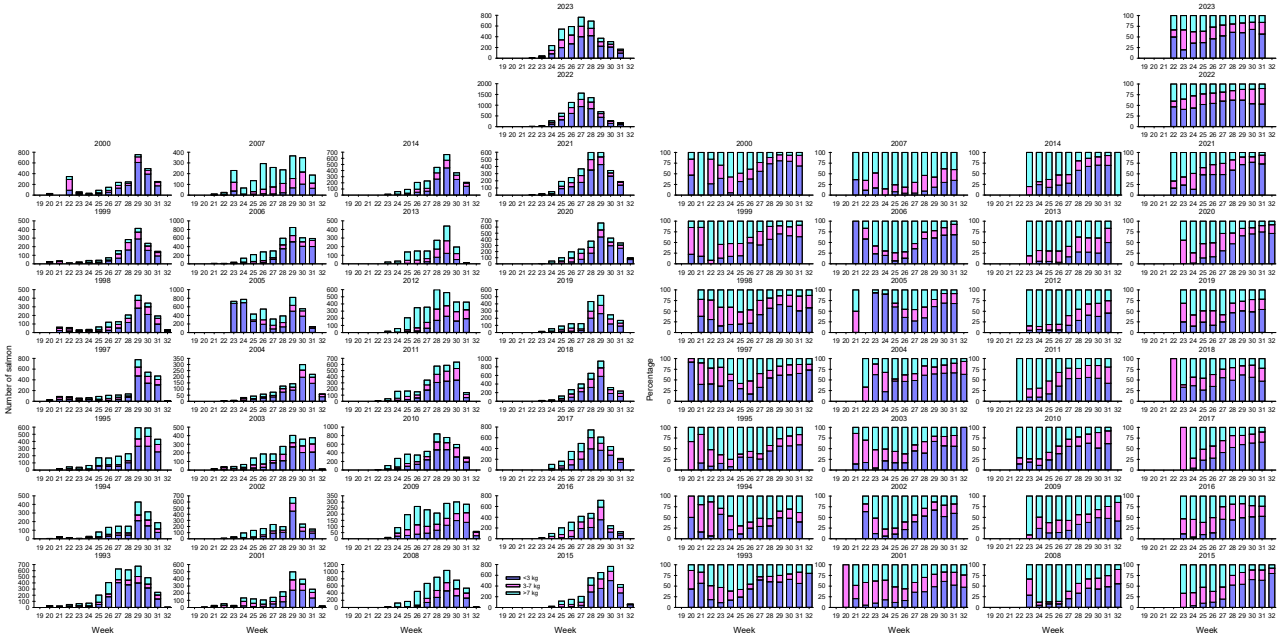


Figure 93. Weekly numbers and proportions of small, medium and large size salmon in the bag net catches in Alta salmon district. Source; SSB

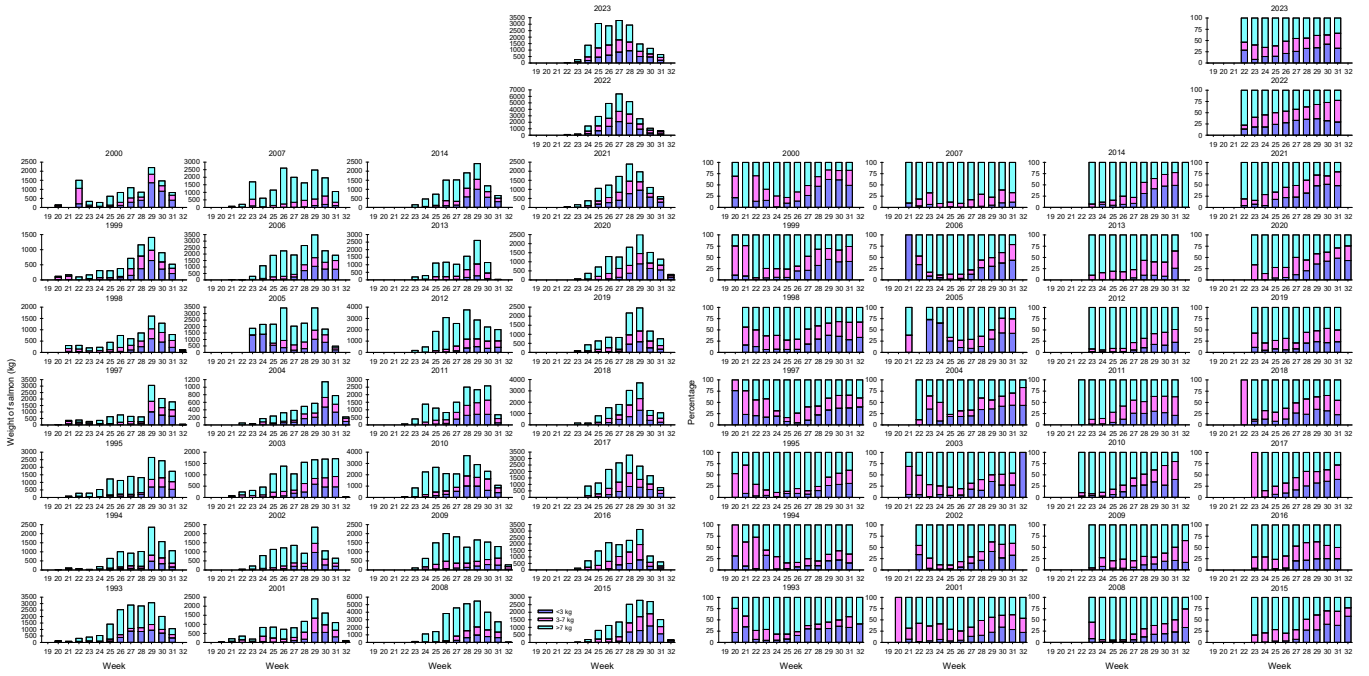


Figure 94. Weekly total weights and proportions of small, medium and large size salmon in the bag net catches in Alta salmon district. Source; SSB

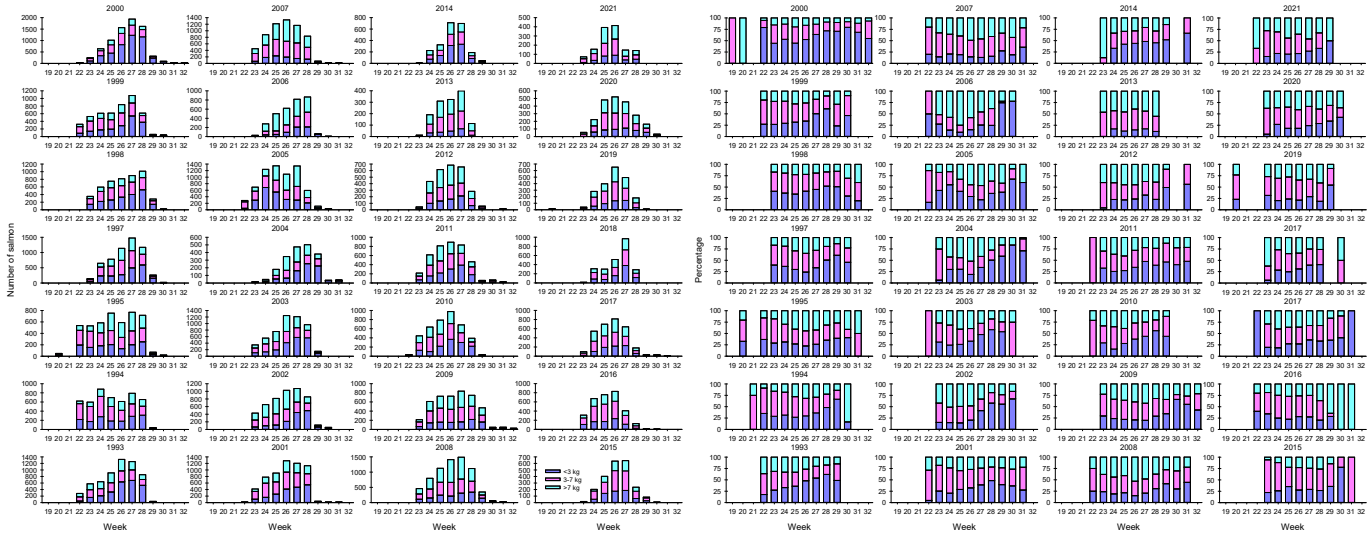


Figure 95. Weekly numbers and proportions of small, medium and large size salmon in the bend net catches in Alta salmon district. Source; SSB

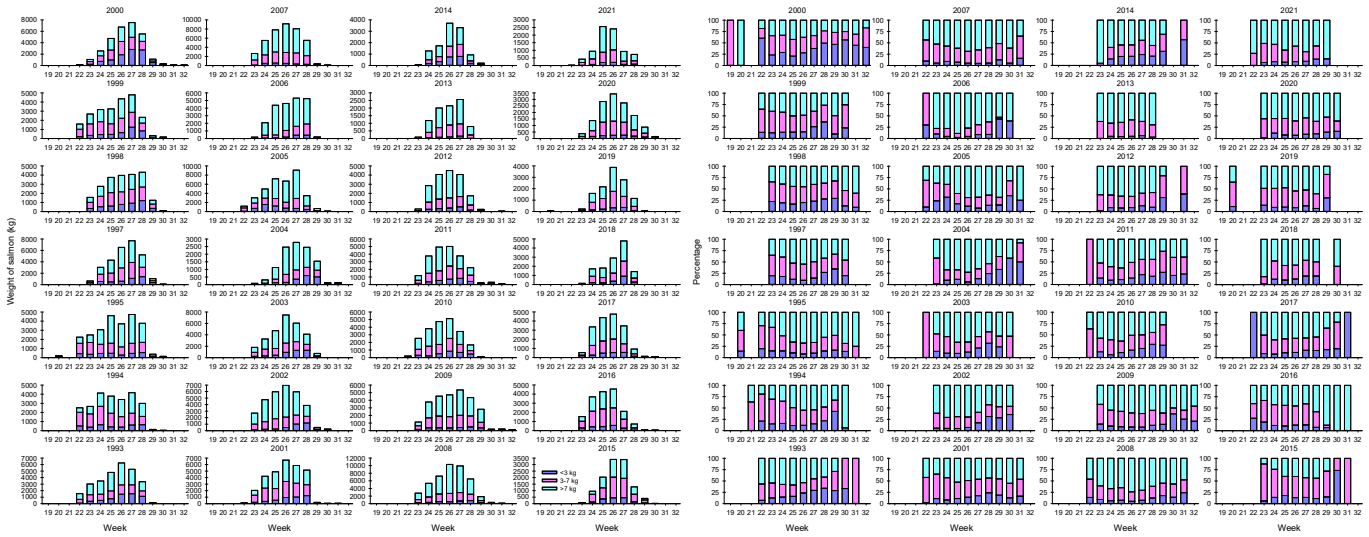


Figure 96. Weekly total weights and proportions of small, medium and large size salmon in the bend net catches in Alta salmon district. Source; SSB

Photo 7. Sampling and weighing of salmon in CoASal project. Photo: Eero Niemelä.

25. Weekly numbers, weight, and proportions of small, medium and large size salmon in bag net and bend net catches in Hammerfest salmon district

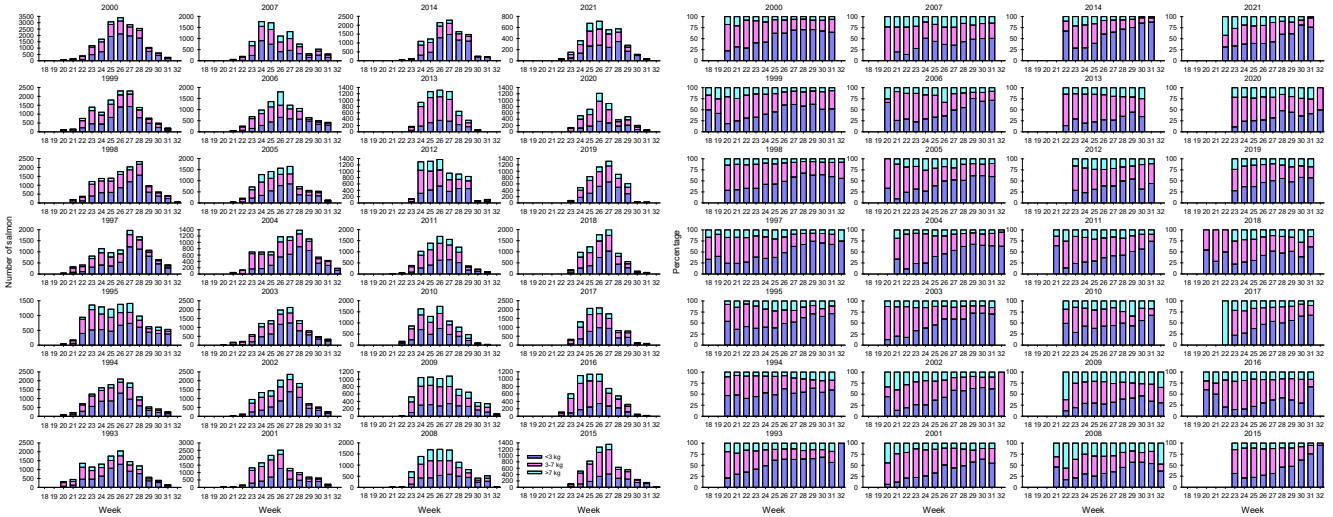


Figure 97. Weekly numbers and proportions of small, medium and large size salmon in the combined bag net and bend net catches in Hammerfest salmon district. Source; SSB

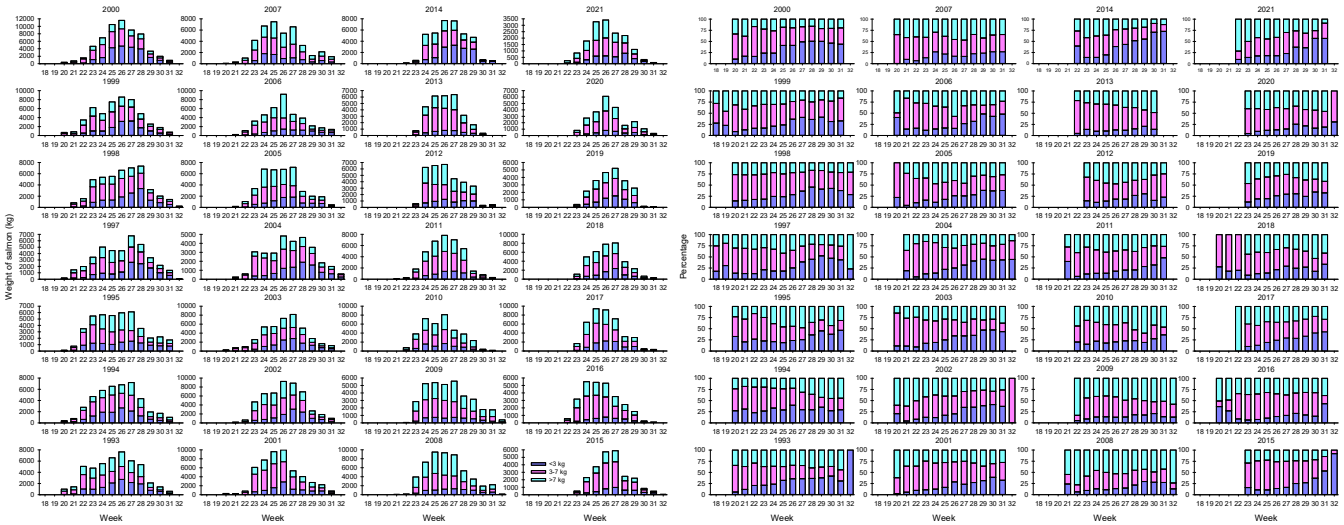


Figure 98. Weekly total weights and proportions of small, medium and large size salmon in the combined bag net and bend net catches in Hammerfest salmon district. Source; SSB

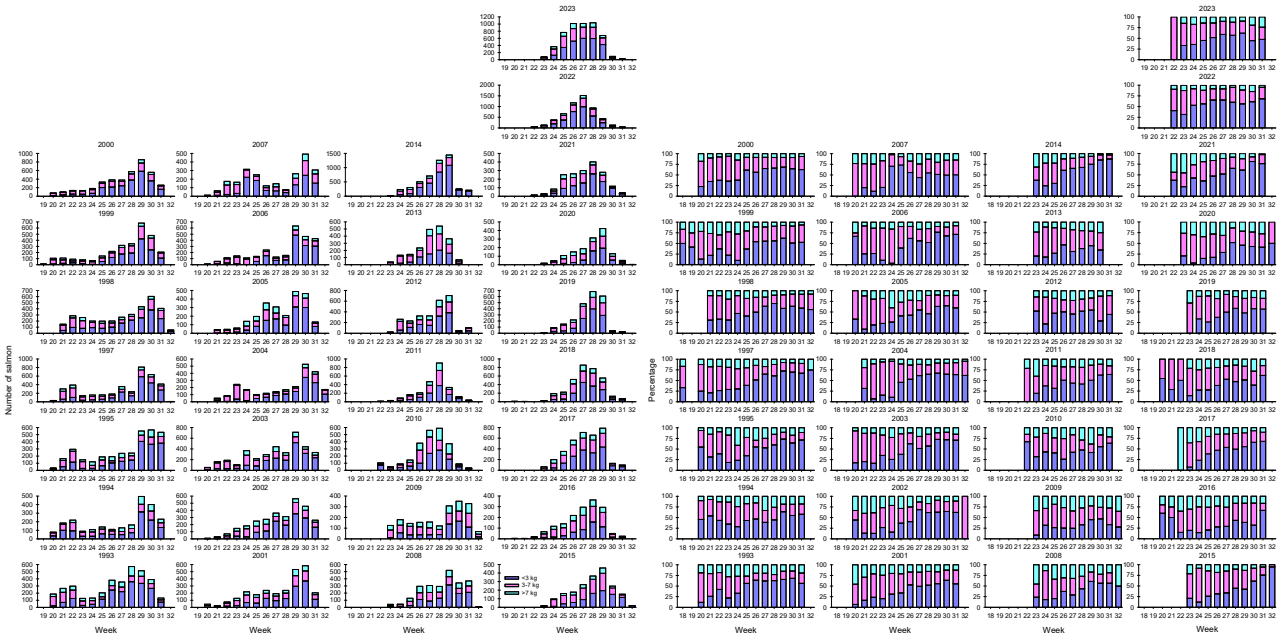


Figure 99. Weekly numbers and proportions of small, medium and large size salmon in the bag net catches in Hammerfest salmon district. Source; SSB

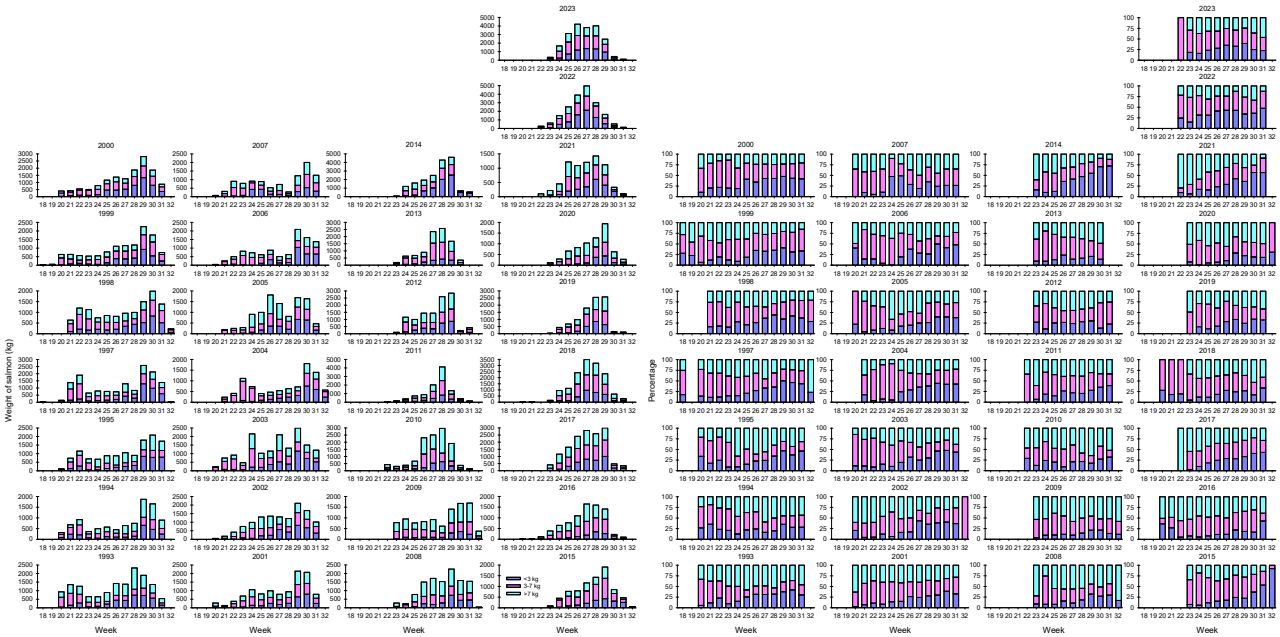


Figure 100. Weekly total weights and proportions of small, medium and large size salmon in the bag net catches in Hammerfest salmon district. Source; SSB

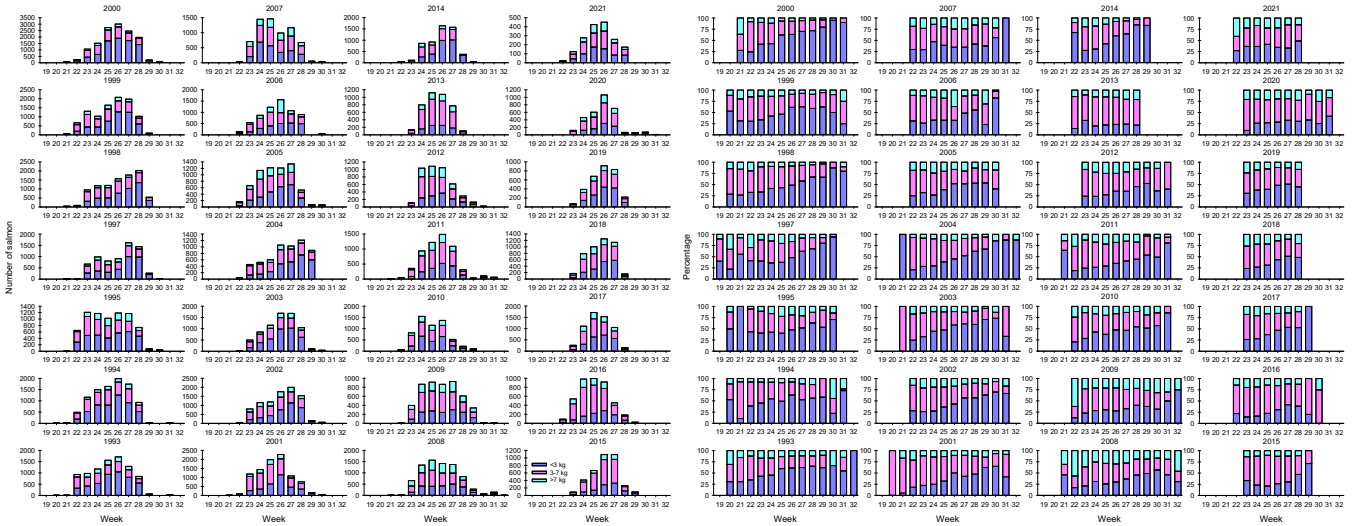


Figure 101. Weekly numbers and proportions of small, medium and large size salmon in the bend net catches in Hammerfest salmon district. Source; SSB

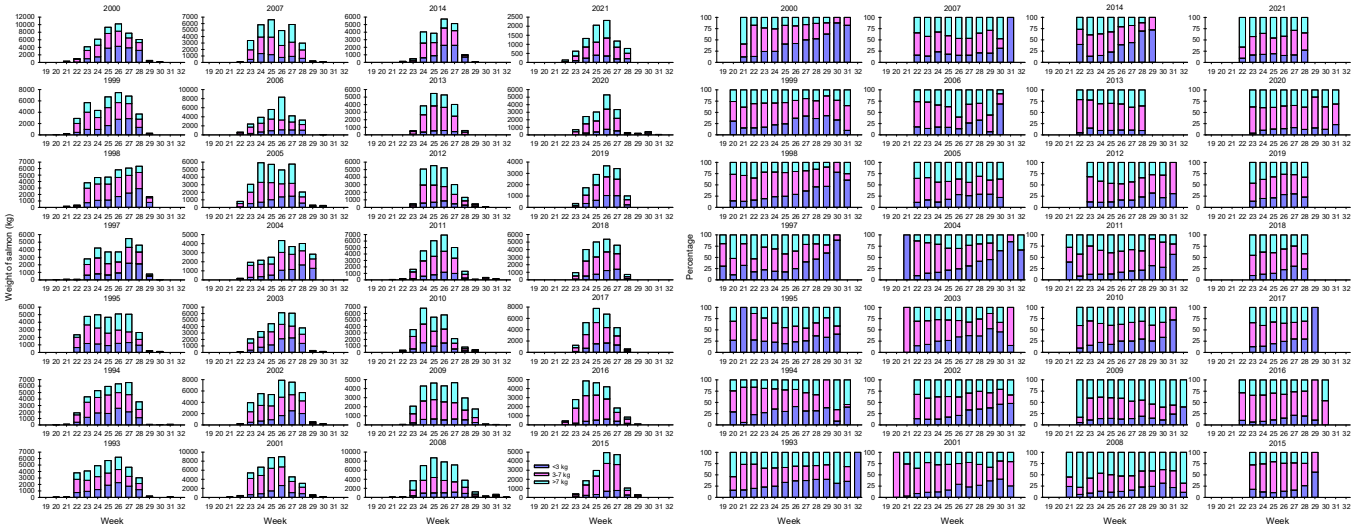


Figure 102. Weekly total weights and proportions of small, medium and large size salmon in the bend net catches in Hammerfest salmon district. Source; SSB

26. Weekly numbers, weight and proportions of small, medium and large size salmon in bag net and bend net catches in Tana salmon district

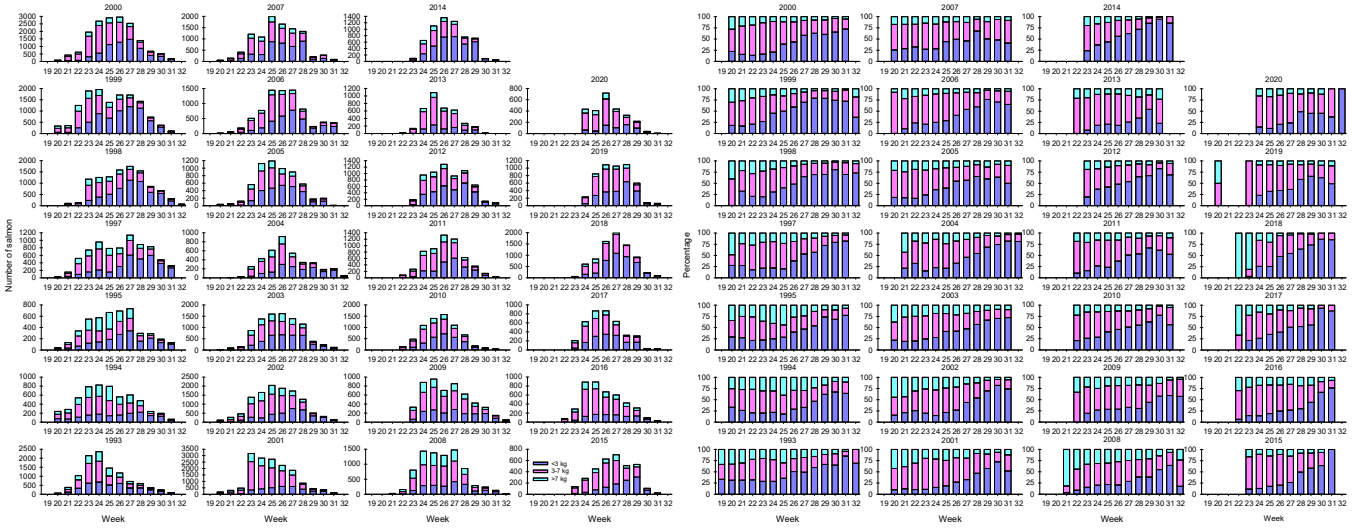


Figure 103. Weekly numbers and proportions of small, medium and large size salmon in the combined bag net and bend net catches in Tana salmon district. Source; SSB

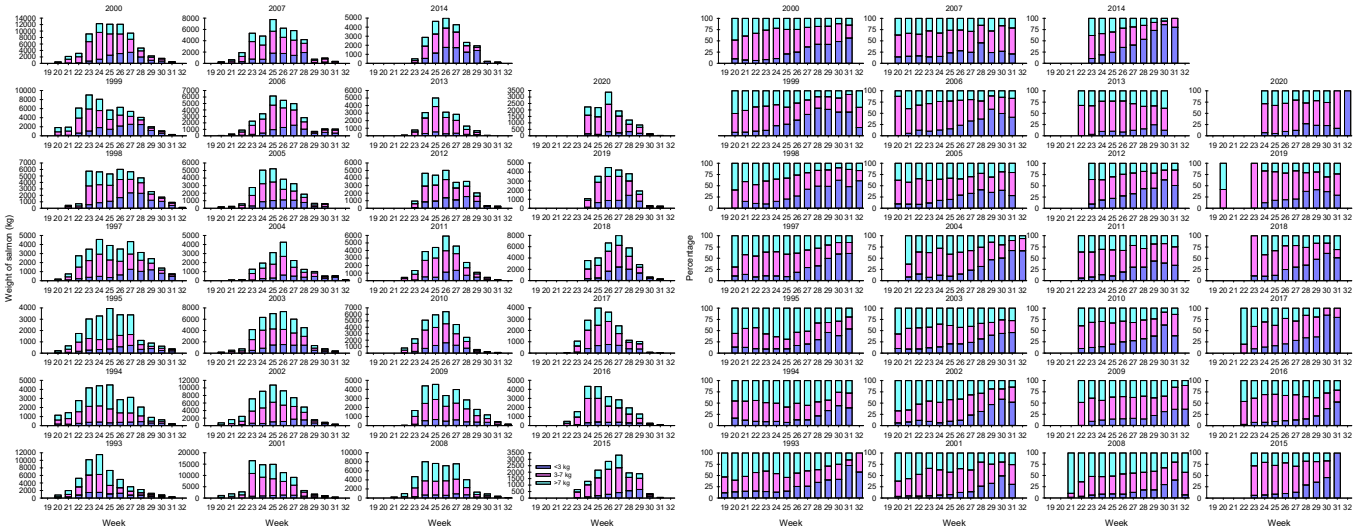


Figure 104. Weekly total weights and proportions of small, medium and large size salmon in the combined bag net and bend net catches in Tana salmon district. Source; SSB

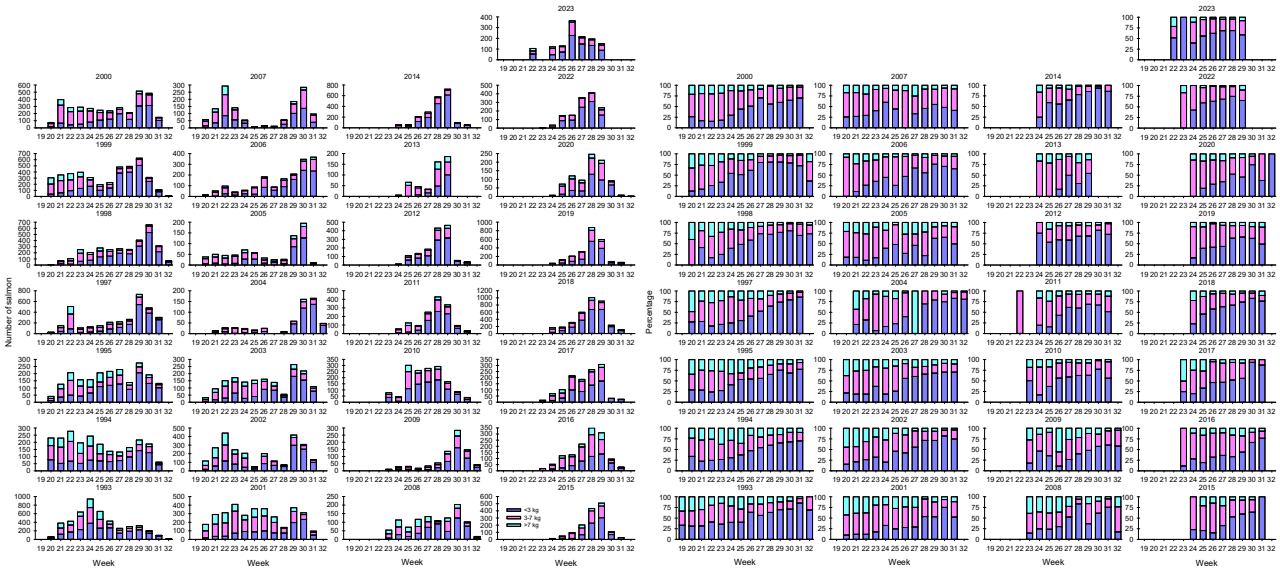


Figure 105. Weekly numbers and proportions of small, medium and large size salmon in the bag net catches in Tana salmon district. Only Lebesby municipality area in the years 2022-2023. Source; SSB

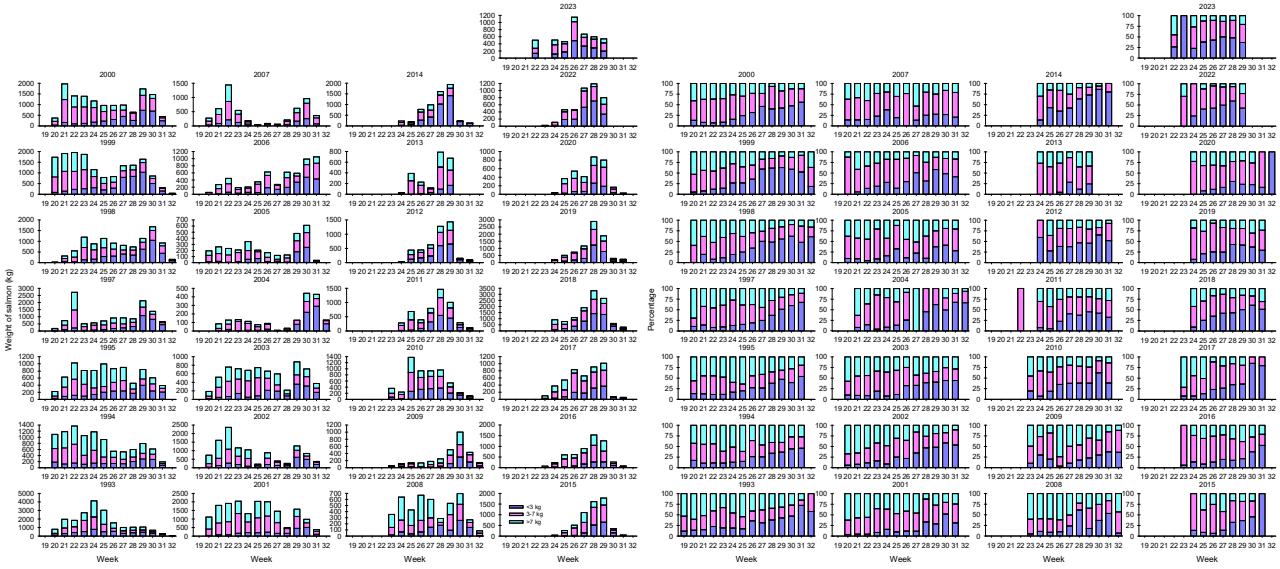


Figure 106. Weekly total weights and proportions of small, medium and large size salmon in the bag net catches in Tana salmon district. Only Lebesby municipality area in the years 2022-2023. Source; SSB

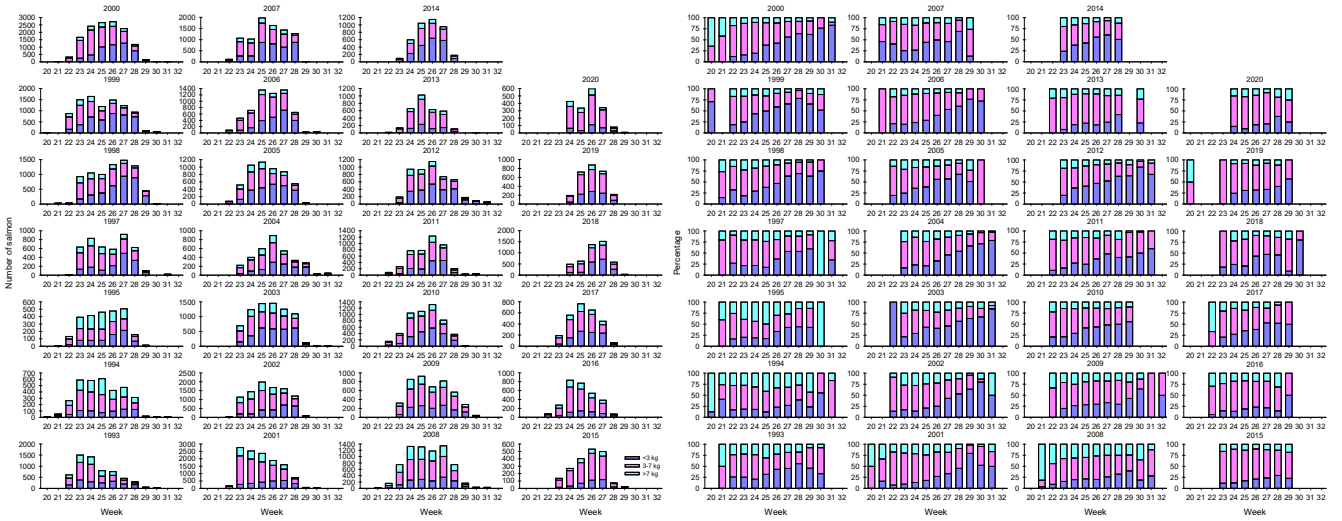


Figure 107. Weekly numbers and proportions of small, medium and large size salmon in the bend net catches in Tana salmon district. Source; SSB

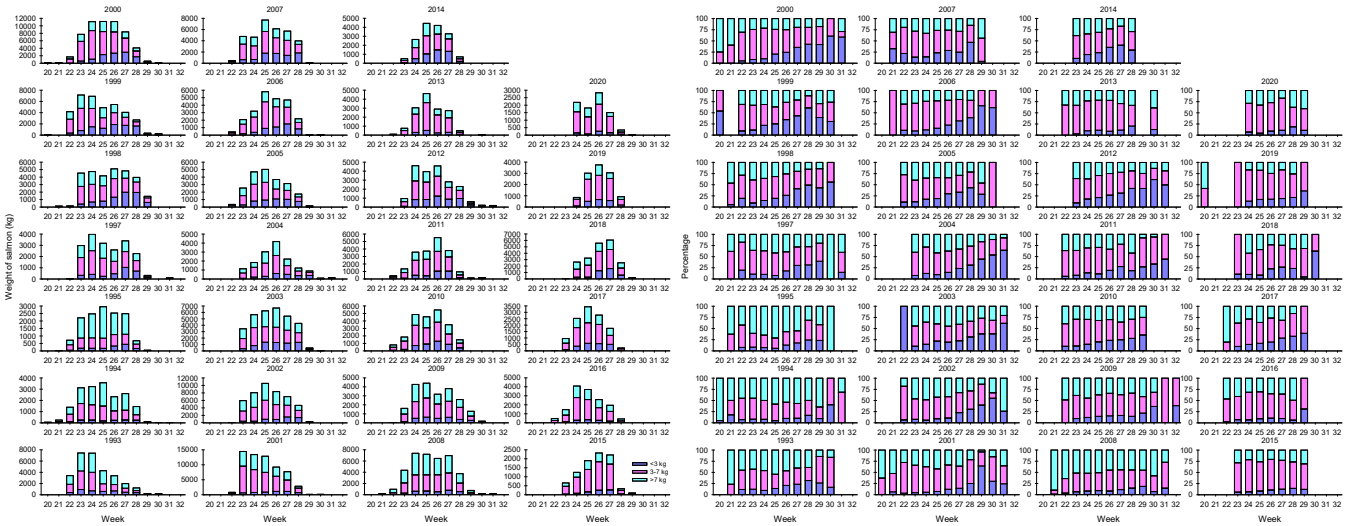


Figure 108. Weekly total weights and proportions of small, medium and large size salmon in the bend net catches in Tana salmon district. Source; SSB

27. Weekly numbers, weight and proportions of small, medium and large size salmon in bag net and bend net catches in Varanger salmon district

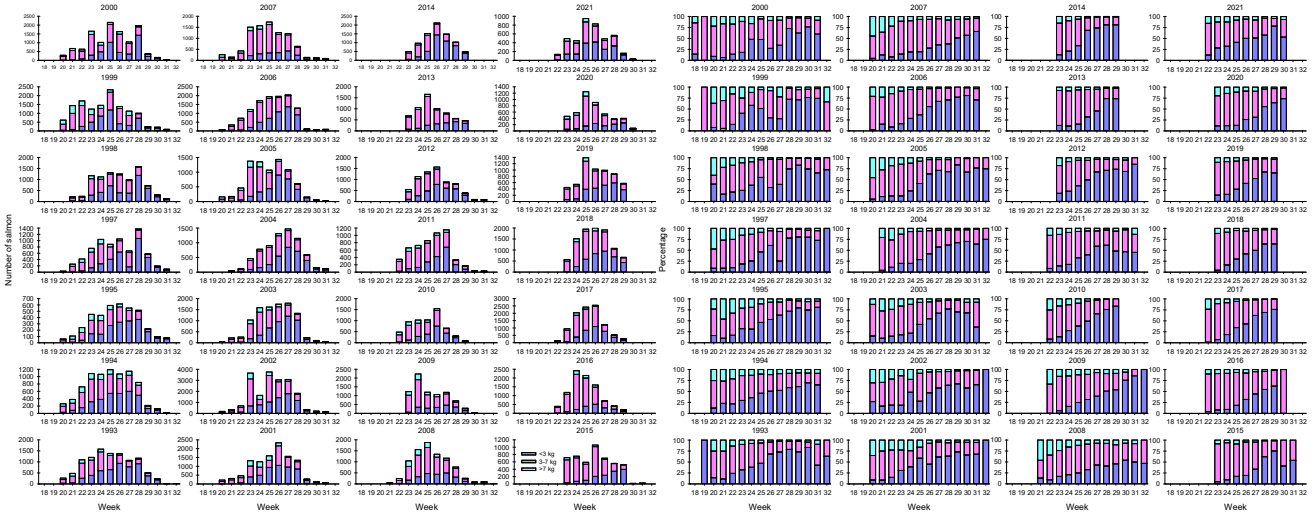


Figure 109. Weekly numbers and proportions of small, medium and large size salmon in the combined bag net and bend net catches in Varanger salmon district. Source; SSB

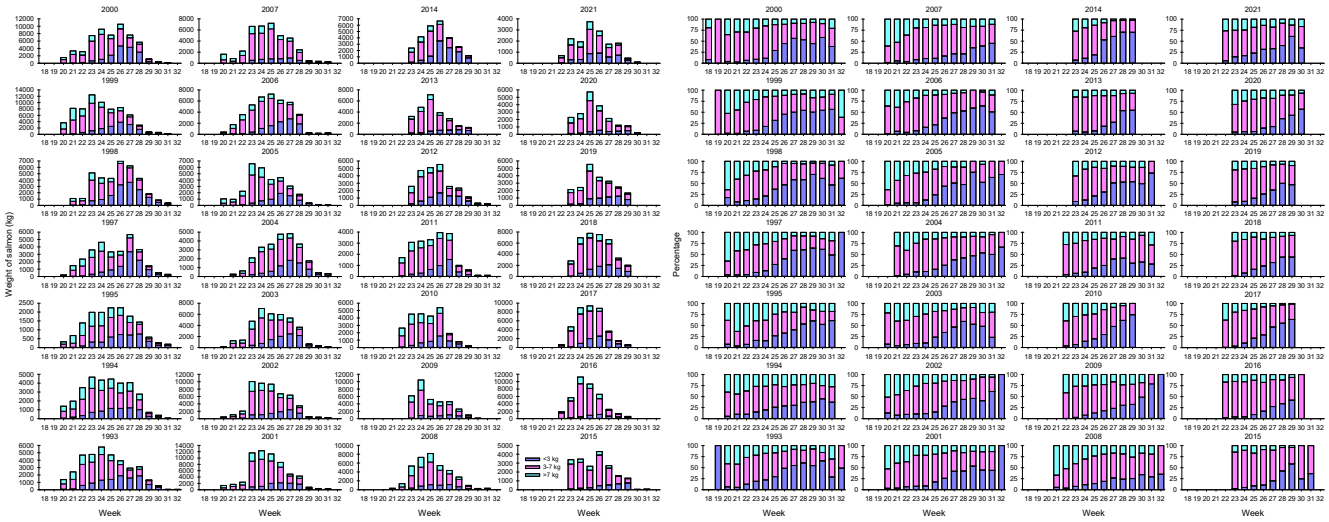


Figure 110. Weekly total weights and proportions of small, medium and large size salmon in the combined bag net and bend net catches in Varanger salmon district. Source; SSB

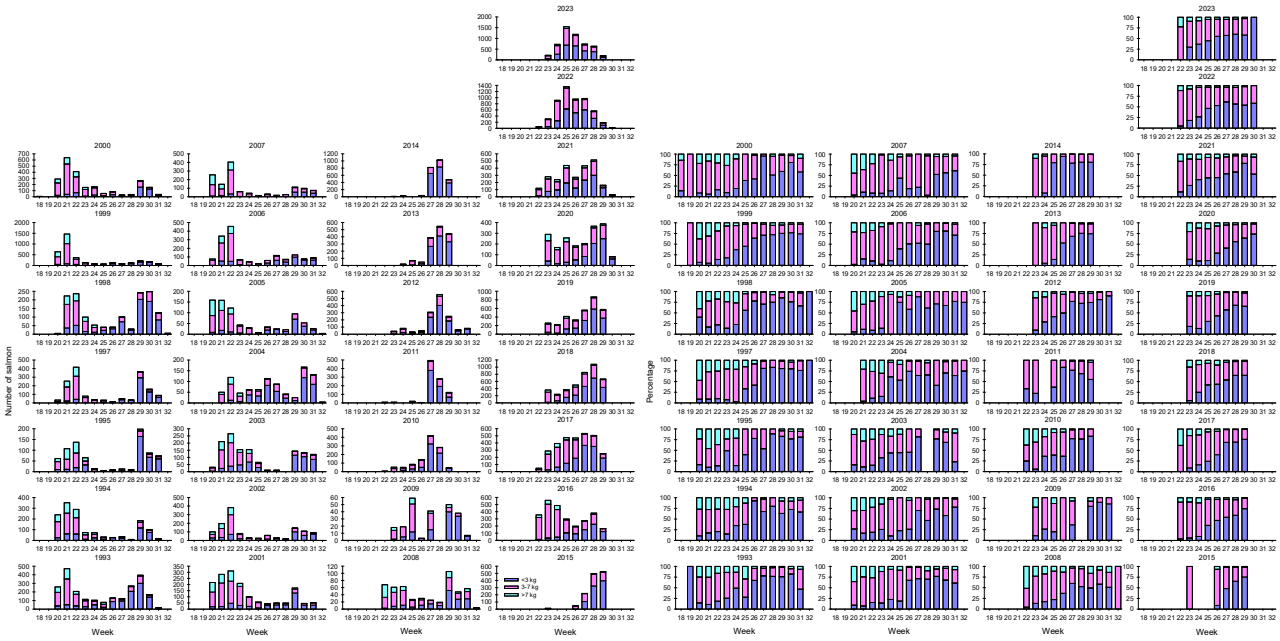


Figure 111. Weekly numbers and proportions of small, medium and large size salmon in the bag net catches in Varanger salmon district. Source; SSB

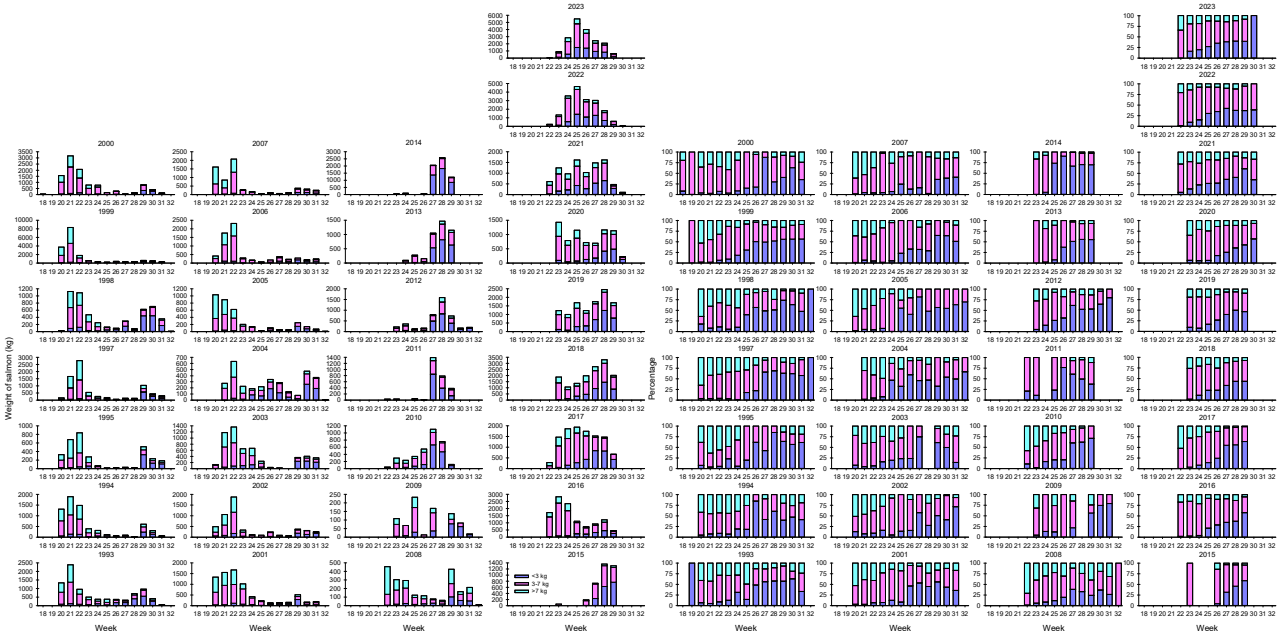


Figure 112. Weekly total weights and proportions of small, medium and large size salmon in the bag net catches in Varanger salmon district. Source; SSB

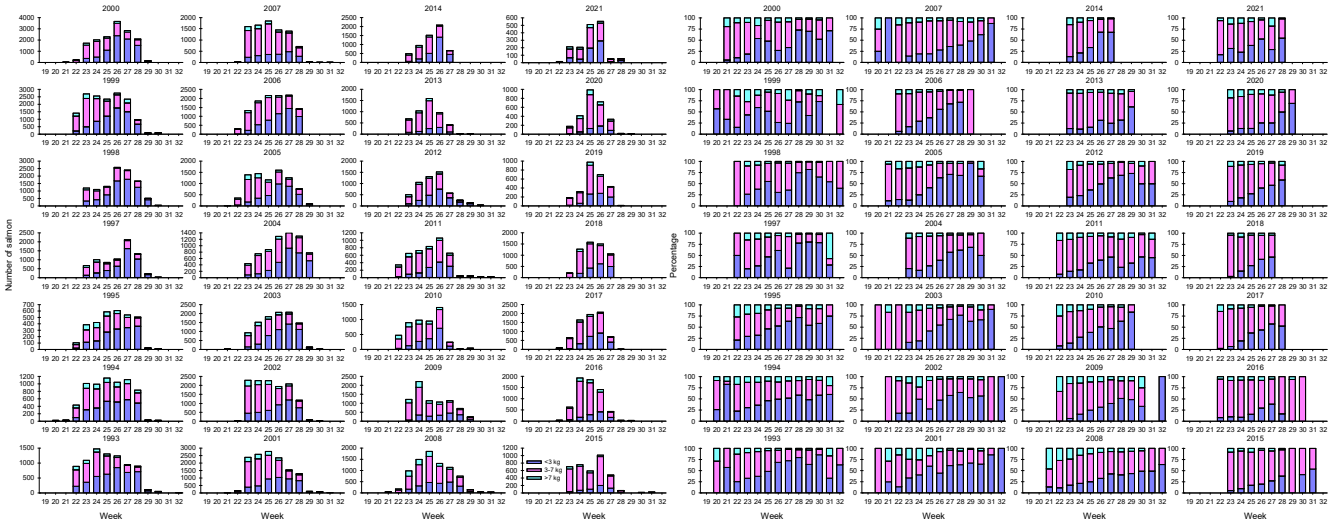


Figure 113. Weekly numbers and proportions of small, medium and large size salmon in the bend net catches in Varanger salmon district. Source; SSB

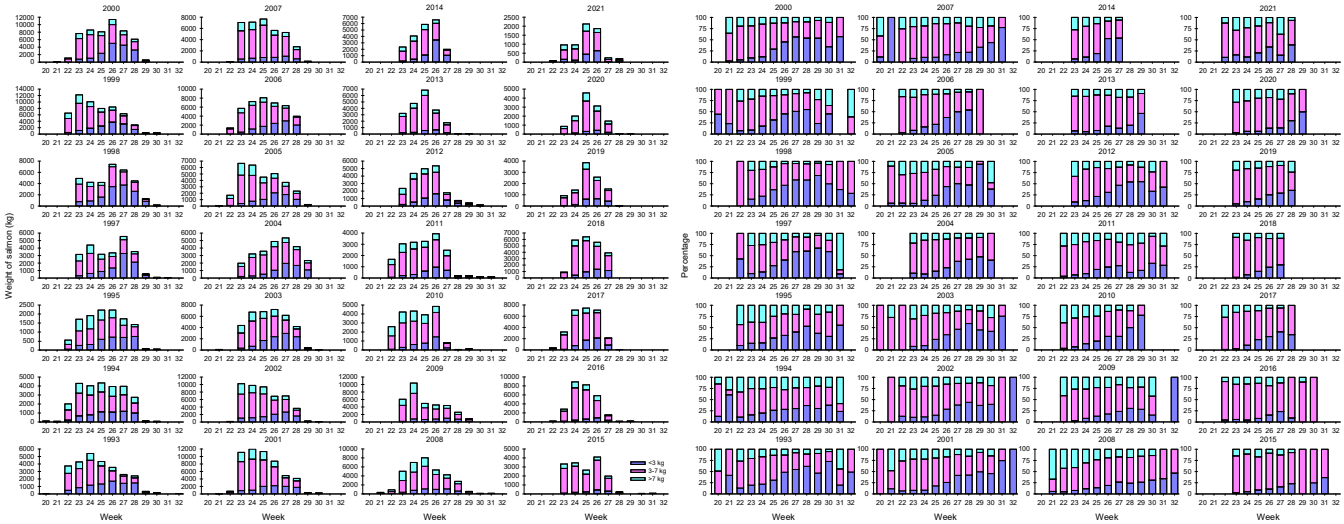


Figure 114. Weekly total weights and proportions of small, medium and large size salmon in the bend net catches in Varanger salmon district. Source; SSB

28. Annual and weekly catches in numbers for combined bag net and bend net fishery in Loppa and Hasvik municipalities, for the three size groups of salmon

In Norway in 1993, new regulations were implemented regarding how to inform about the daily salmon catches. The new catch reporting orders included that catches should be reported daily, and divided in three size groups (<3kg, 3-7kg, >7 kg) in numbers and weights. Catch reports should also inform if salmon were caught in bag net or bend net. Salmon in the weight group <3kg corresponds salmon in the age of one seawinter, 3-7kg corresponds salmon in the age of two seawinter and also most of previous spawning salmon age groups, >7 kg corresponds salmon in the age of 3-5 seawinter salmon.

Graphs for each municipality are showing weekly catches from bag net and bend net fishery combined. Nowadays, salmon fishing restrictions are differing between geographical areas and in one municipality there can be local fishing restrictions, like in Sør-Varanger municipality. Weekly numbers of salmon catches show how much the catches have declined after the new fishing restrictions were implemented, especially when comparing catches in 1990's with the catches in 2010's.

Weekly salmon catches in all the municipalities are showing that the size distributions in salmon catches are changing slowly from the beginning to the end of fishing season. Largest salmon have been making the majority early in the fishing season in the catches and their proportion has slowly declined and compensated by medium size salmon and finally by small size salmon. The cutting of salmon fishing season early in the summer has affected in some municipalities into the smaller amounts of large salmon in the catches in the latest years.

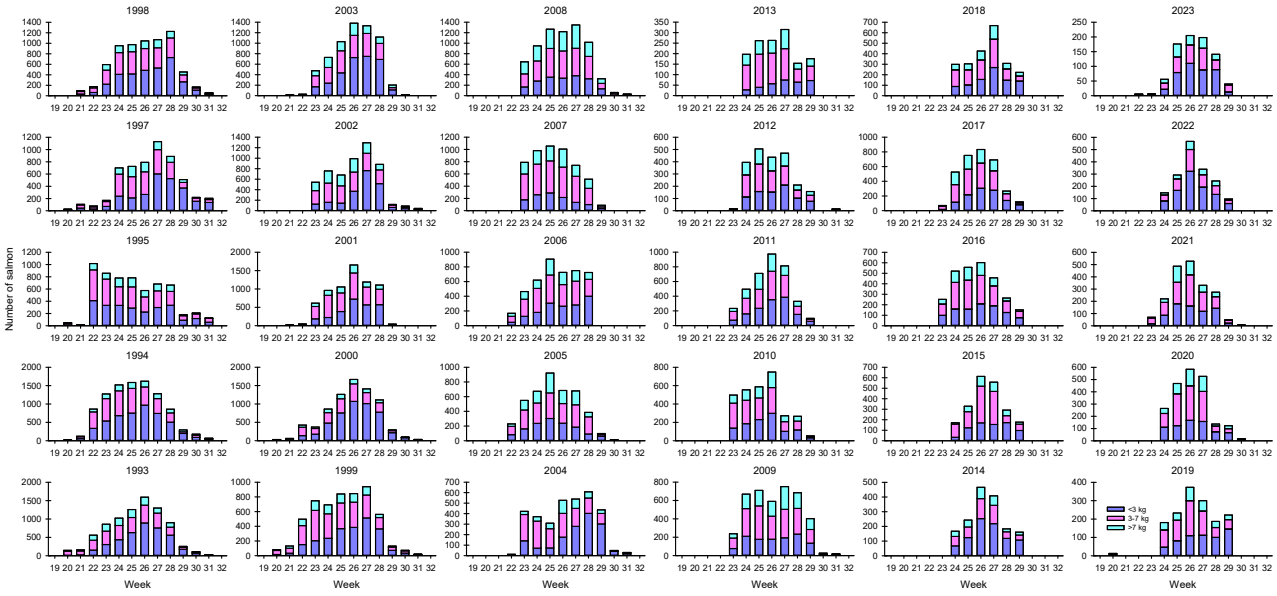


Figure 115. Annual and weekly catches in numbers for combined bag net and bend net fishery in Loppa and Hasvik municipalities, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

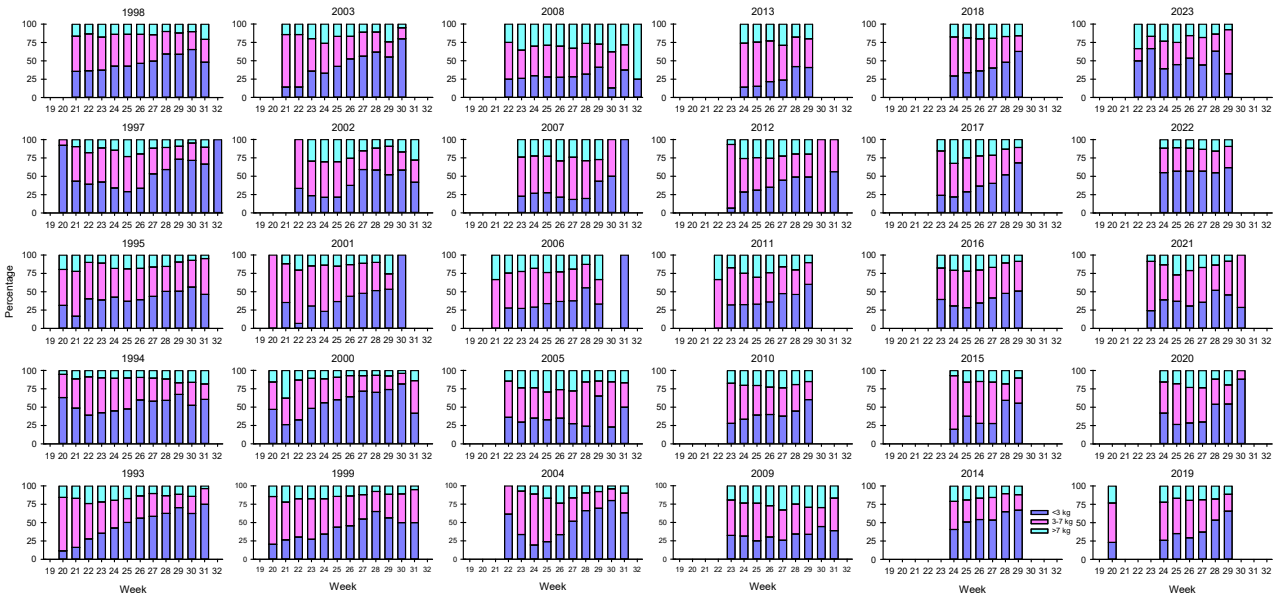


Figure 116. Annual and weekly distributions (%) in combined bag net and bend net fishery in Loppa and Hasvik municipalities, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

Photo 8. Salmon catch. Photo: Eero Niemelä

29. Annual and weekly catches in numbers for combined bag net and bend net fishery in Alta municipality, for three size groups of salmon

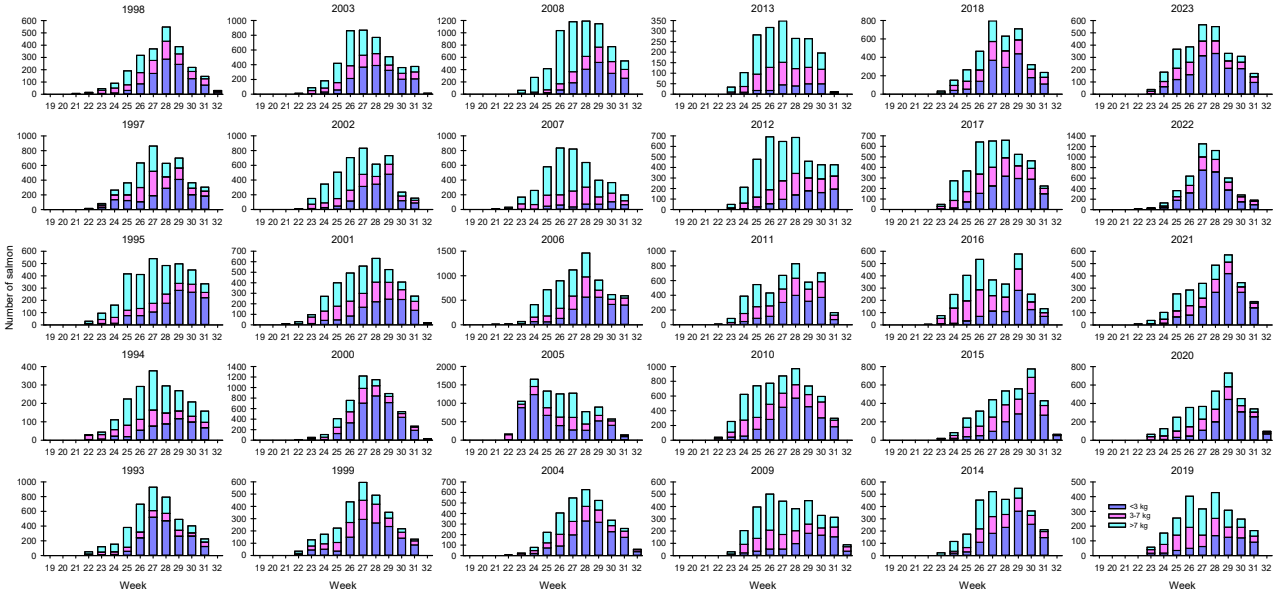


Figure 117. Annual and weekly catches in numbers for combined bag net and bend net fishery in Alta municipality, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

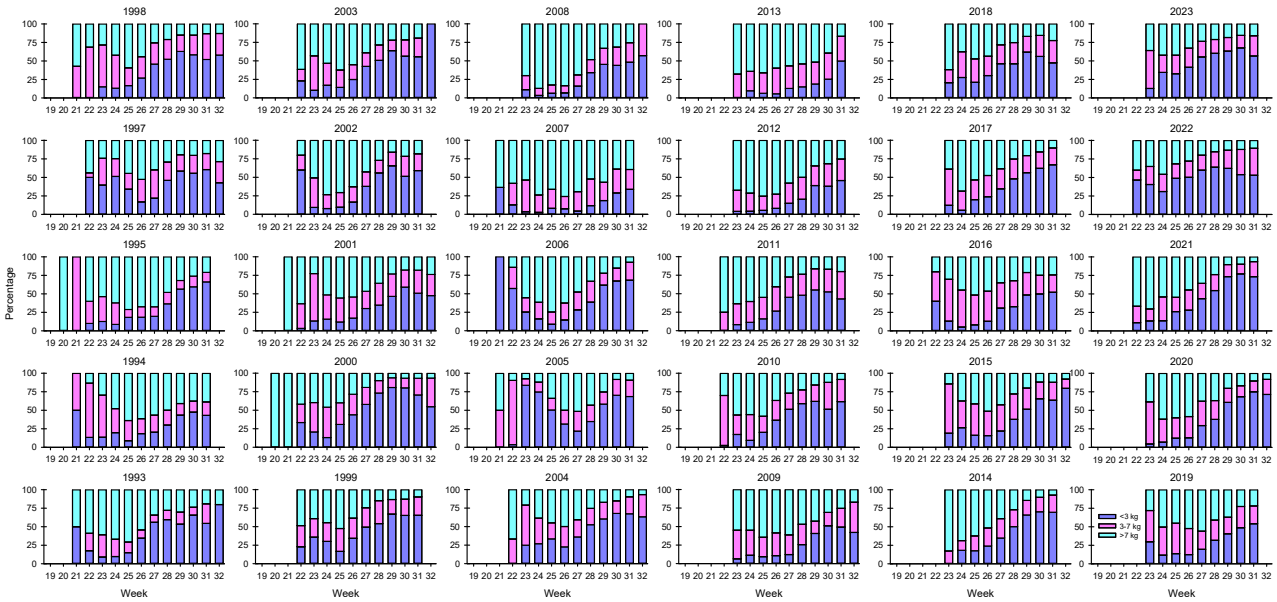


Figure 118. Annual and weekly distributions (%) in combined bag net and bend net fishery in Alta municipality, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

30. Annual and weekly catches in numbers for combined bag net and bend net fishery in Hammerfest municipality for three size groups of salmon

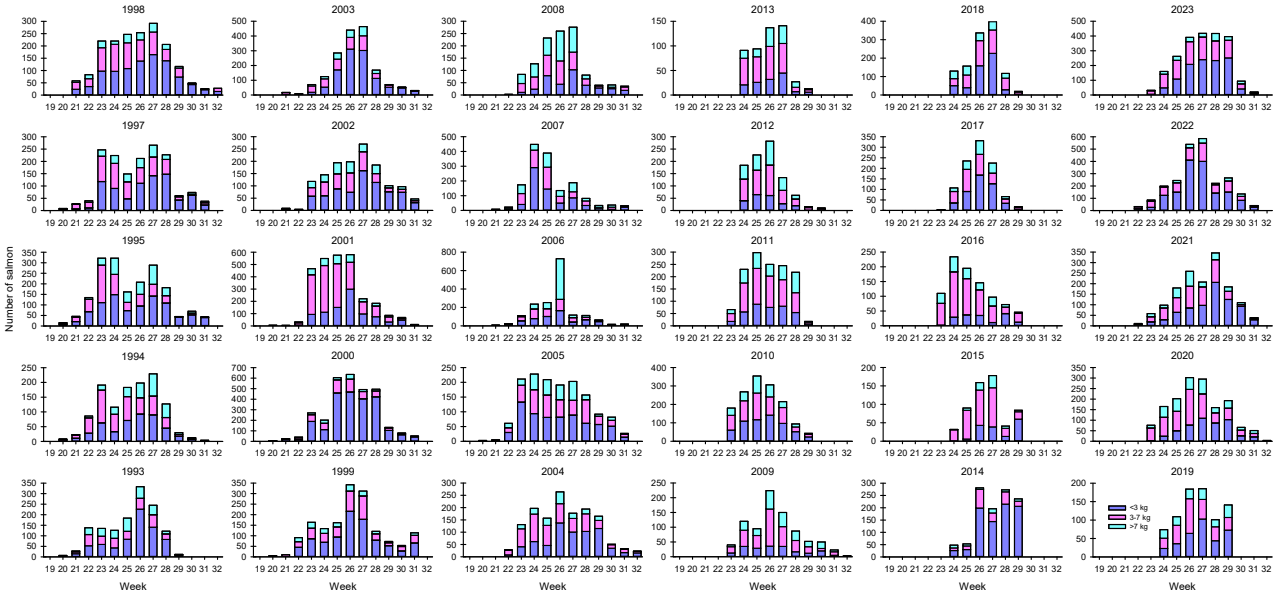


Figure 119. Annual and weekly catches in numbers for combined bag net and bend net fishery in Hammerfest municipality, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

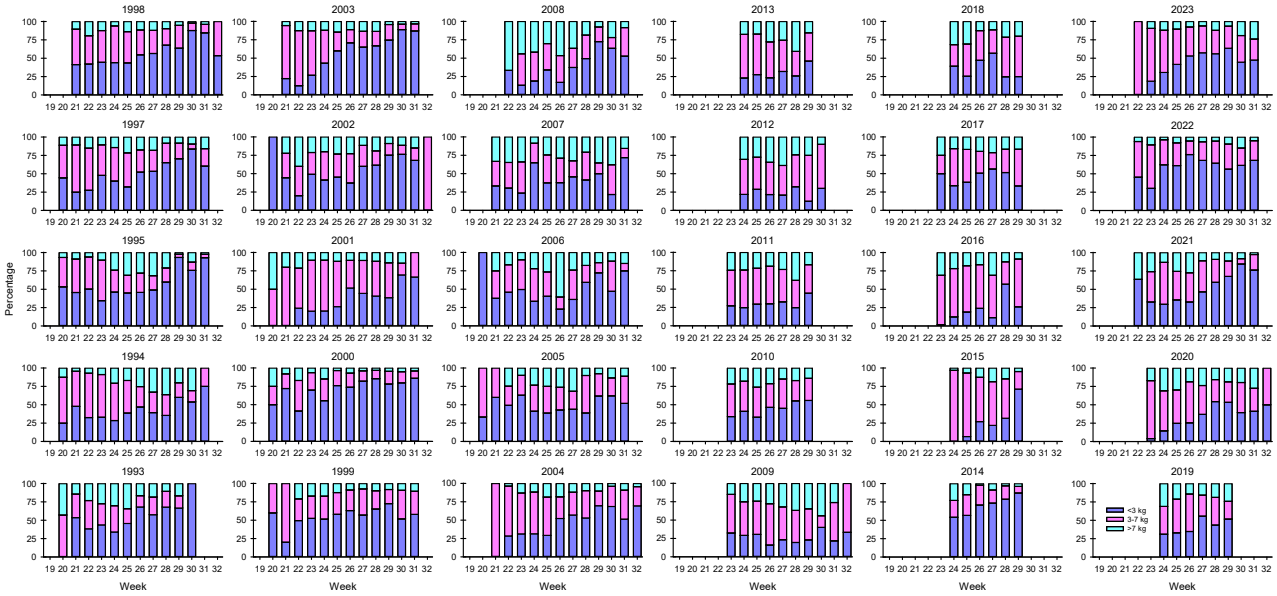


Figure 120. Annual and weekly distributions (%) in combined bag net and bend net fishery in Hammerfest municipality, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

31. Annual and weekly catches in numbers for combined bag net and bend net fishery in Måsøy municipality for three size groups of salmon

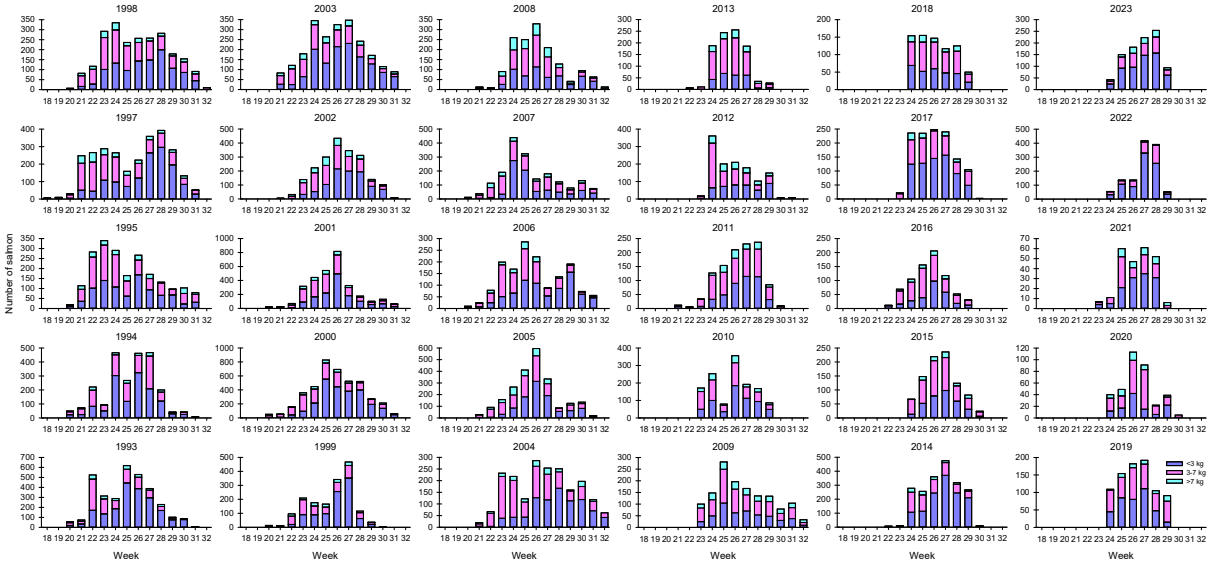


Figure 121. Annual and weekly catches in numbers for combined bag net and bend net fishery in Måsøy municipality, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

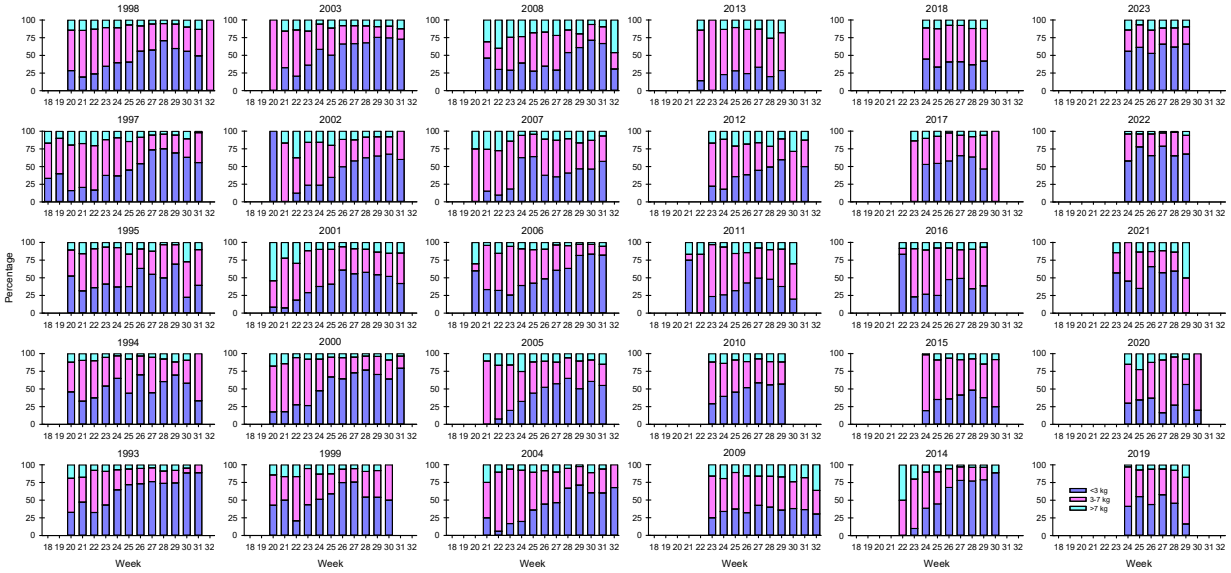


Figure 122. Annual and weekly distributions (%) in combined bag net and bend net fishery in Måsøy municipality, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

32. Annual and weekly catches in numbers for combined bag net and bend net fishery in Nordkapp municipality, for three size groups of salmon

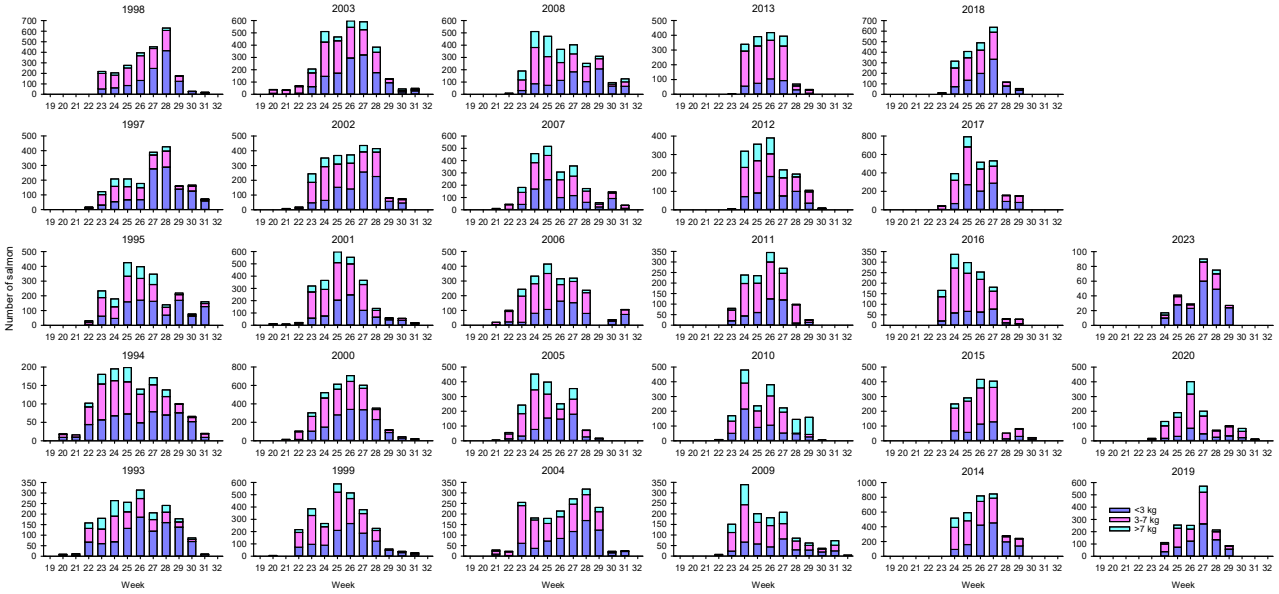


Figure 123. Annual and weekly catches in numbers for combined bag net and bend net fishery in Nordkapp municipality, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

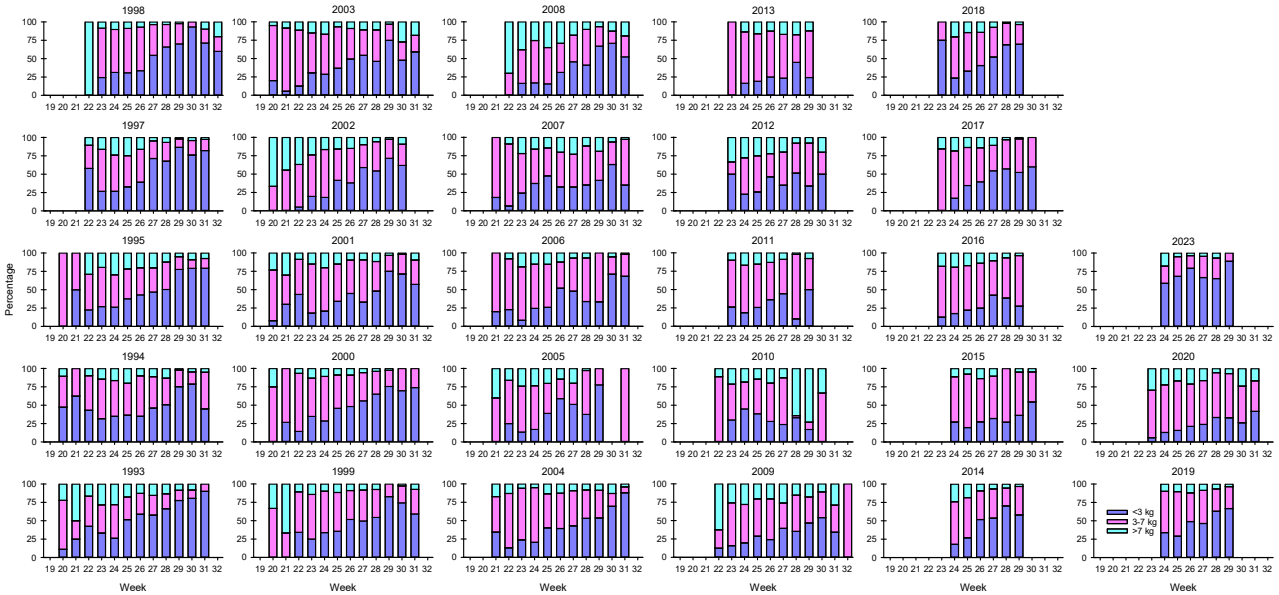


Figure 124. Annual and weekly distributions (%) in combined bag net and bend net fishery in Nordkapp municipality, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

33. Annual and weekly catches in numbers for combined bag net and bend net fishery in Porsanger municipality, for three size groups of salmon

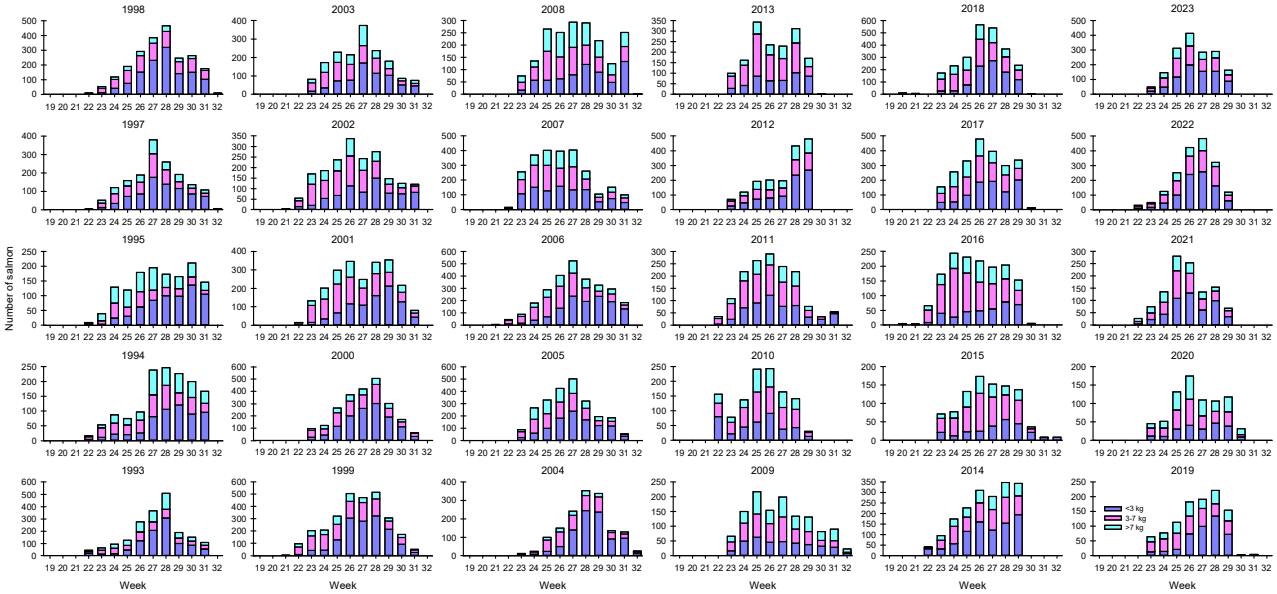


Figure 125. Annual and weekly catches in numbers for combined bag net and bend net fishery in Porsanger municipality, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

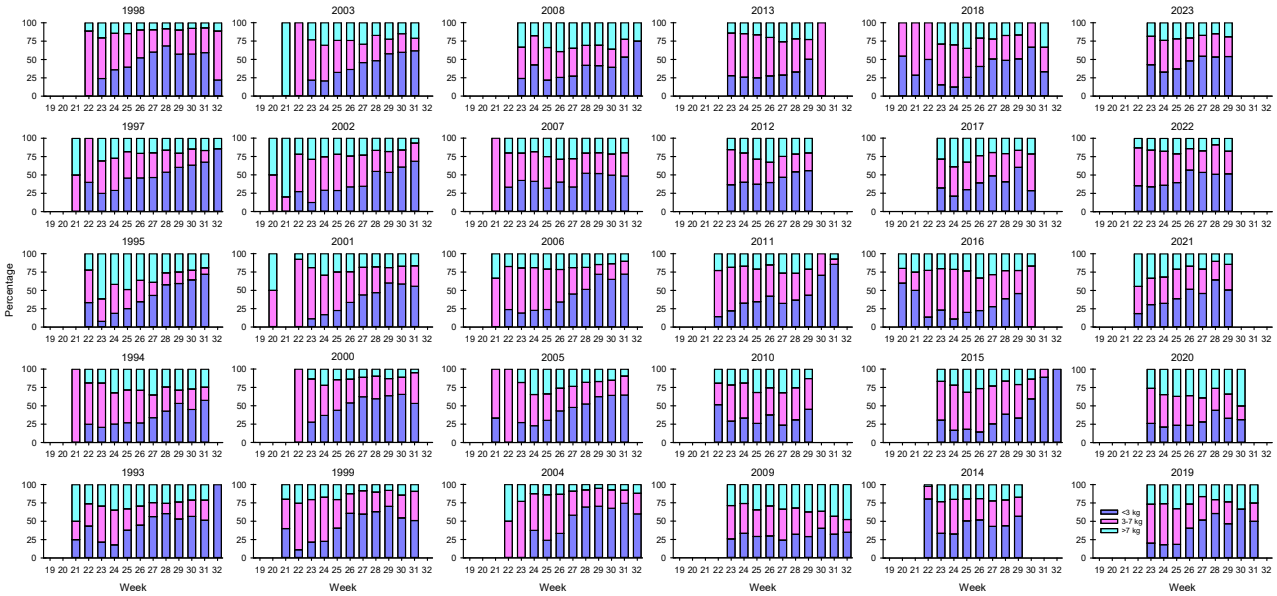


Figure 126. Annual and weekly distributions (%) in combined bag net and bend net fishery in Porsanger municipality, three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

34. Annual and weekly catches in numbers for combined bag net and bend net fishery in Lebesby municipality, for three size groups of salmon

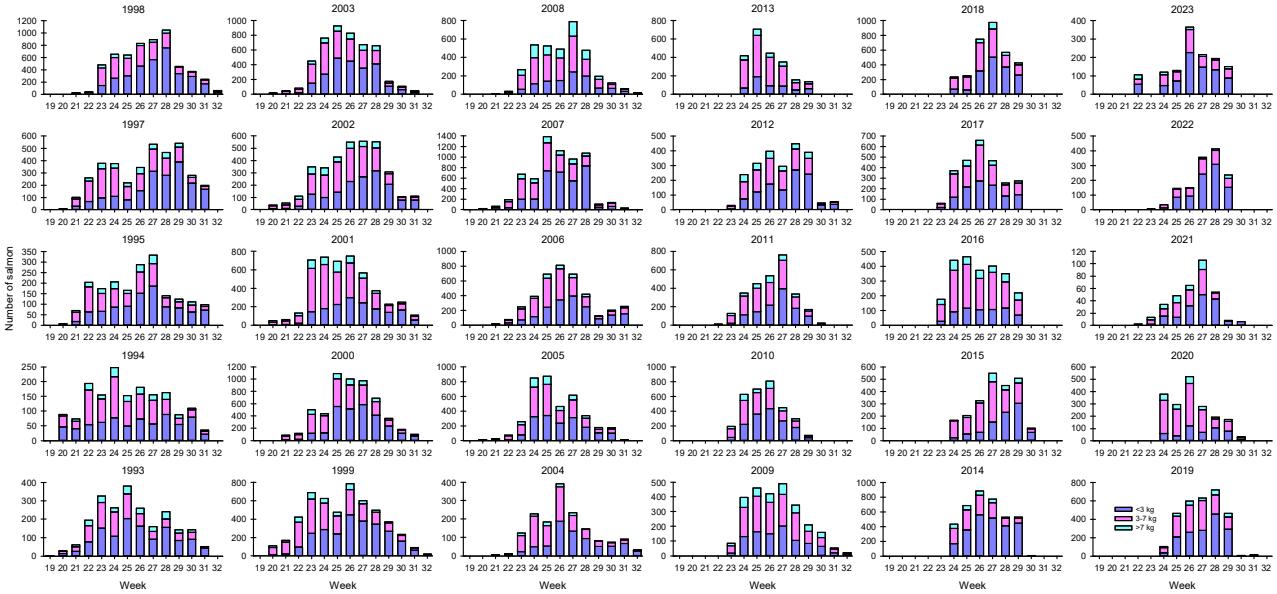


Figure 127. Annual and weekly catches in numbers for combined bag net and bend net fishery in Lebesby municipality, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

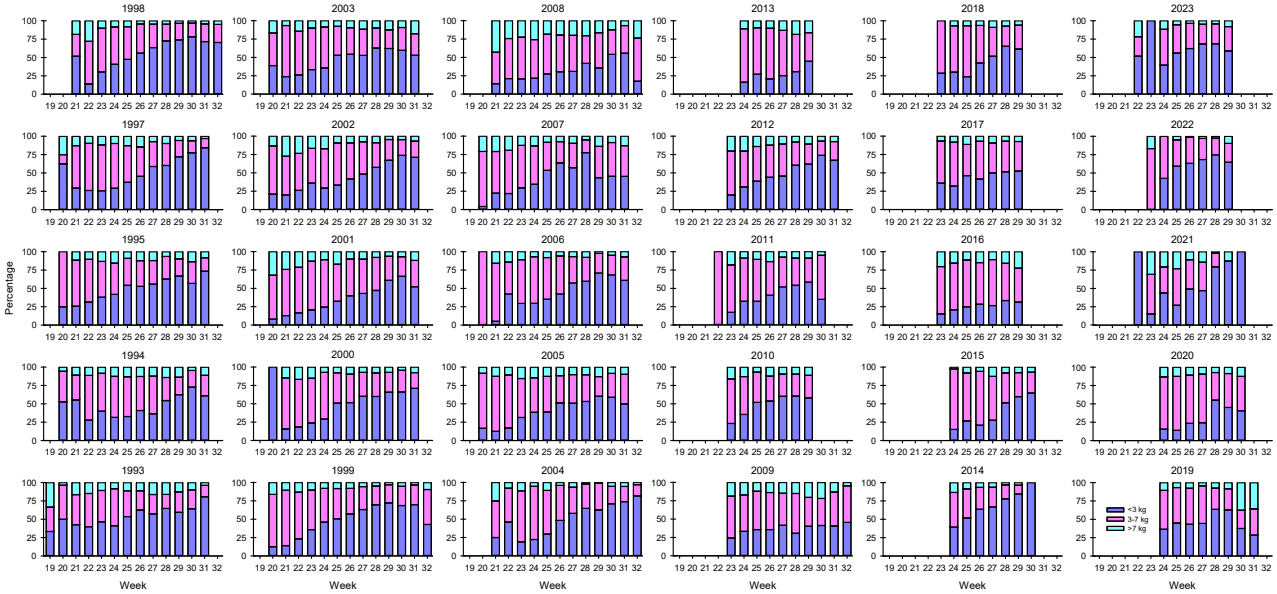


Figure 128. Annual and weekly distributions (%) in combined bag net and bend net fishery in Lebesby municipality, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

35. Annual and weekly catches in numbers for combined bag net and bend net fishery in Vadsø and Nesseby municipalities, for three size groups of salmon

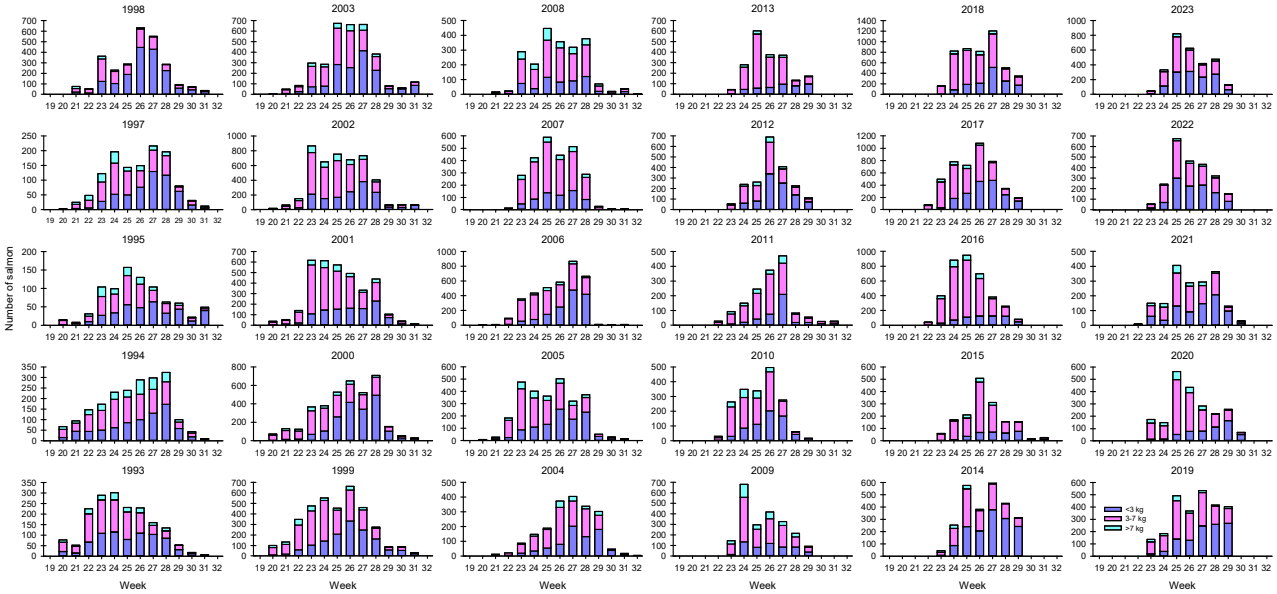


Figure 129. Annual and weekly catches in numbers for combined bag net and bend net fishery in Vadsø and Nesseby municipalities, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

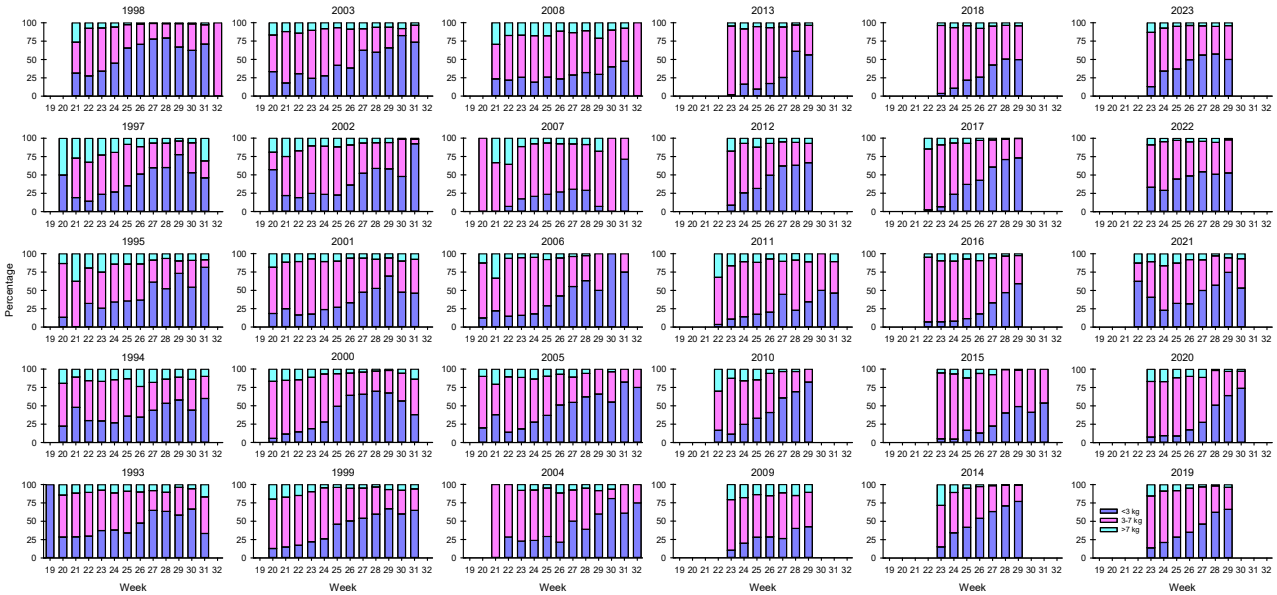


Figure 130. Annual and weekly distributions (%) in combined bag net and bend net fishery in Vadsø and Nesseby municipalities, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

36. Annual and weekly catches in numbers for combined bag net and bend net fishery in Sør-Varanger, Nesseby and Vadsø municipalities, for three size groups of salmon

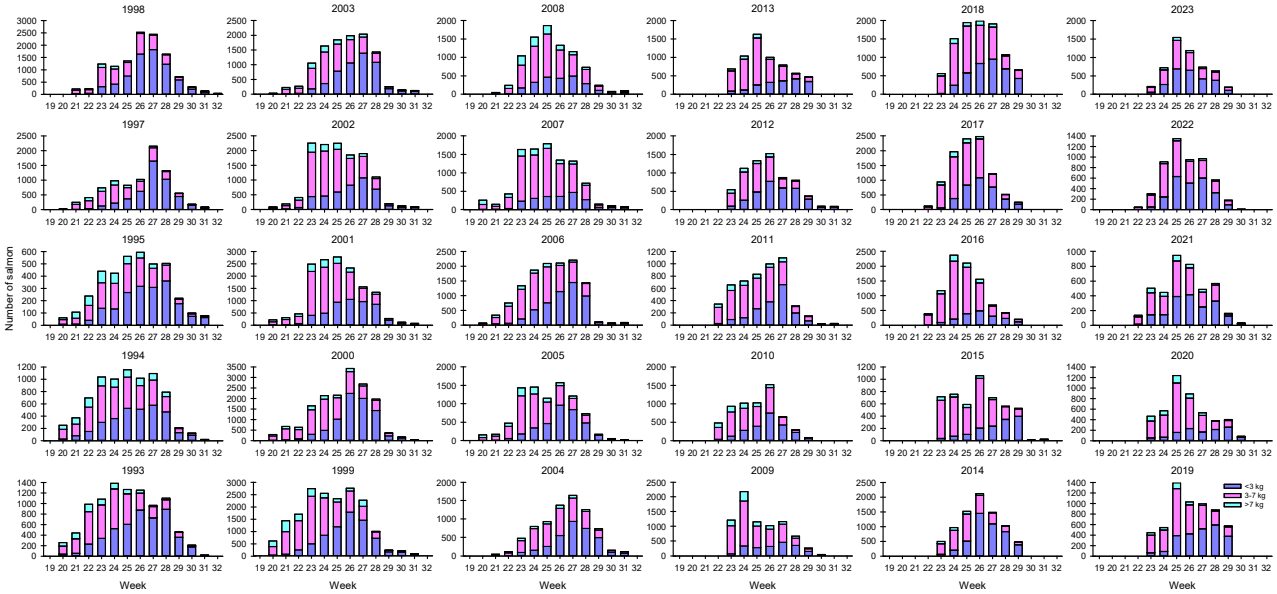


Figure 131. Annual and weekly catches in numbers for combined bag net and bend net fishery in Sør-Varanger, Nesseby and Vadsø municipalities, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

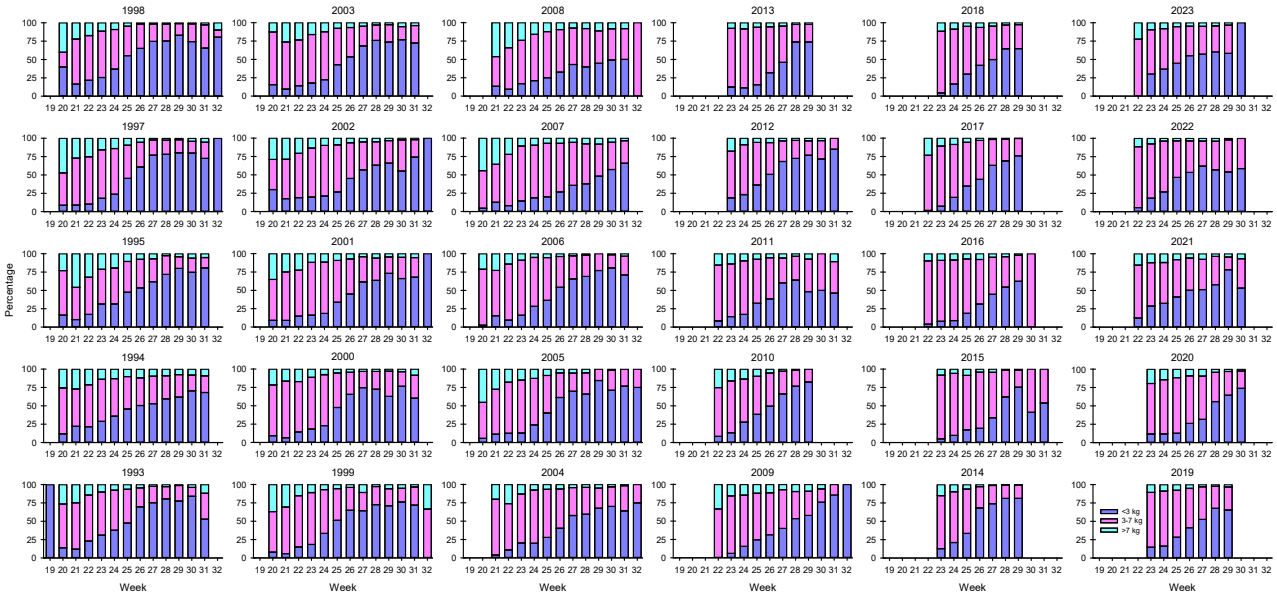


Figure 132. Annual and weekly distributions (%) in combined bag net and bend net fishery in Sør-Varanger, Nesseby and Vadsø municipalities, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

37. Annual and weekly catches in numbers for combined bag net and bend net fishery in Sør-Varanger municipality for three size groups of salmon

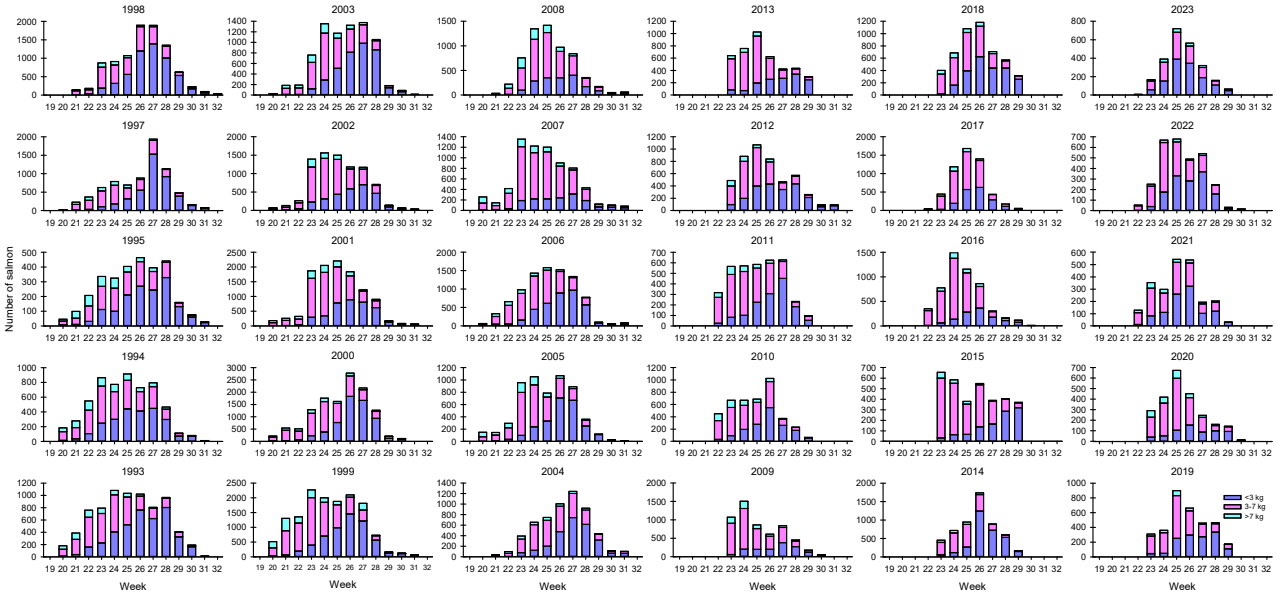


Figure 133. Annual and weekly catches in numbers for combined bag net and bend net fishery in Sør-Varanger municipality, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

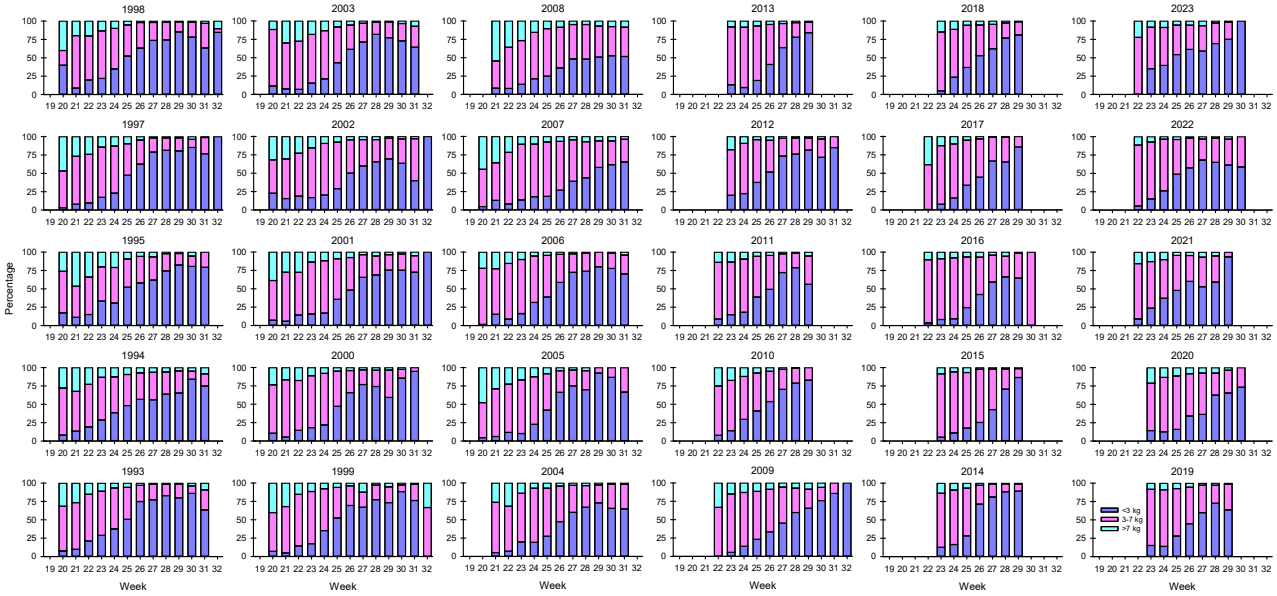


Figure 134. Annual and weekly distributions (%) in combined bag net and bend net fishery in Sør-Varanger municipality, for three size groups of salmon. Only bag nets in the years 2022-2023. Source; SSB

38. Long-term annual variations in the median dates of capture in the municipalities in Finnmark

Daily salmon catches for small, medium and large salmon make it possible to analyze long-term changes in the median date of capture within and between areas more precisely than the weekly catches from the accumulated data. Daily accumulation of catches for small, medium and large salmon presented with cumulative curves or with median dates of capture makes it more accurately to observe temporal and spatial differences in the timing of catches. Median dates of capture and cumulative catch curves are differing significantly between municipalities in Finnmark, and these differences are valid for small, medium and large salmon. Generally, median dates of capture for small, medium and large salmon are varying temporally and simultaneously in the municipalities in the same way. Temporal changes in the median dates of capture are caused by normal variations in the annual migration timing of salmon caused for example by sea temperatures. Changes in fishing restrictions like the start and closing date in fishing and allowed weekly fishing days are affecting the cumulative catch curves and thus also the median date of capture.

Photo 9. Salmon fisher in Sør-Varanger area. Photo: Eero Niemelä.

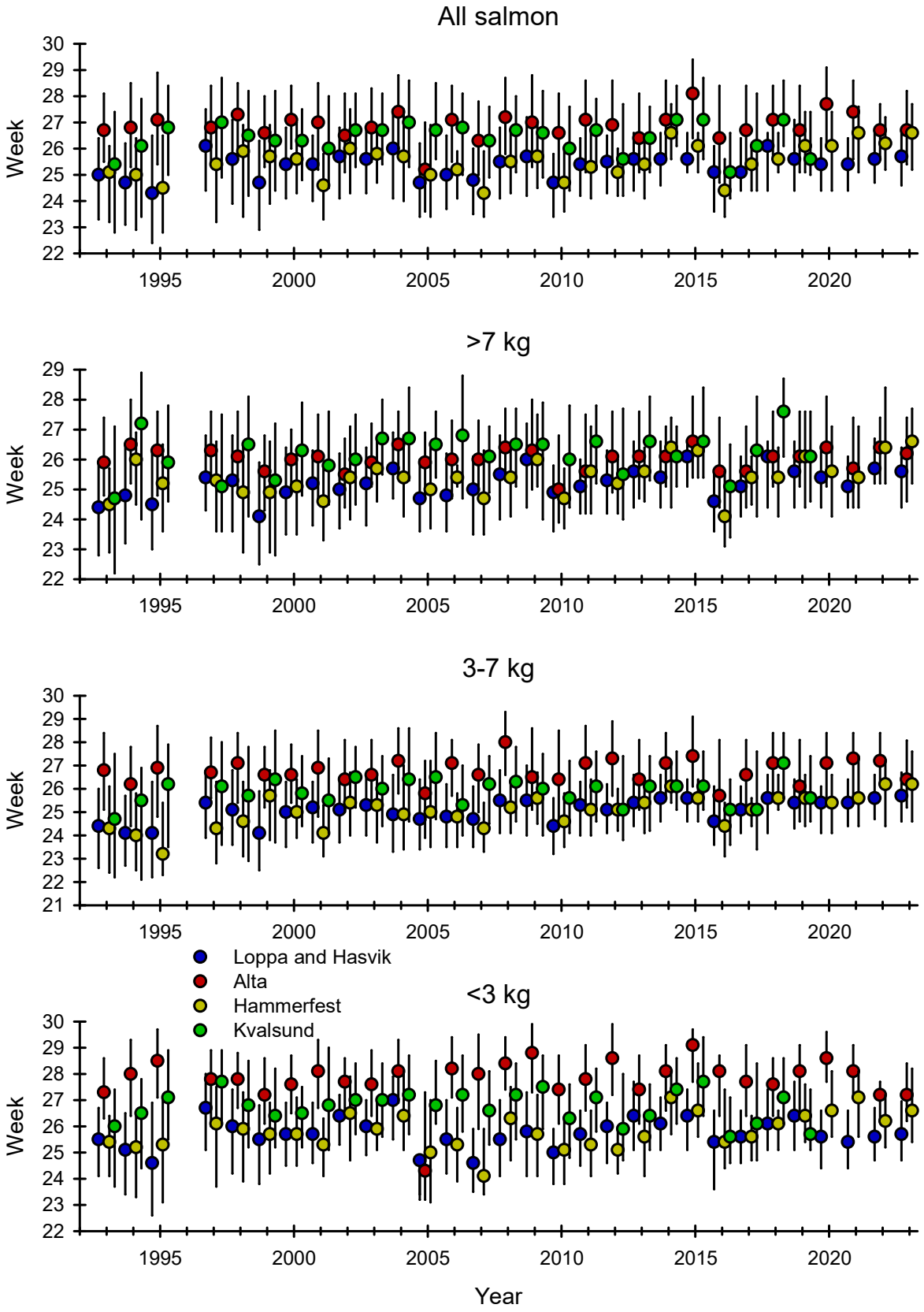


Figure 135. Long-term annual variations in the median dates of capture with lower and upper quartiles between Loppa and Hasvik, Alta, Hammerfest and Kvalsund municipalities in Finnmark in bag net and bend net fisheries in the years 1993-2021. In the years 2022-2023 only in the bag net fisheries. Source; SSB

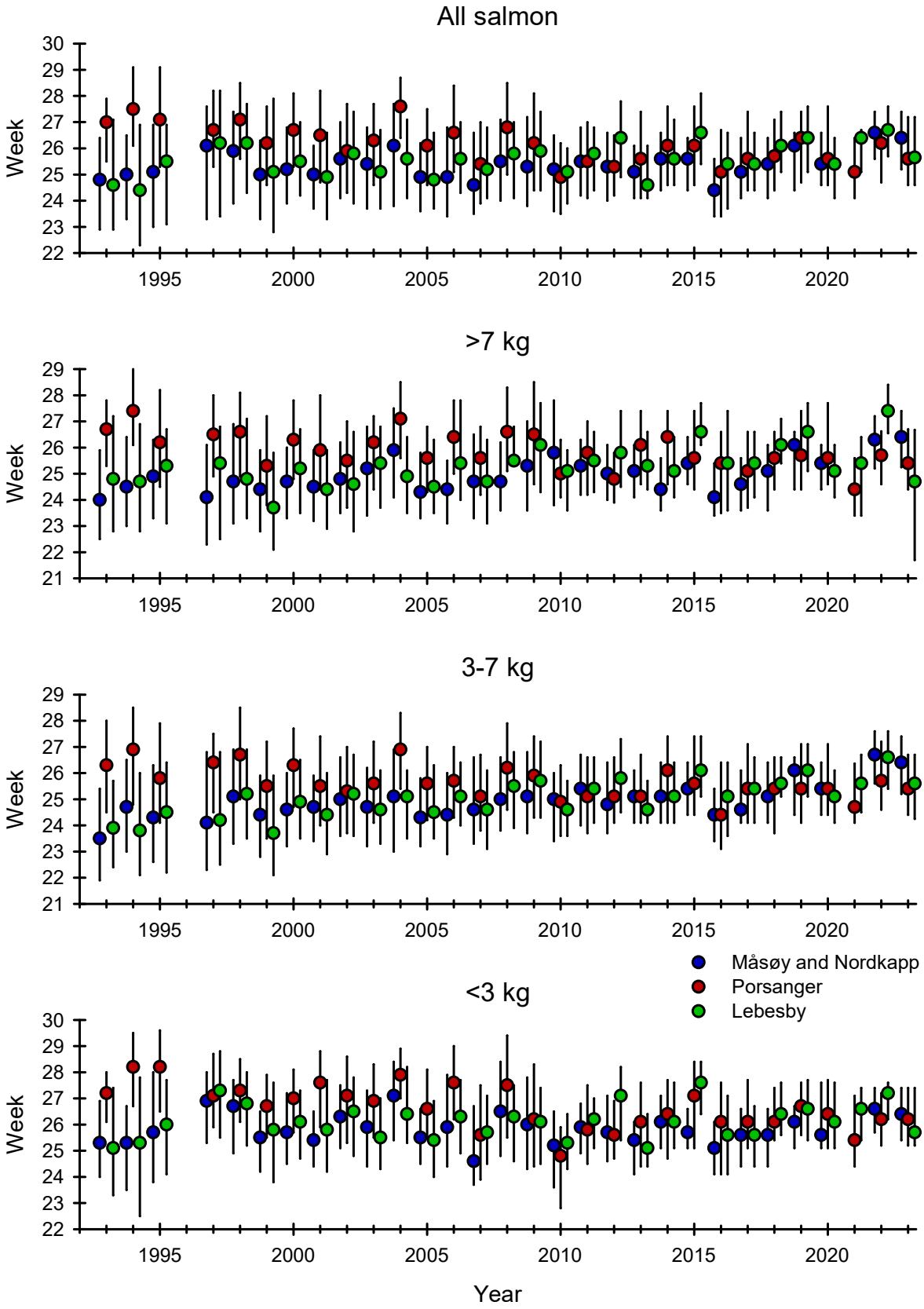


Figure 136. Long-term annual variations in the median dates of capture with lower and upper quartiles between Måsøy and Nordkapp, Porsanger and Lebesby municipalities in Finnmark in bag net and bend net fisheries in the years 1993-2021. In the years 2022-2023 only in the bag net fisheries. Source; SSB

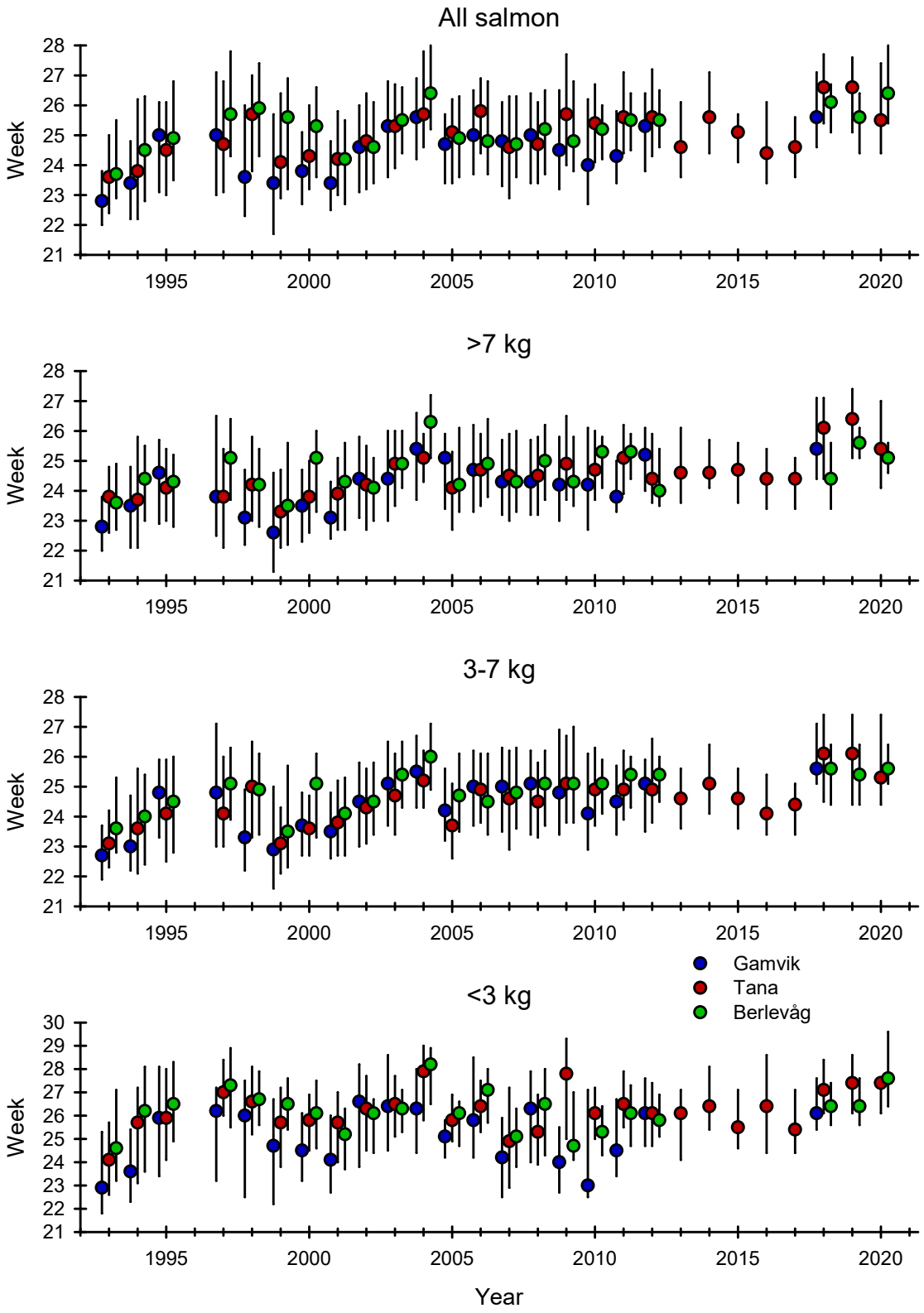


Figure 137. Long-term annual variations in the median dates of capture with lower and upper quartiles between Gamvik, Tana and Berlevåg municipalities in Finnmark in bag net and bend net fisheries in the years 1993-2020. Source; SSB

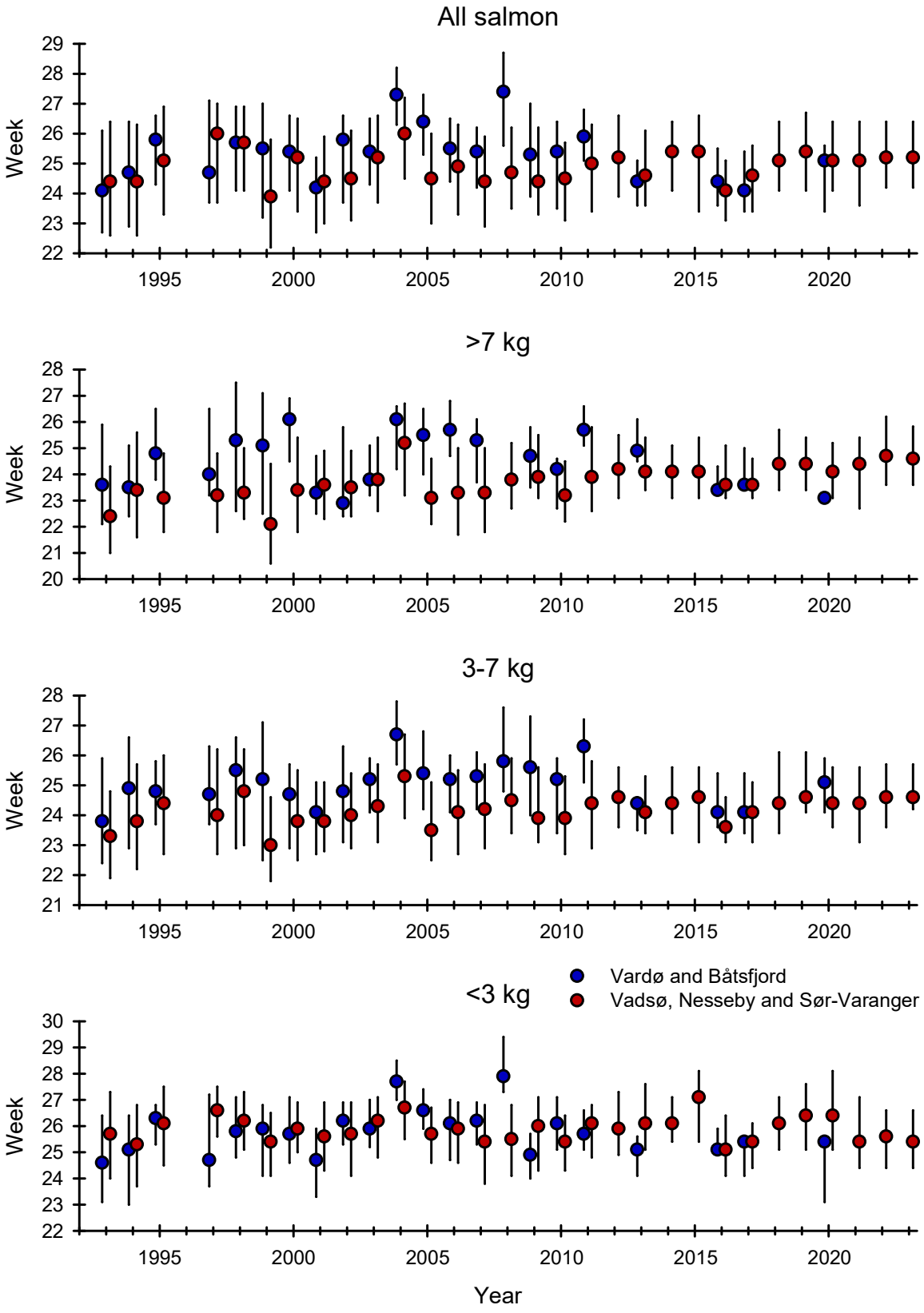


Figure 138. Long-term annual variations in the median dates of capture with lower and upper quartiles between Vardø and Båtsfjord and Vadsø, Nesseby and Sør-Varanger municipalities in Finnmark in bag net and bend net fisheries in the years 1993-2021. In the years 2022-2023 only in the bag net fisheries. Source; SSB

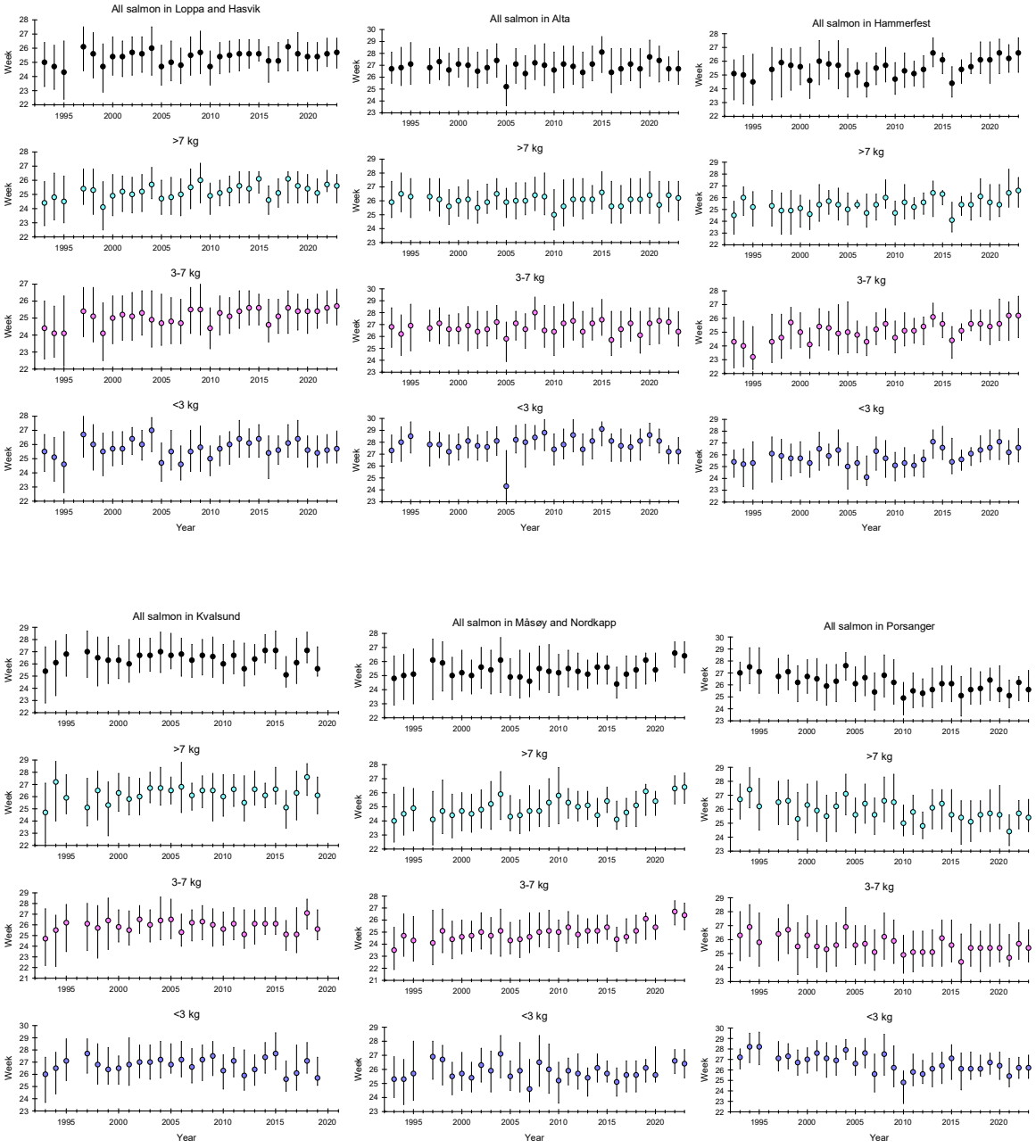


Figure 139. Long-term annual variations in the median dates of capture with lower and upper quartiles in municipalities in Finnmark in bag net and bend net fisheries in the years 1993-2021. In the years 2022-2023 only in the bag net fisheries. Source; SSB

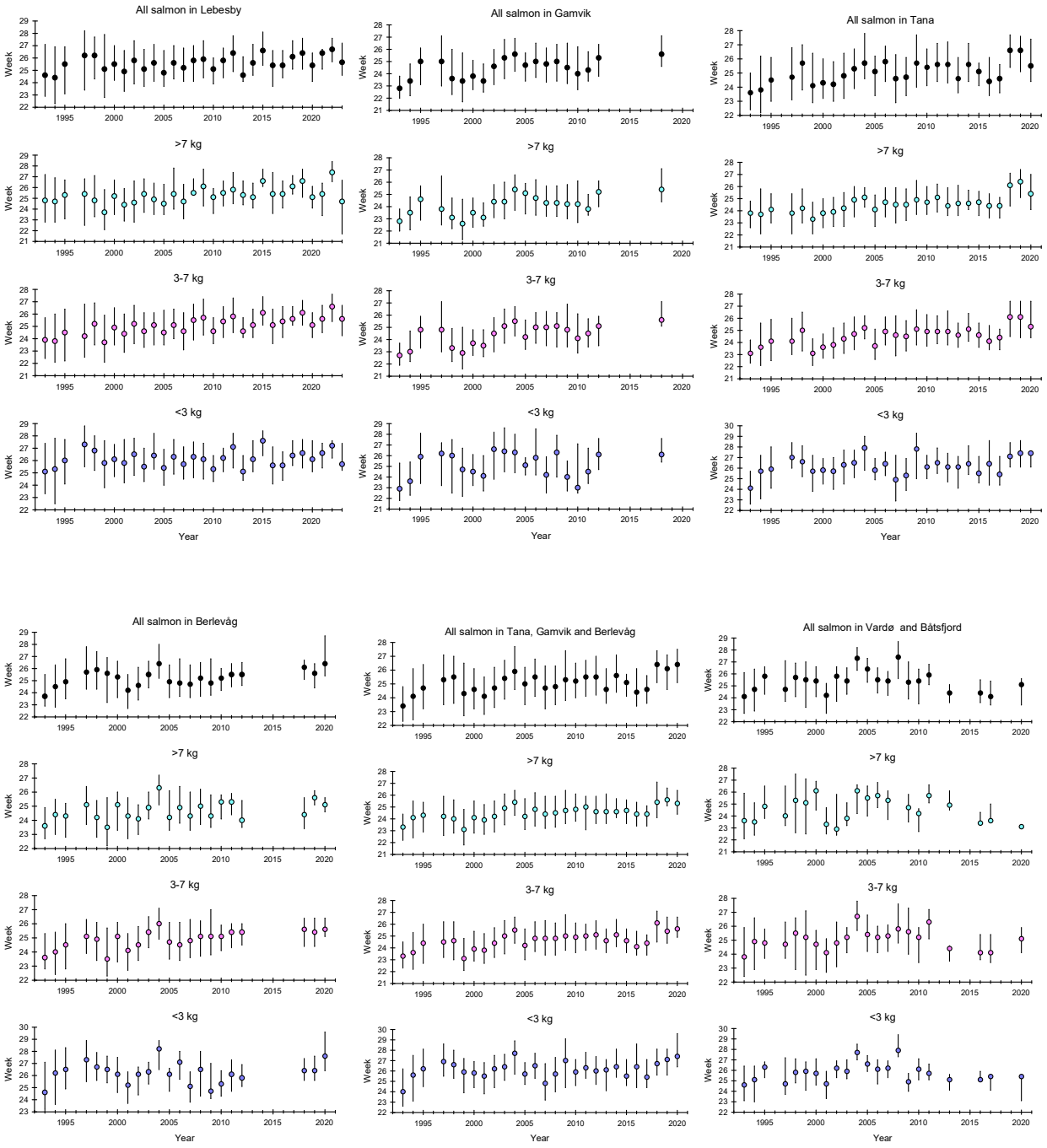


Figure 140. Long-term annual variations in the median dates of capture with lower and upper quartiles in municipalities in Finnmark in bag net and bend net fisheries in the years 1993-2020. In the years 2022-2023 only in the bag net fisheries. Source; SSB

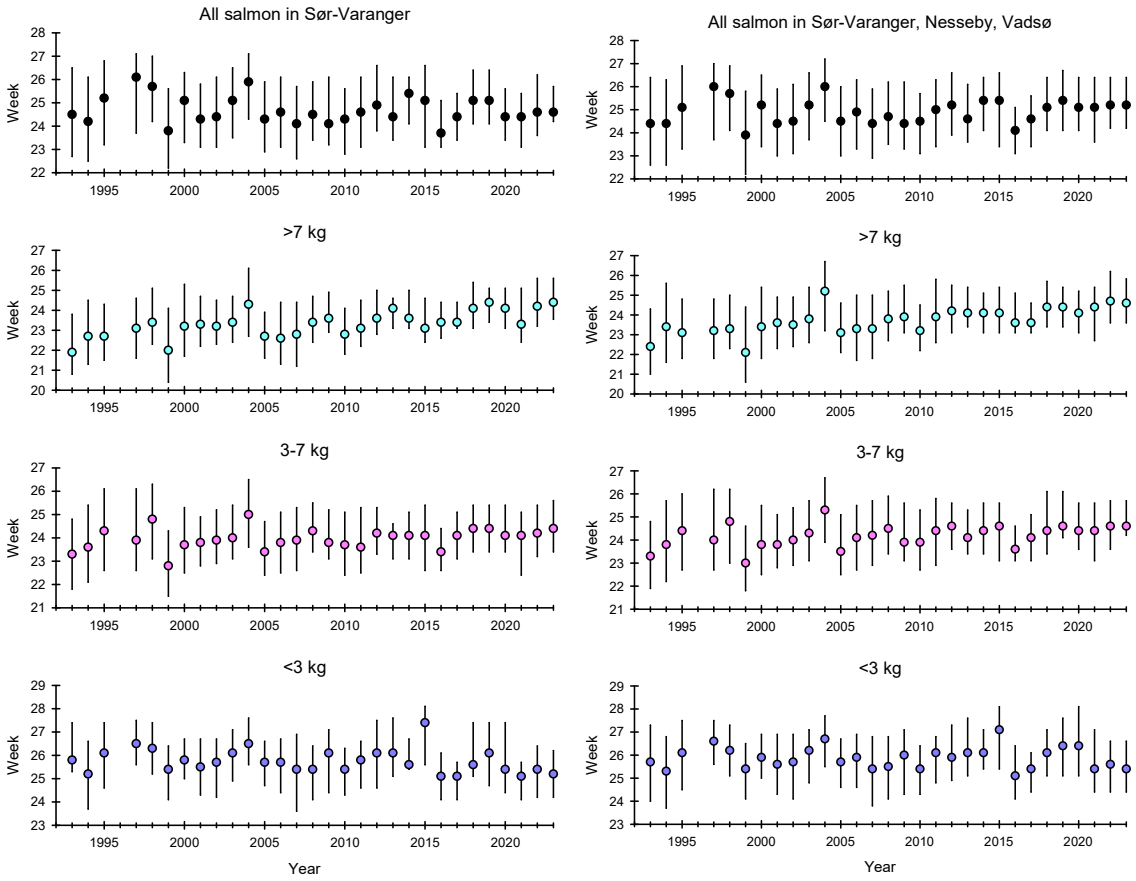


Figure 141. Long-term annual variations in the median dates of capture with lower and upper quartiles in municipalities in Finnmark in bag net and bend net fisheries in the years 1993-2021. In the years 2022-2023 only in the bag net fisheries. Source; SSB

39. Annual cumulative catches for small, medium and large salmon in municipalities in Finnmark

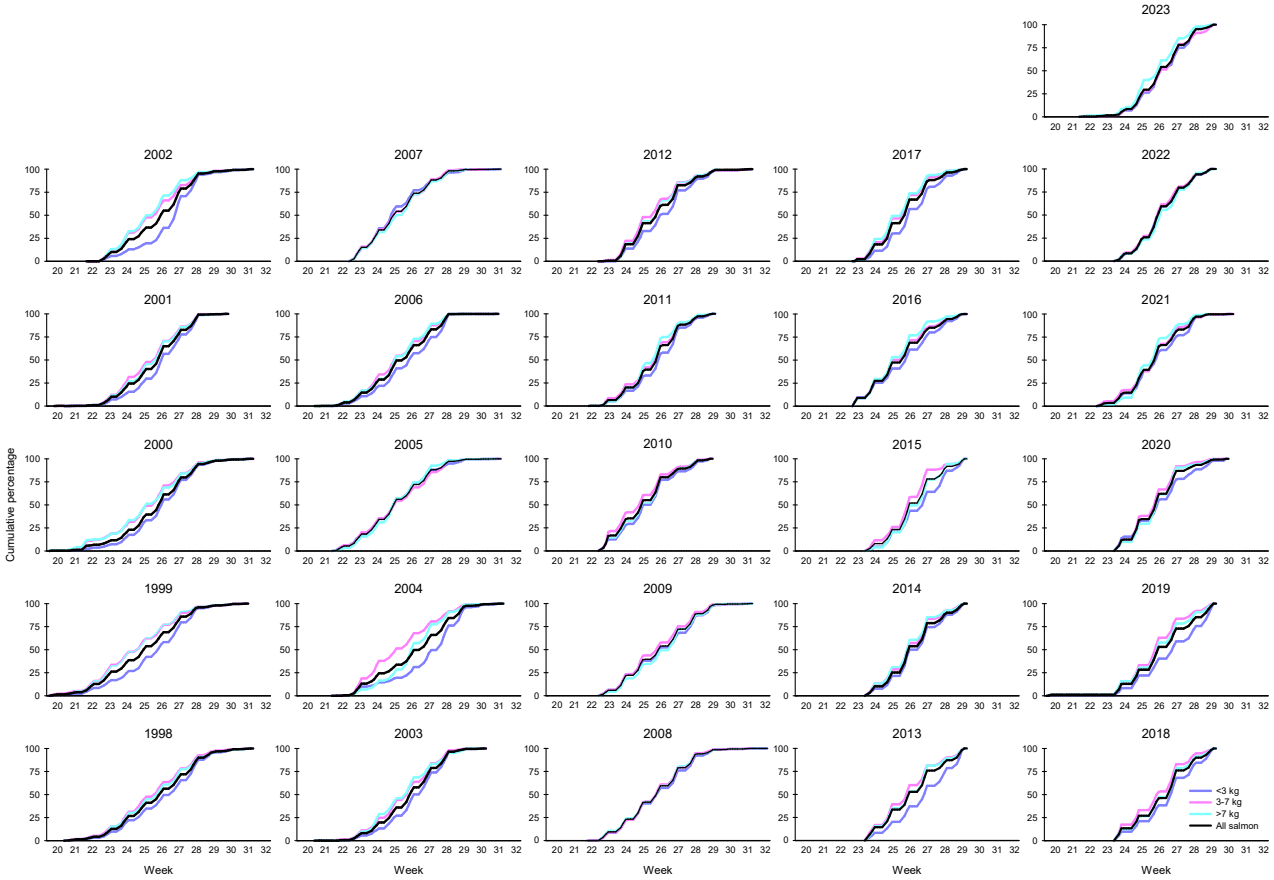


Figure 142. Annual cumulative catches (%) in Loppa and Hasvik municipalities in bag net and bend net fisheries in the years 1998-2021. In the years 2022-2023 only in the bag net fisheries. Source; SSB

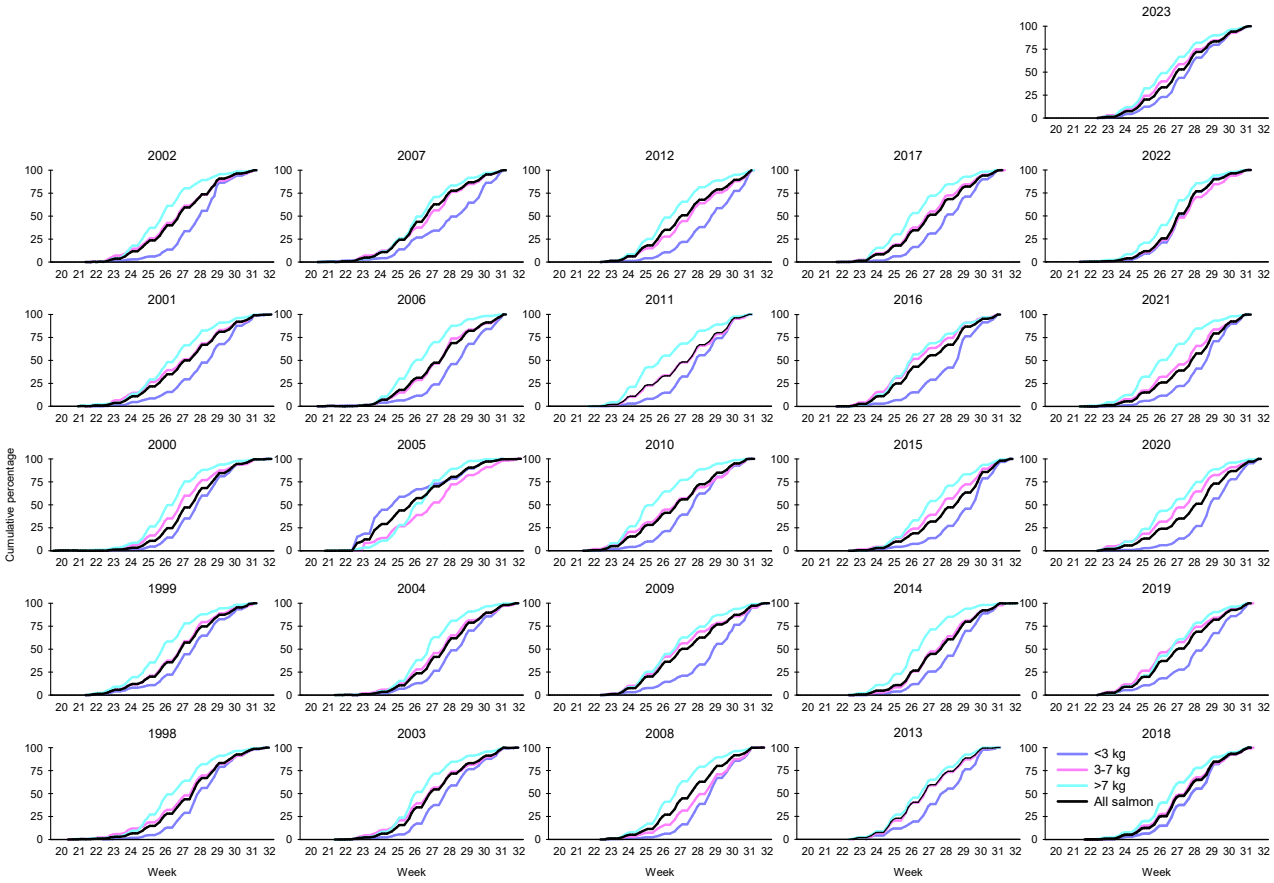


Figure 143. Annual cumulative catches (%) in Alta municipality in bag net and bend net fisheries in the years 1998-2021. In the years 2022-2023 only in the bag net fisheries. Source; SSB

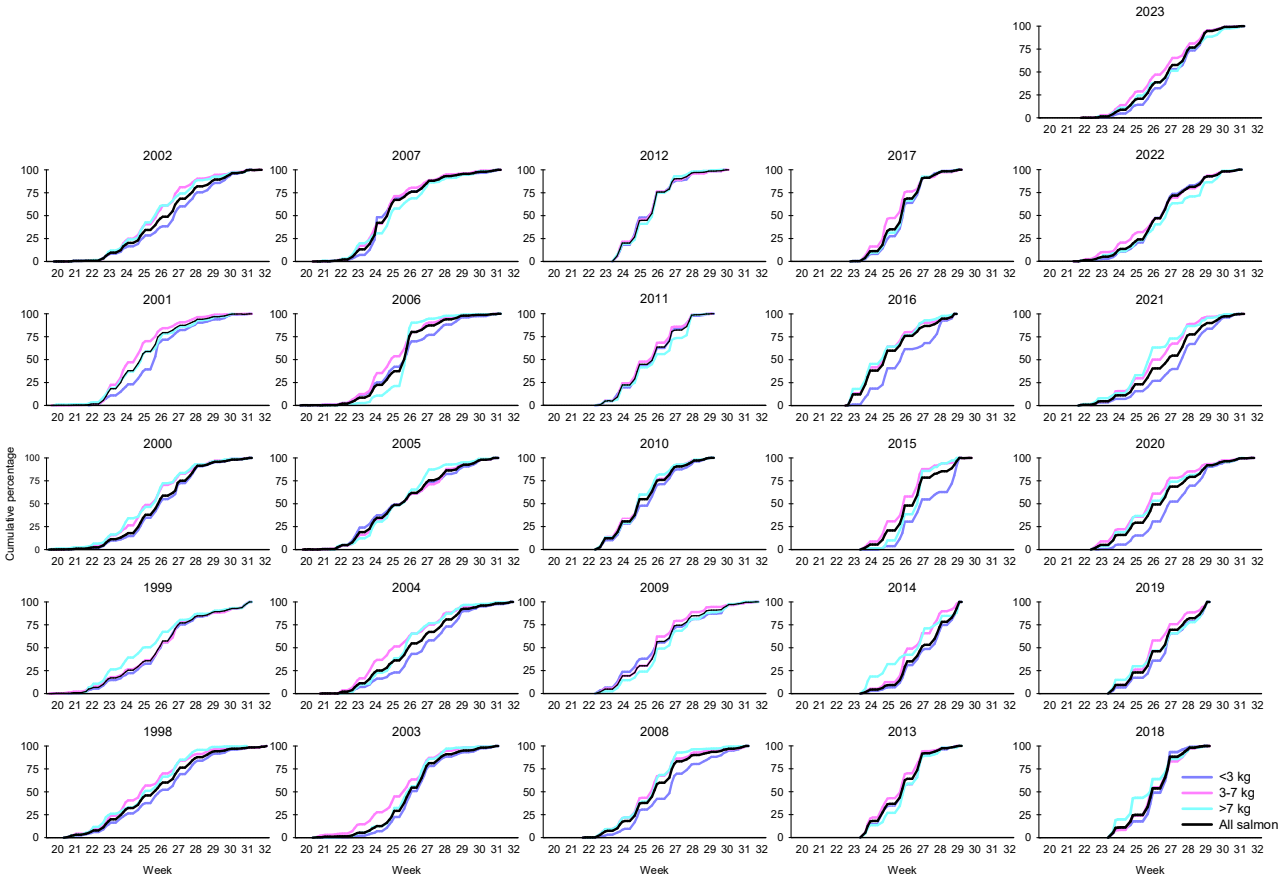


Figure 144. Annual cumulative catches (%) in Hammerfest municipality in bag net and bend net fisheries in the years 1998-2021. In the years 2022-2023 only in the bag net fisheries. Source; SSB

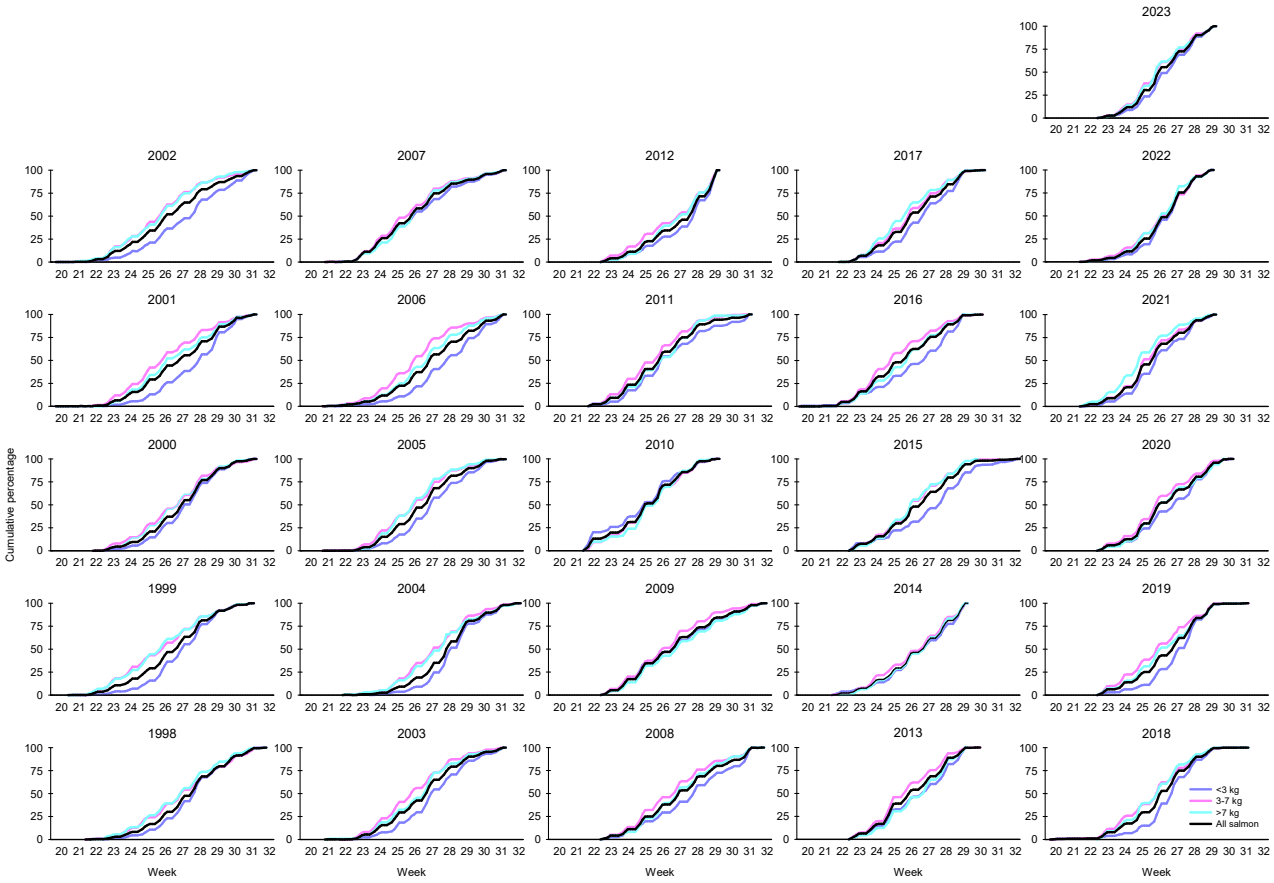


Figure 145. Annual cumulative catches (%) in Porsanger municipality in bag net and bend net fisheries in the years 1998-2021. In the years 2022-2023 only in the bag net fisheries. Source; SSB

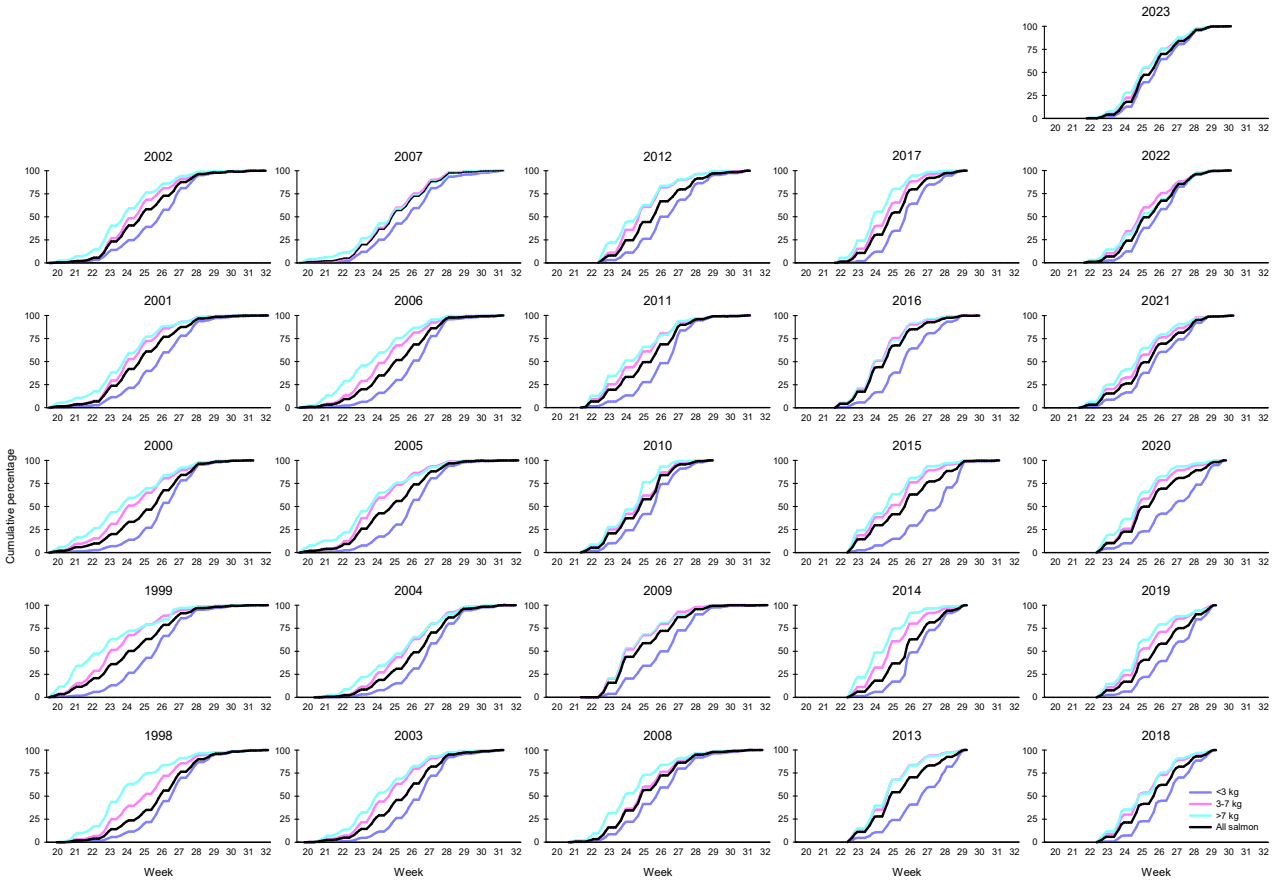


Figure 146. Annual cumulative catches (%) in Vadsø, Nesseby and Sør-Varanger municipalities in bag net and bend net fisheries in the years 1998-2021. In the years 2022-2023 only in the bag net fisheries. Source; SSB

40. Wild salmon resource in North Atlantic; sea and river catches combined

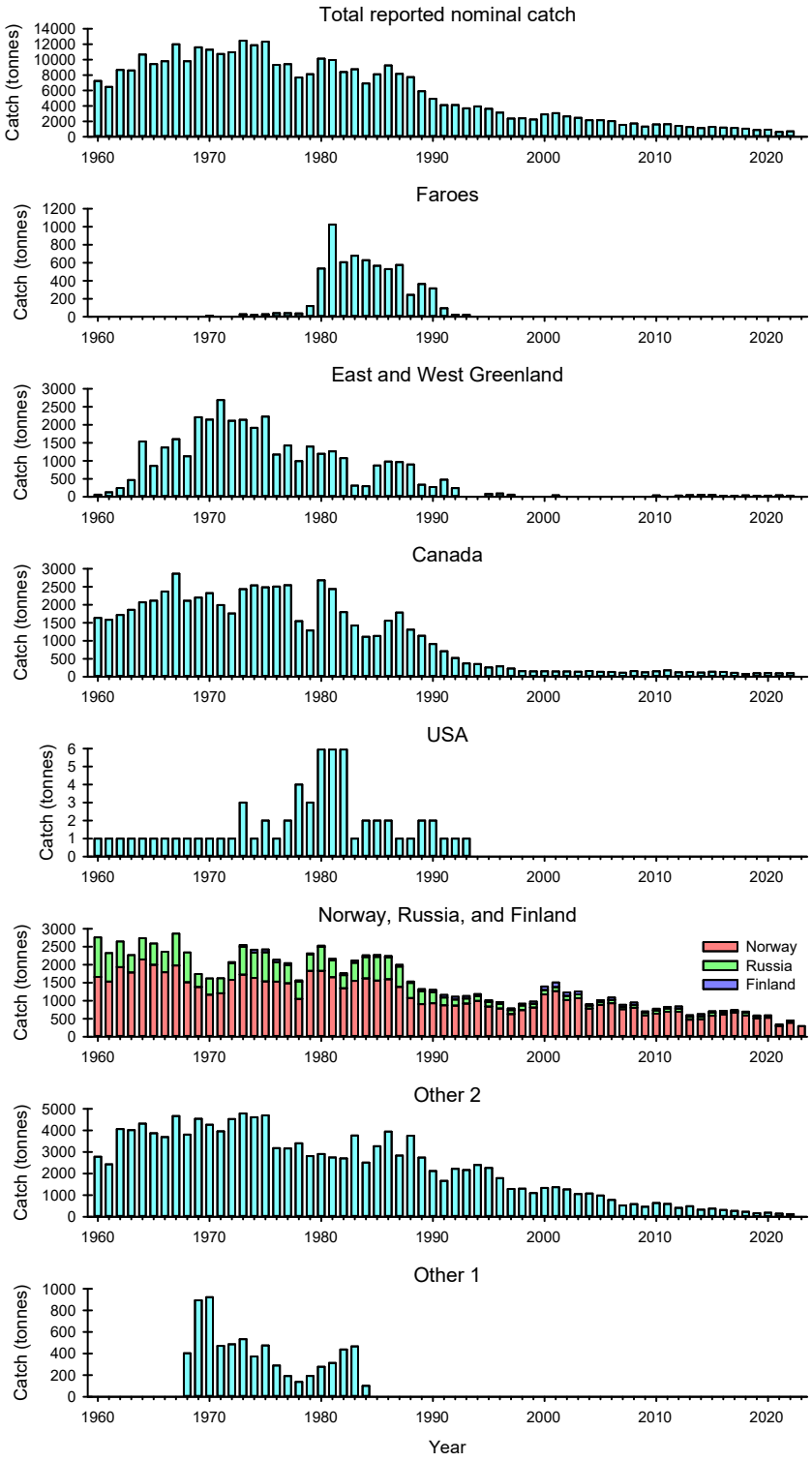


Figure 147. Reported salmon catches in NASCO (North Atlantic Salmon Conservation Organizations) areas. Other 1 and Other 2 are meaning the countries which are not included elsewhere. Other 1: countries fishing salmon in high seas in Atlantic: Catches in Norwegian Sea by Denmark, Sweden, Germany, Norway, Finland (before salmon fishery was closed in the year 1984 by international NASCO convention); Other 2 countries: Iceland (wild and ranched), Sweden (wild and ranched), UK (England and Wales, North Ireland, Scotland), France, Spain, Denmark, Ireland, St Paul and Michelon. Source: ICES 2023

Salmon fishing at sea in international waters was more or less unregulated until the year 1984 when the NASCO convention was signed by the countries around the North Atlantic Ocean. After this convention, all salmon fishing was prohibited in international waters, except for an annual quota in the Faroese fisheries. The Faroese quota resulted in the catches of 300-400 tons until the year 1990. Another important decision to protect and increase wild salmon stocks was the prohibition of driftnet fishery in Norway. This fishery took place mainly in Northern Norway west from Nordkapp in coastal waters. Annual reported salmon catches at sea and in the rivers together exceeded 13 000 tons in the period from the end of 1960's to the middle of 1970's (Fig. 147).

Since the middle of 1970's, the total salmon catches have steadily declined. The reason for this decline is complex. Salmon stocks have weakened due to overexploitation that has lasted for years and mainly without quotas, fishing efforts have been mostly unregulated, salmon parasite *Gyrodactylys salaris* has destroyed many salmon stocks, especially in Norway and recently in Russia, parasites and diseases from salmon cage farming have caused mortality to salmon smolts and adults and escaped salmon from cage farming have weakened wild salmon genes. Many rivers which produced salmon smolts have been destroyed by damming and in many salmon rivers water quality has become polluted. In recent years, an increased sea mortality has been observed, which can be caused by higher sea temperatures. One of the major effectors on the declining salmon catches at sea has been the large quantity of farmed salmon on the market. Large amounts of farmed salmon around the year on the market have reduced the need to catch wild salmon at sea during the short period in summer when sea salmon fishing is allowed.

In Norway, Finland and Russia, the reported salmon catches have declined from appr. 2500 tons in 1960 to 600-800 tons in the last decade (Fig. 147).

Rod fishing in the rivers has been regulated with many regulatory measures like catch limits, license regulations, fishing time regulations and regulating the numbers of salmon to kill. The numbers of released salmon have increased significantly in all the areas. In some countries even all salmon have released especially in those rivers where the stocks are in poor condition (Fig. 148).

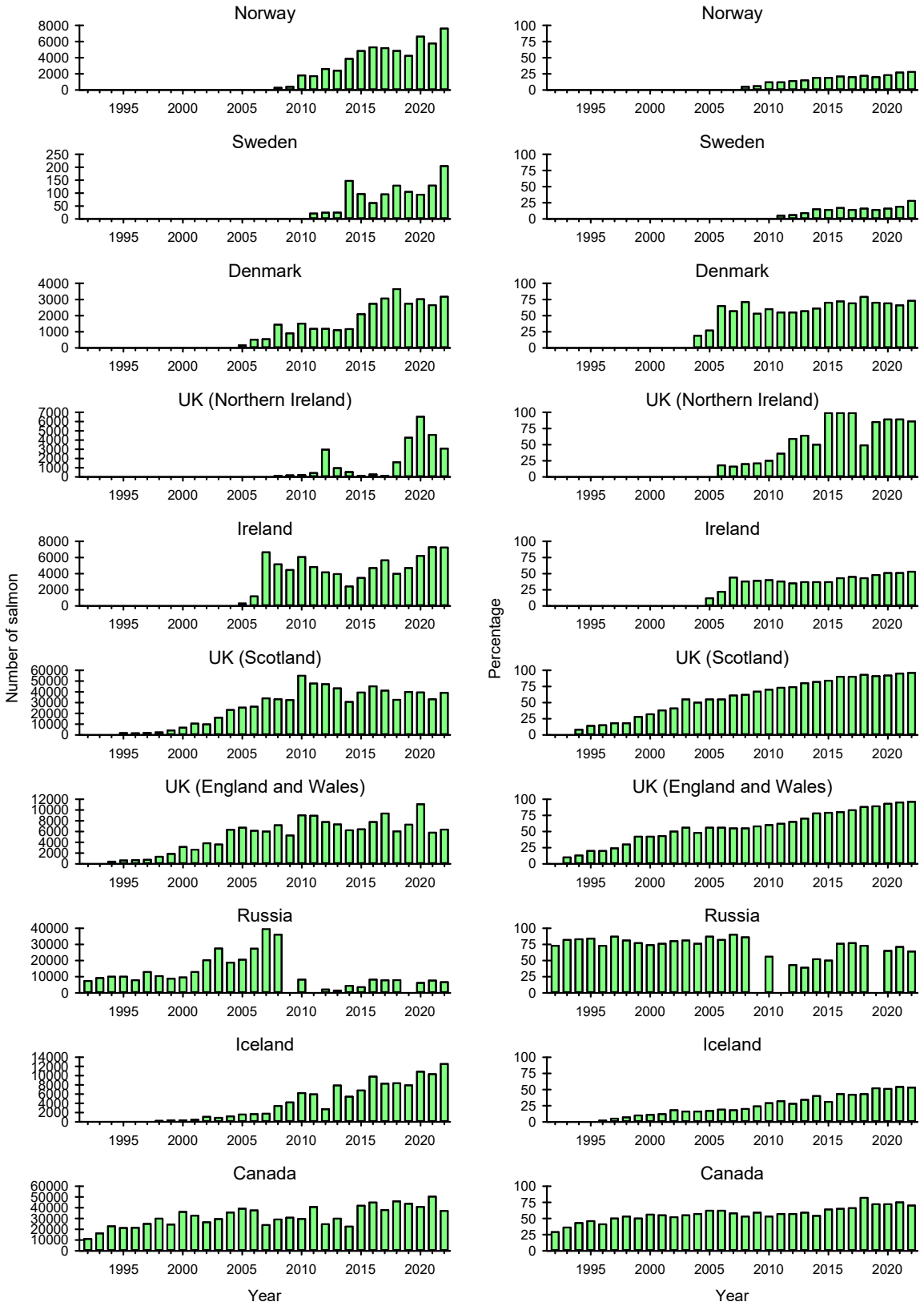


Figure 148. Numbers of salmon released in rod fishing and percentages from all salmon caught in rod fishing in the rivers. Source: ICES 2023.

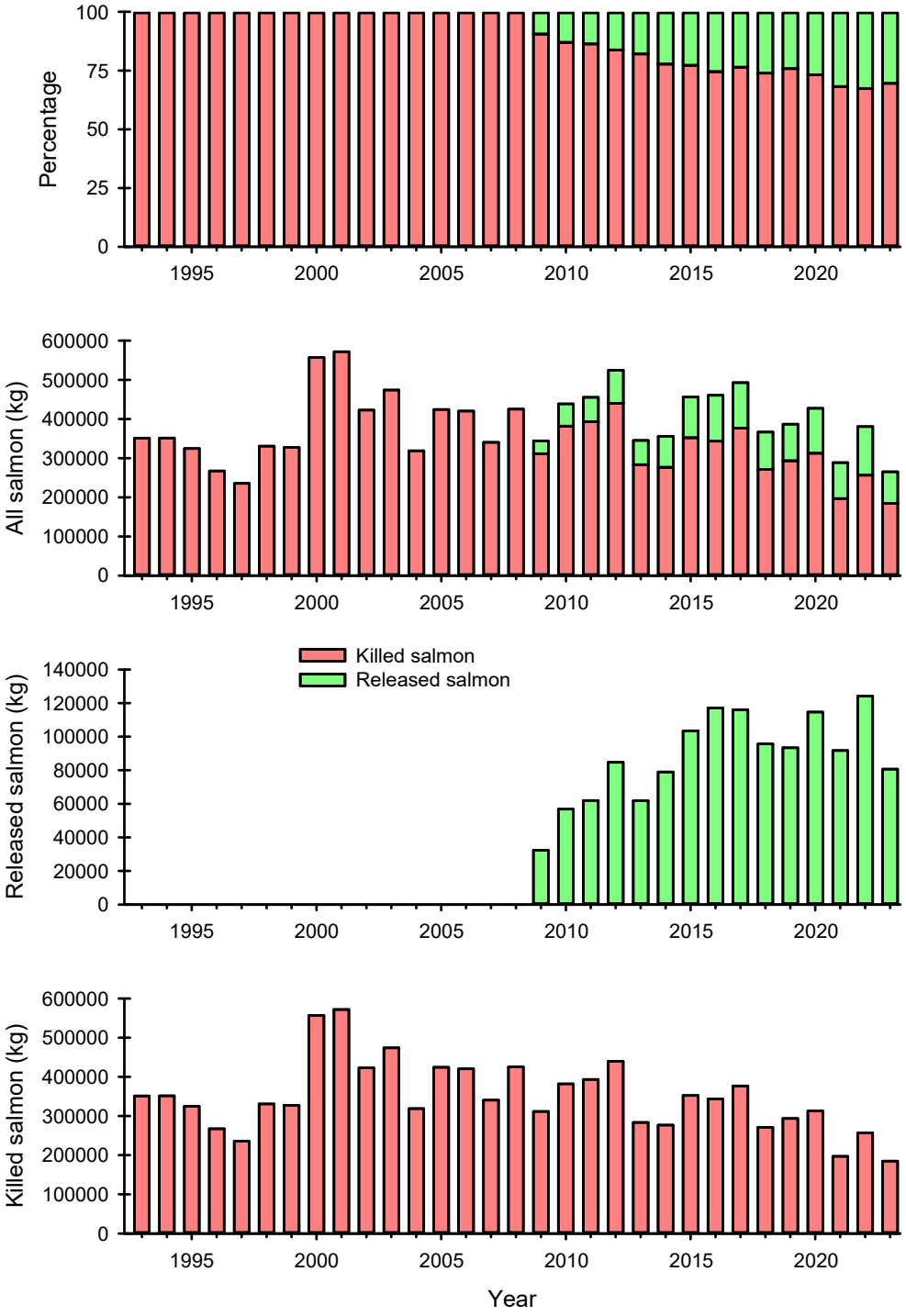


Figure 149. Weight in kilos for killed and released salmon in rod fishing and proportion of killed salmon from the total rod fishing catches in Norway. Source: SSB.

The catch and release practice in rod fishing has in Norway become a natural way to protect and increase wild salmon stocks. In some years the weight of released salmon has exceeded 120 tons, which corresponds to 20%-25% of the total rod catches (Fig. 149).

41. General description on the salmon catches and fishery in Norway, Finland, and Russia

Salmon catches in Norway was at approx. 450 000 fish in the middle of 1980's but, nowadays they are at approx. 100 000-150 000 fish. In Finland, salmon in the catches have been at approx. 29 000 fish in the early 2000's but, has dramatically declined in the year 2000. One reason to the sharp declining in the Finnish salmon catch in the year 2017 was new restrictions in salmon fishery in the River Tana watershed (Fig. 150). In the Finnish salmon catches, there are four clear stock fluctuations (peaks) and the last peak was early 2000's. In the years 2021-2023 all salmon fishing has been prohibited in the River Tana in Norway and in Finland and, also at sea in the Tanafjord and some coastal areas nearby Tanafjord. During the last 20 years before the year 2020 there were no clear peaks anymore in the catches in Norway, Finland and Russia.

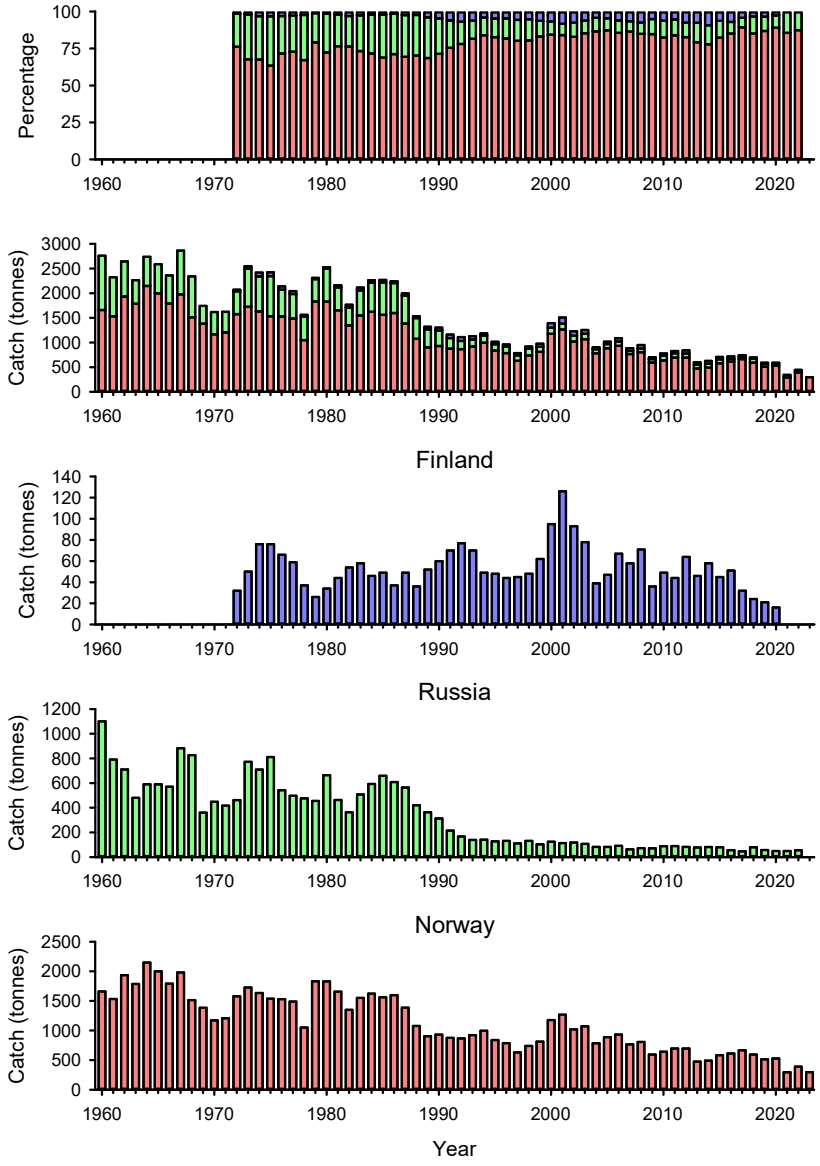


Figure 150. Long-term salmon catches in Norway, Finland and Russia and proportions between the countries. Source: ICES 2023

In Norway, the proportion of salmon catches caught in the rivers has increased from the middle of 1990's to today and salmon caught at sea has declined. This decline has taken place due to the increased interest in protecting wild salmon stocks from the mixed stocks fisheries at sea. Recreational fishery in rivers has increased (measured in the numbers of recreational fishers), which affects the catch distributions (Fig. 151). Years ago, in Russia and especially in the White Sea area and the Petchora area, there were some estuary salmon fishing. After recreational fishing was legalized in Kola Peninsula rivers in the early 1990's, catches in the rivers became important. After recreational fishery was opened in many of Kola Peninsula rivers, fishery at sea was strongly regulated or even closed in some areas.

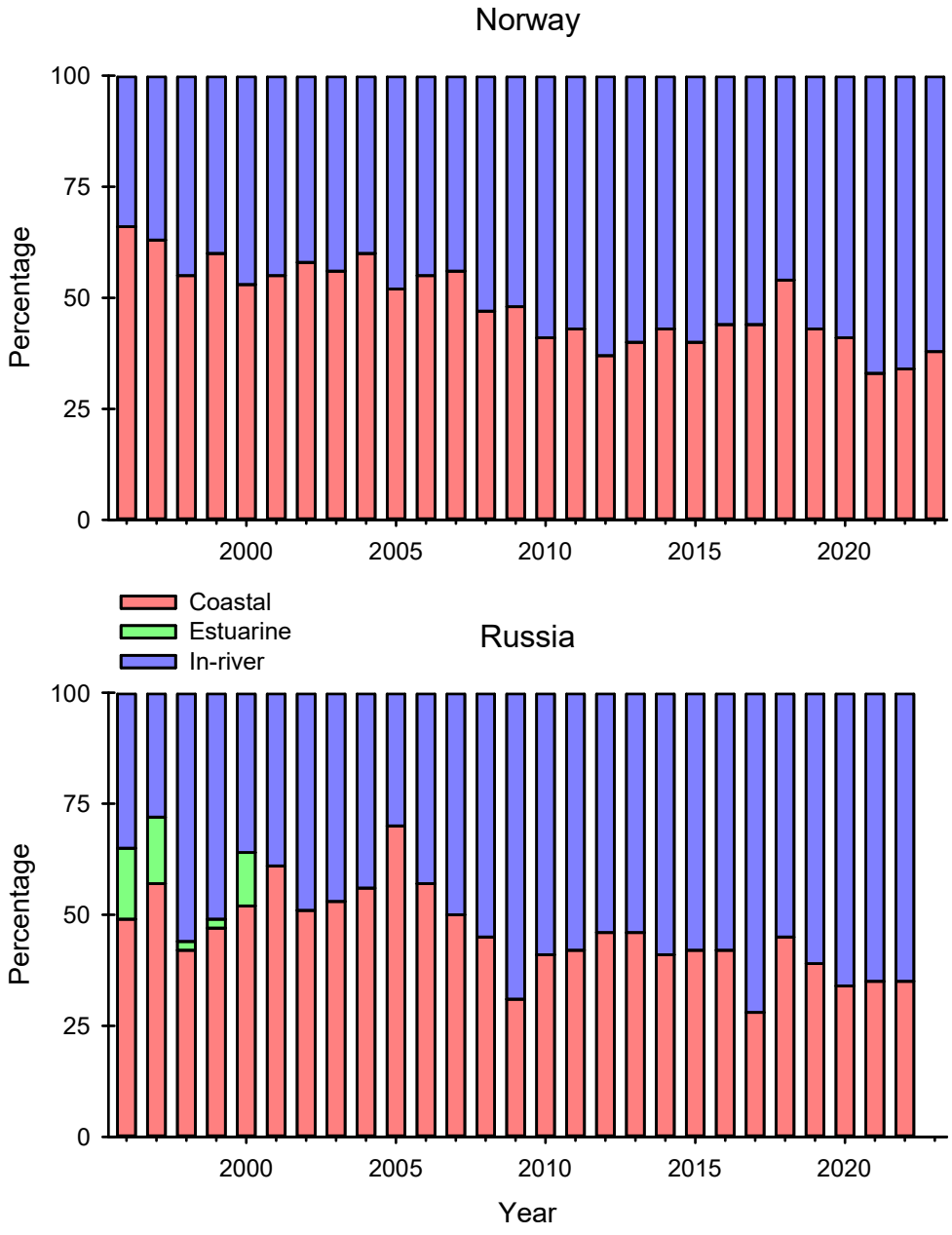


Figure 151. Salmon catch distributions in Norway and Russia between catches in the rivers and at sea in coastal areas and in estuarine areas. Source: ICES 2023

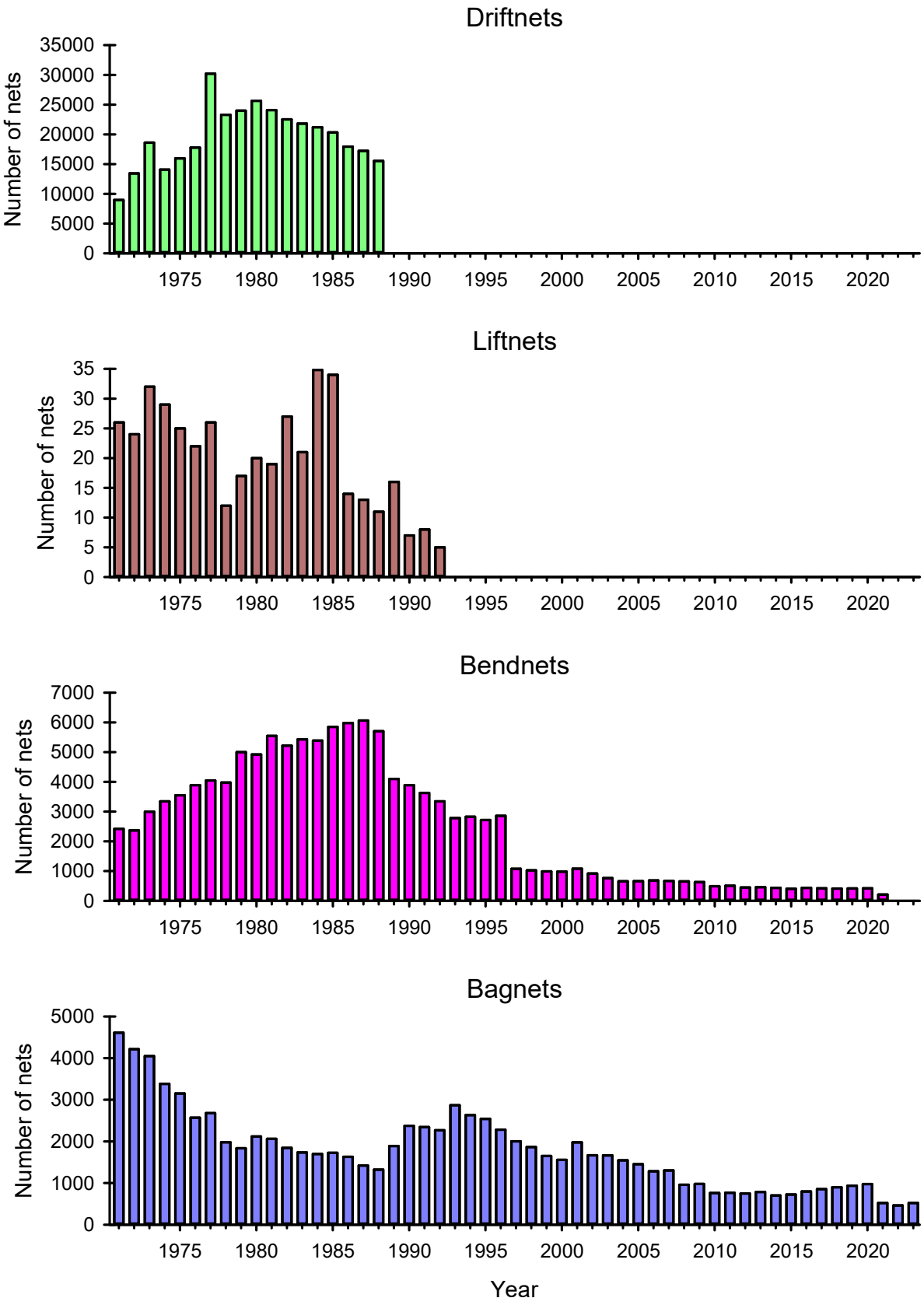


Figure 152. Long-term variations in the annual numbers of fishing gears in Norway. Source: ICES, 2023

Four fishing methods were used at sea in Norway until the year 1988. The year 1988 was the last year when driftnet fishing operated in the coastal waters and mainly in the area west from Nordkapp in Finnmark. Driftnet fishing took place early in the summer, when medium and large sized salmon was on their way to their home rivers. Bend net fishing initiated in northern Norway in the 1960's and increased in the following years. In the entire Norway, bend net fishing peaked in the year 1987 (Fig. 152). From the end of 1980's the numbers of bend nets declined and in the year 1997, bend nets were prohibited in Norway except in Finnmark county. In Finnmark county, the numbers of bend nets slowly declined and were prohibited in 2022 and in the coming years. The start of bag nets in salmon fishing took place in the middle of 1800's. The numbers of bag nets in Norway were approx. 4500 in the early 1970's and their numbers declined towards 1980's, simultaneously with the increase of bend nets. From the early 1990's the numbers of bag nets declined towards the year 2010 and after that started to increase slightly. In the year 2021, the numbers of bend nets and bag nets clearly declined due to the total moratorium of salmon fishing in the area of Tanafjord and in the coastal areas close to Tanafjord.

Photo 10. Bend net fishing in Varangerfjord before the bend net moratorium. Photo: Eero Niemelä

42. Farm production of Atlantic salmon in the North Atlantic area

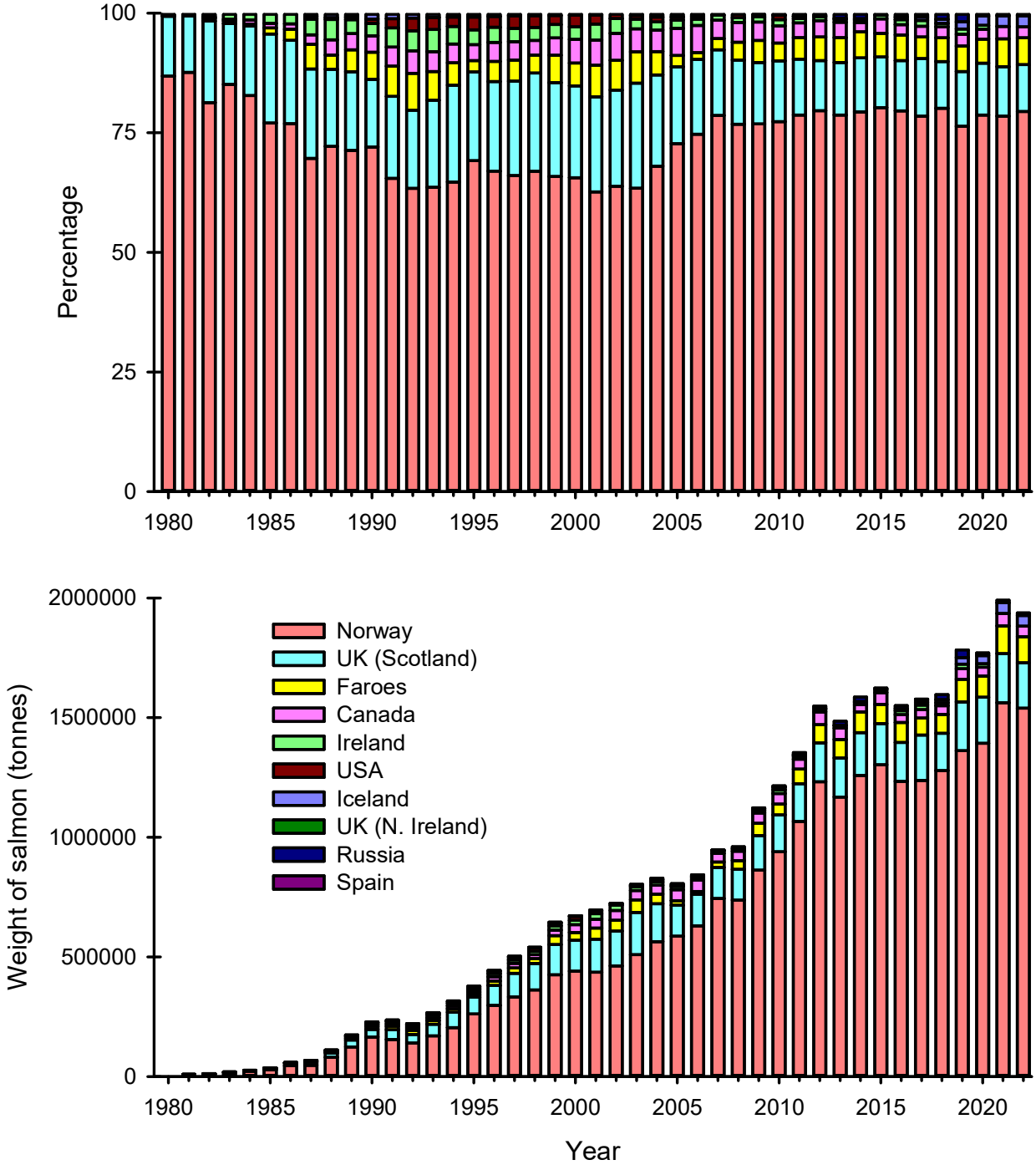


Figure 153. Salmon production at sea in cages in North Atlantic. Source: ICES 2023.

Figures 153, 154 and 155 are illustrating the huge increase in salmon farming. Salmon farming at sea in North Atlantic has increased during the last 40 years and this increase seems to continue. Norway is the major producer of farmed salmon in the Atlantic area (Fig. 153). Outside of the North Atlantic area, salmon production has been concentrated in Chile (Fig. 154). The total salmon production has now exceeded 3 million tons and this production seems to increase.

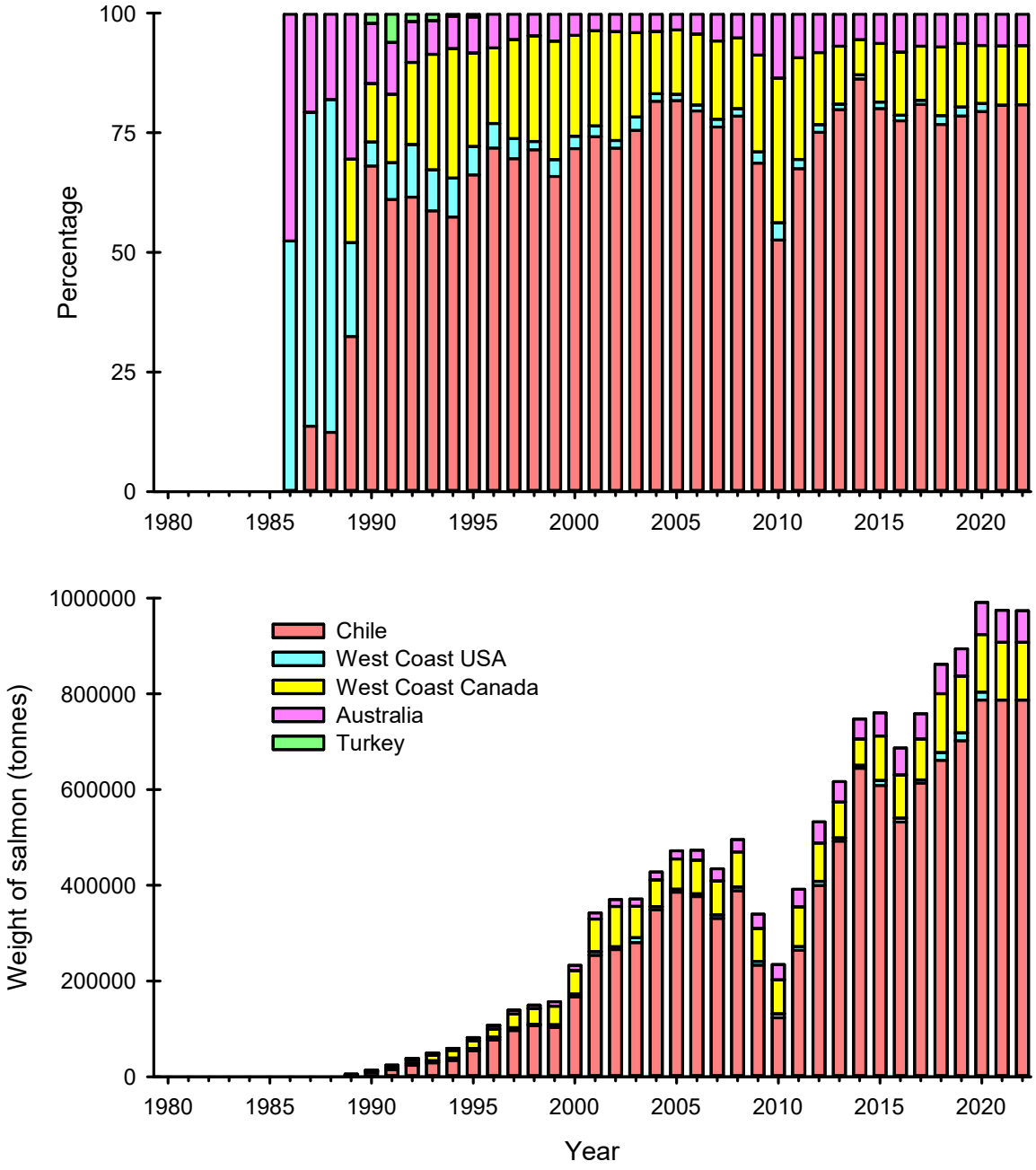


Figure 154. Salmon production at sea in cages outside North Atlantic area. Source: ICES 2023.

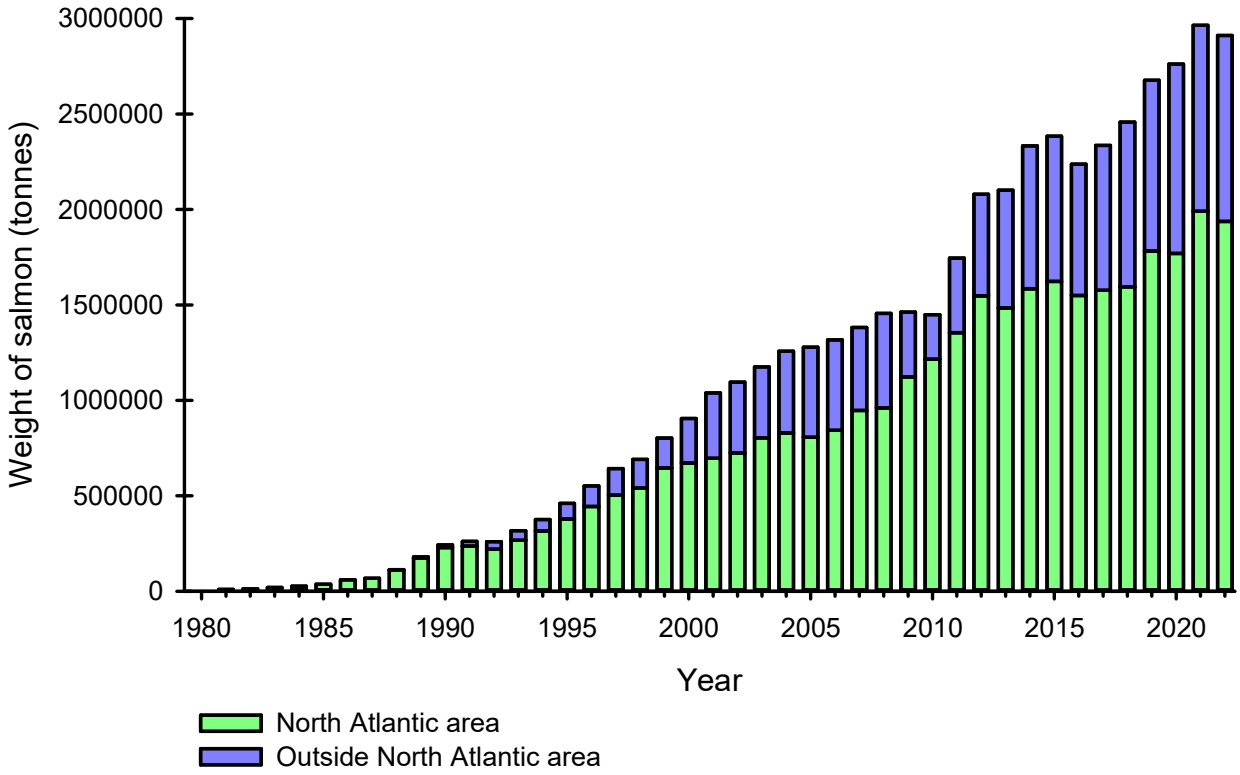


Figure 155. Proportions in salmon production at sea in cages in North Atlantic area and outside North Atlantic area. Source: ICES 2023.

Photo 11. Cage culture in Varangerfjord area, Norway. Photo: Eero Niemelä

43. Salmon fishing effort at sea in Finnmark, Troms and other areas in Norway (numbers of fishing sites, fishers, bag nets and bend nets)

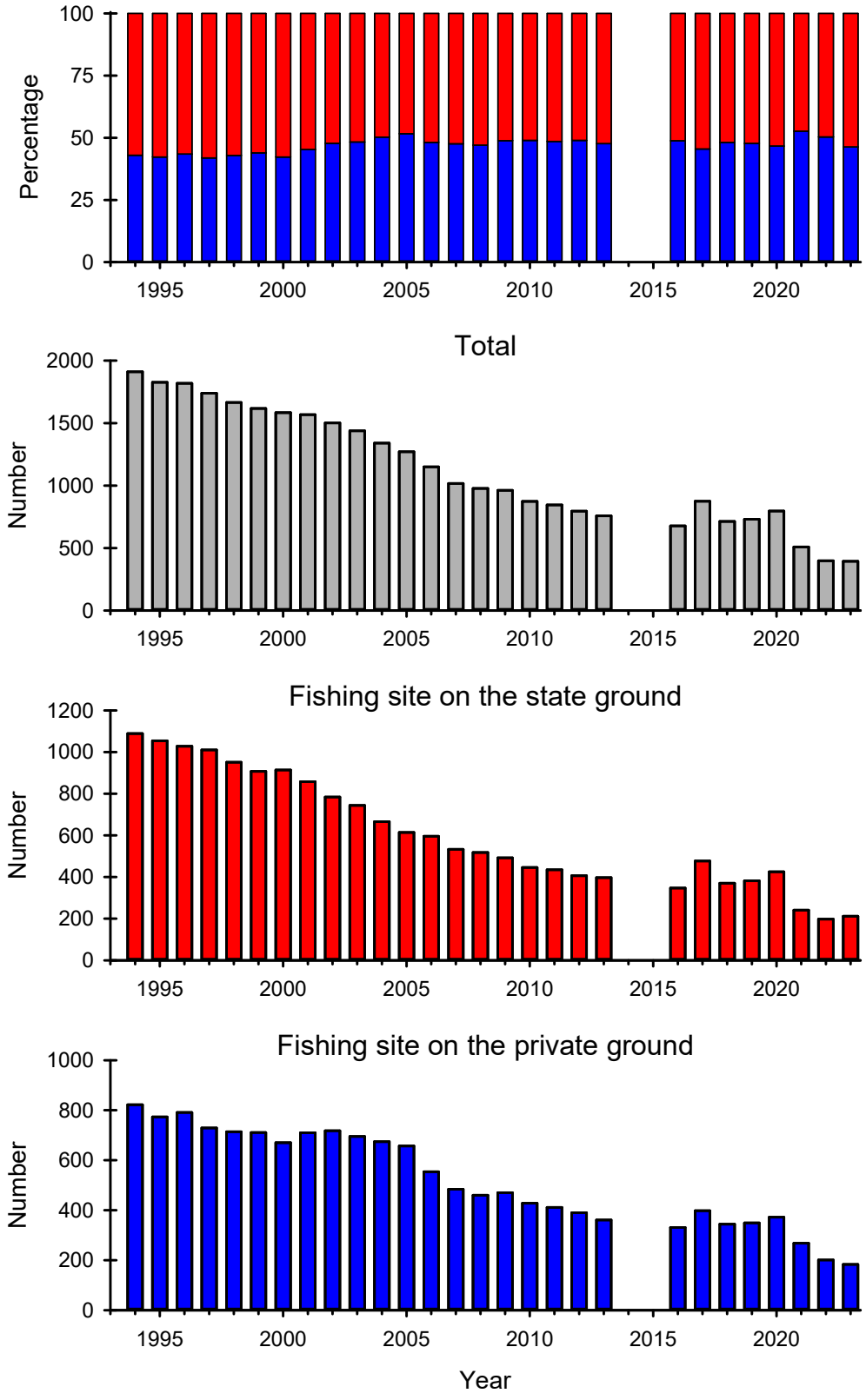


Figure 156. Numbers of registered bag net and bend net fishing sites on the private and state-owned ground in Finnmark. Source: County Governor of Troms and Finnmark.

Numbers of salmon fishing sites in Finnmark were in the middle of 1990 at approx. 2000 and in the year 2023 at approx. 400. Fishing sites can be on state ground or on private ground (Fig. 156). In long-term, they divide 50% to 50%. The numbers of fishing sites have declined simultaneously and in the year 2021 they declined clearly due to the salmon fishing moratorium in Tanafjord and areas close to it.

Figures 157, 158 and 159 clearly indicates the long-term decline in the fishing sites that has happened since the middle of 1990's in three large areas in Finnmark and in individual municipalities. In some areas, like in the municipalities Gamvik and Berlevåg in Tanafjord and in the municipality Nesseby in Varangerfjord, fishing sites have slightly increased before the year 2020 (Figs. 157 and 159).

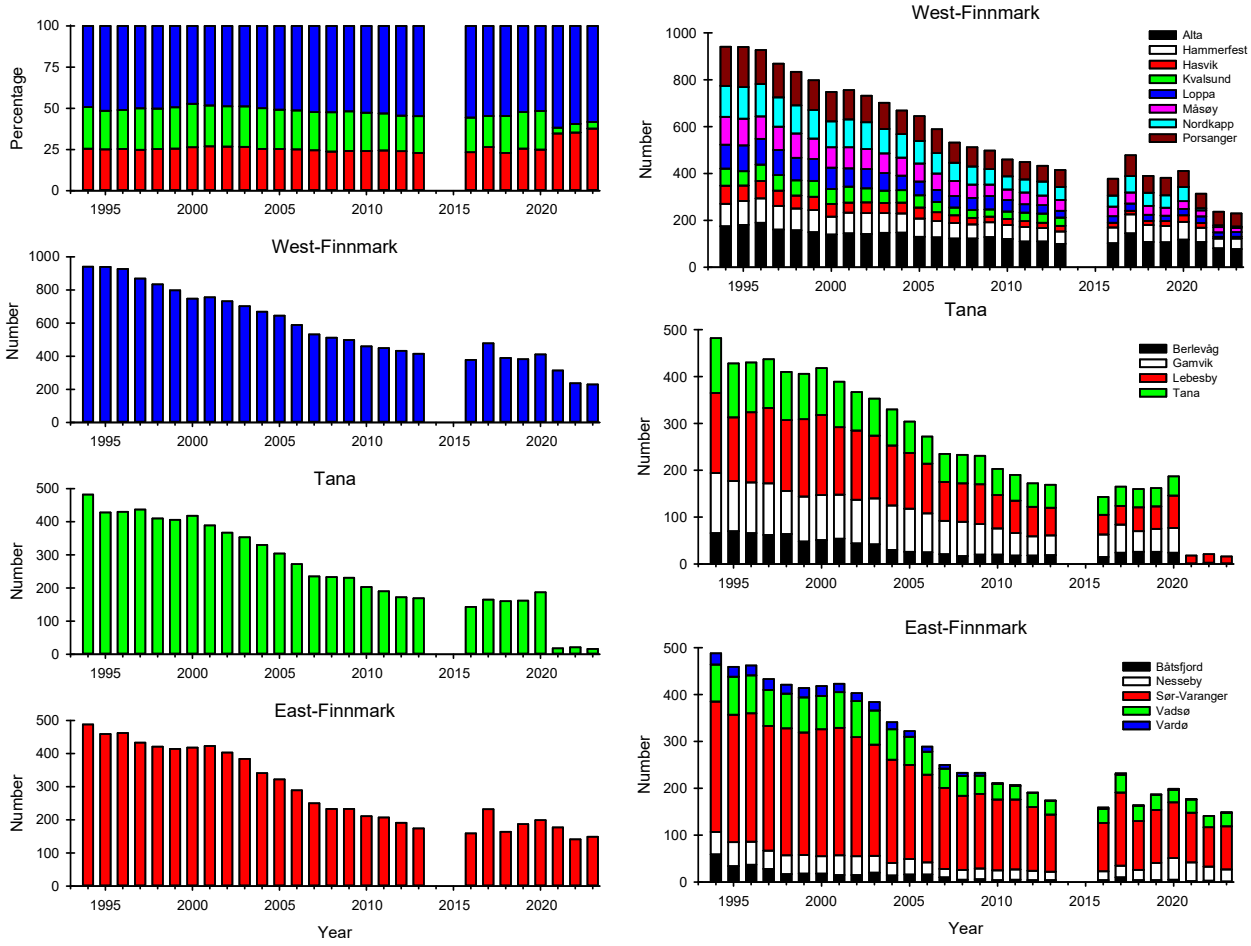


Figure 157. Numbers of fishing sites available in West-Finnmark, Tana area and East-Finnmark.
West-Finnmark includes municipalities Loppa, Hasvik, Alta, Hammerfest, Kvalsund, Måsøy, Nordkapp and Porsanger; Tana includes municipalities Lebesby, Gamvik, Tana and Berlevåg; East- Finnmark includes municipalities Båtsfjord, Vardø, Nesseby, Vadsø and Sør-Varanger. Source. County governor of Troms and Finnmark.

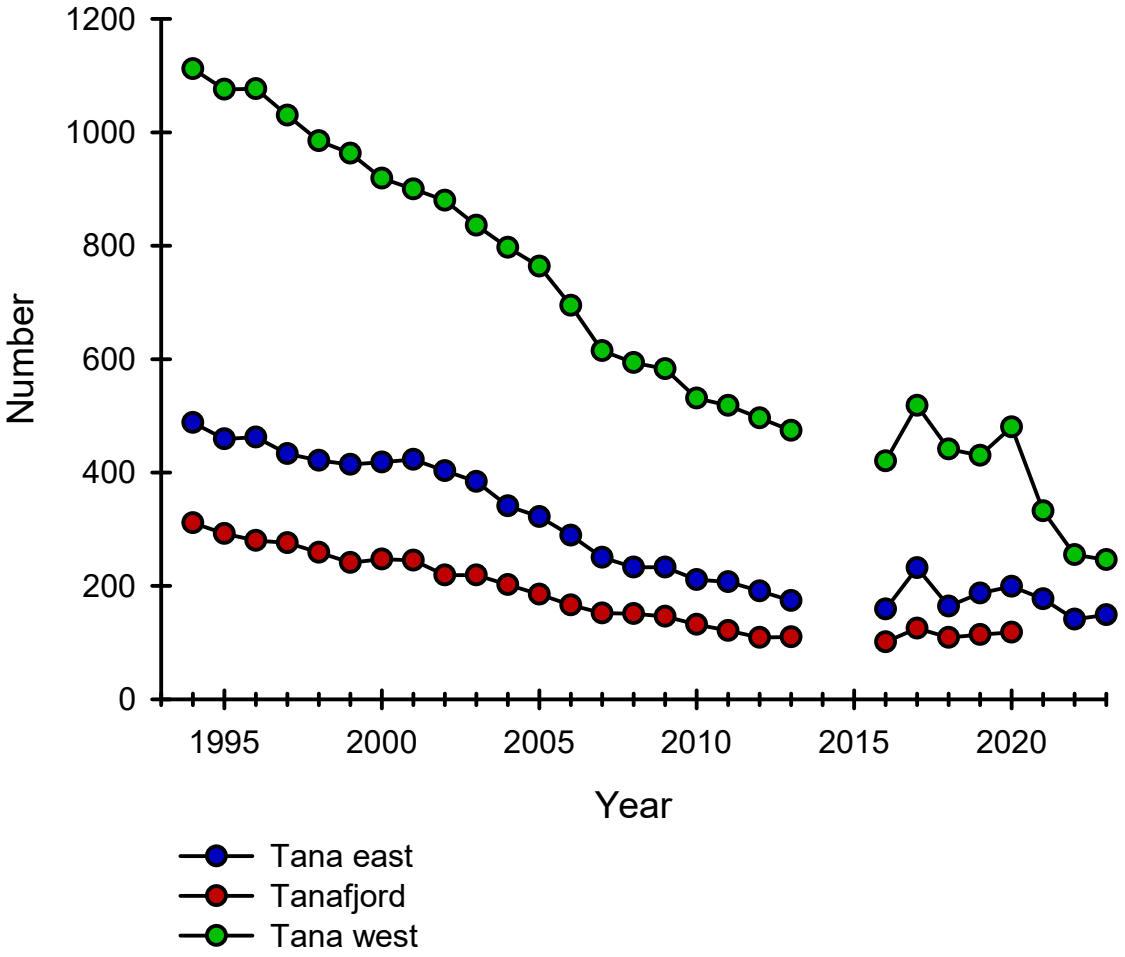


Figure 158. Numbers of officially accepted salmon fishing sites in Finnmark coastal areas. Source: County Governor of Troms and Finnmark.

In long-term, salmon fishing effort measured in accepted numbers of fishing sites for bag net and bend net fishing, has declined. The highest fishing effort has been in the area west from Tanafjord (Fig.158).

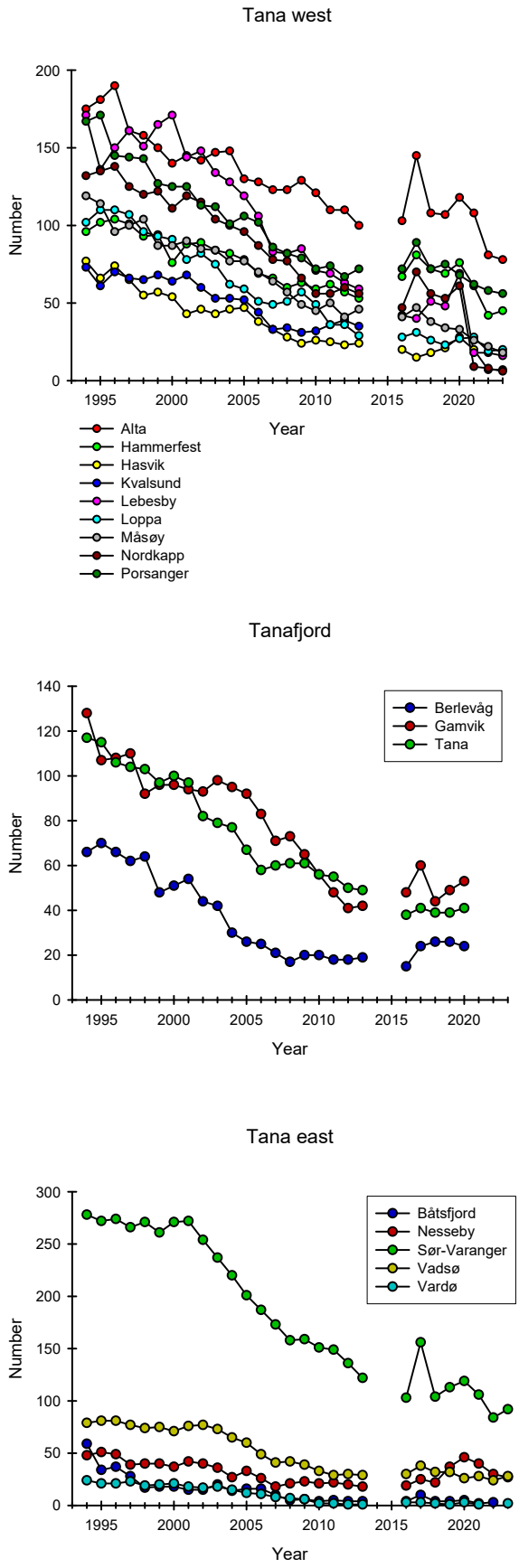


Figure 159. Annual numbers of fishing sites available (accepted sites) in each municipality in the eastern area from Tanafjord (lowest figure), in Tanafjord (figure in the middle) and in the area west from Tanafjord (top figure). Source: County Governor of Troms and Finnmark.

44. Numbers and proportions of bag nets and bend nets in salmon districts and municipalities in Finnmark

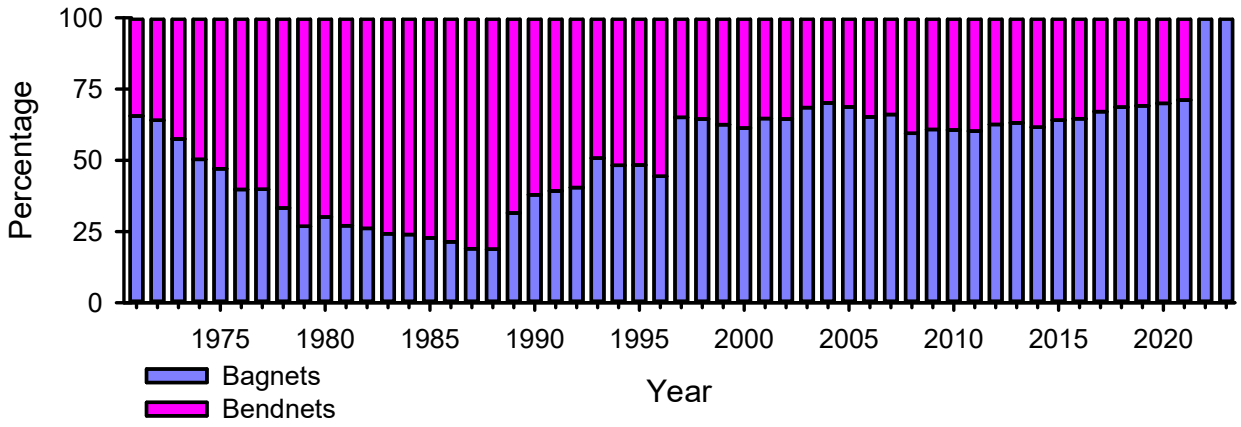


Figure 160. The annual proportions of bag nets and bend nets used in Norway in salmon fishery from the year 1971 onwards. Source: SSB

In Norway in 1950's and in 1960's the main salmon fishing method in coastal and fjord areas was with bag net. Some gillnets were also used but in late 1960's fishermen started to use bend nets. In the year 1971 already approx. 30% of the salmon fishing gears used were bend nets. The proportions of bend nets increased steadily until the year 1988. From the year 1989 the proportions of bend nets decreased sharply until the year 1997 and thereafter their proportions in Norway were approx. 30 % (Fig. 160). Since 2022 the only net fishing method for salmon fishing at sea has been bag net.

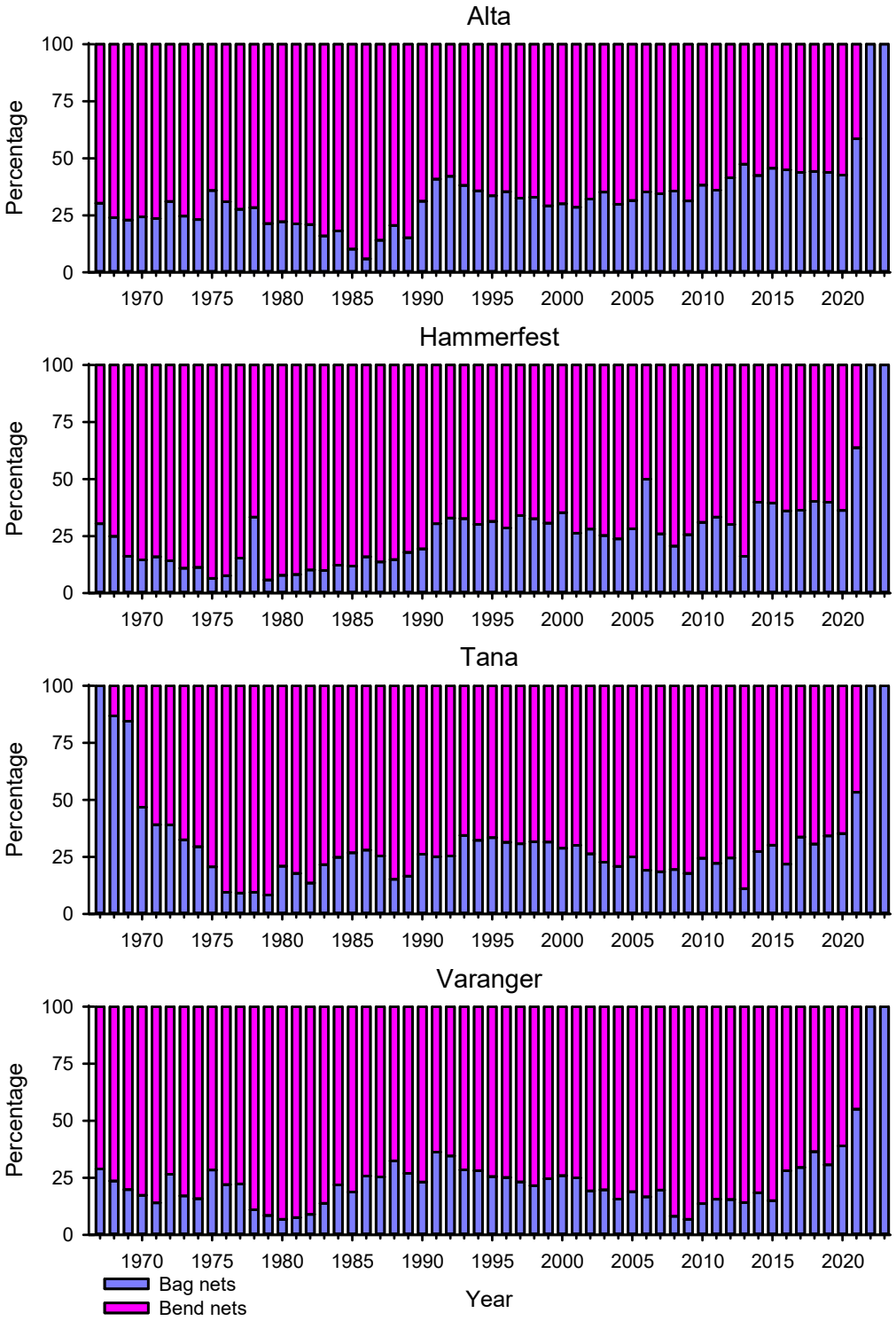


Figure 161. The proportions of bag nets and bend nets used in salmon fishing in four salmon districts in Finnmark. Source: SSB

The proportions of bag nets and bend nets have only small annual variations in Finnmark (Fig. 161). The proportions of bag nets and bend nets have in a historical perspective, slow changes between the years. The restricted fishing times in bend net fishery since the year 2015 have increased the use of bag nets especially in Varanger and Tana salmon districts.

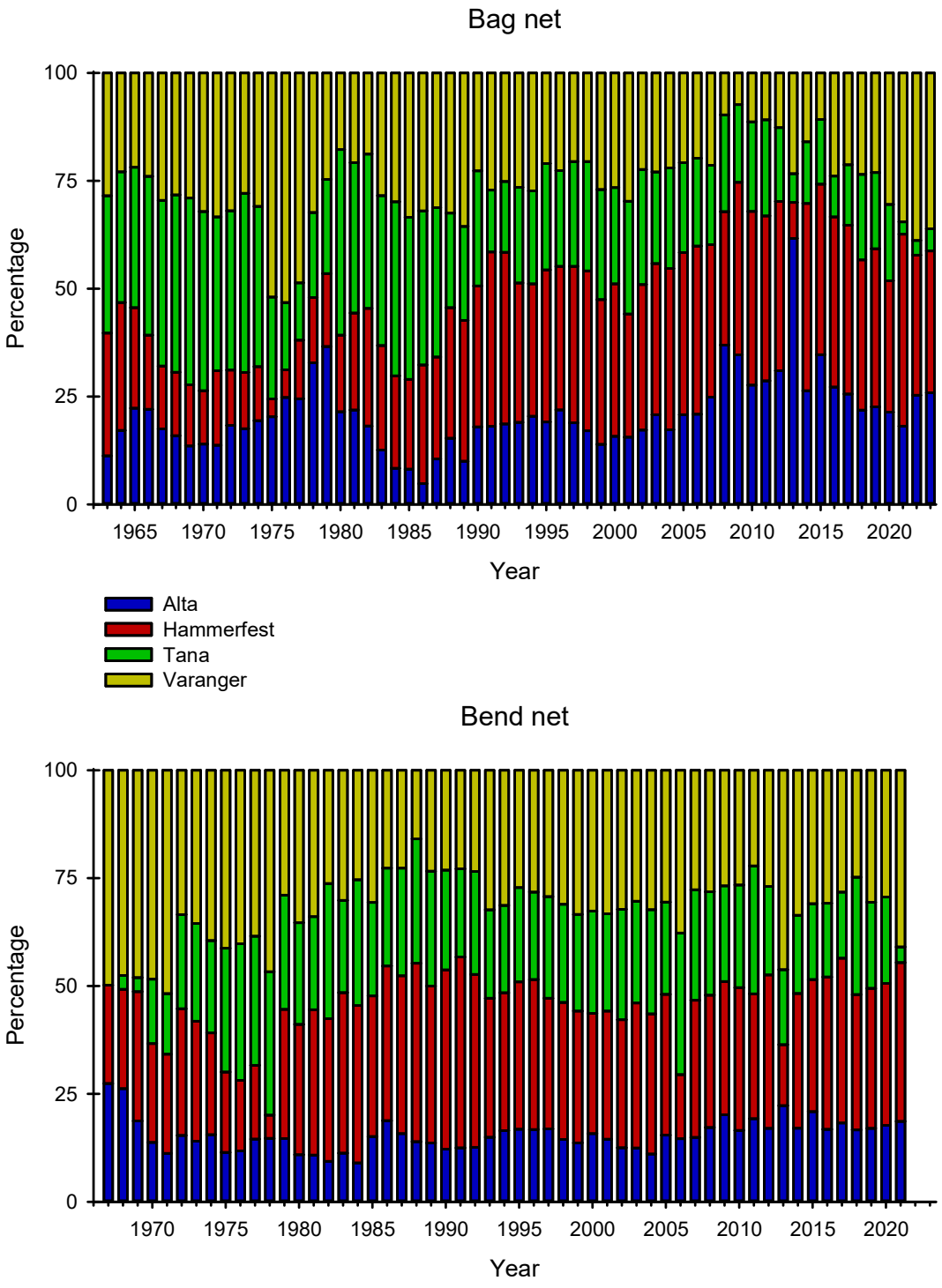


Figure 162. Annual proportions of bag nets and bend nets between four salmon districts in Finnmark. Source: SSB

Figure 162 gives an overview of the long-term development of the proportions of bag nets and bend nets used in four salmon districts in Finnmark. The proportions of bag nets used in Tana salmon districts have clearly decreased since the year 1963 compared to the proportions in other salmon districts. In Alta and Hammerfest salmon districts, the proportions have increased so much that in the years 2008-2017 around 70-75% of all bag nets used in Finnmark were found on this district. During the last ten years, the proportions of bag nets used in Varanger salmon district have clearly increased compared to the proportions in other areas. The annual proportions of bend nets have

been quite stable between all the salmon districts during the last 30 years. Since the1980's, Appr. 50% of the bend nets in use have been used in East-Finnmark (Tana and Varanger salmon districts). The highest proportions of bend nets during the last 30 years have been in Hammerfest and Varanger salmon districts.

The numbers of bag nets have declined from the middle of 1960's to late 1970's. After that, there was an increase and the numbers peaked in the early 1990's, followed by steady decline until the latest years (Figs. 163-166). In Finnmark the numbers of bend nets have been close to 1 500 in 1970's and thereafter they have declined.

The numbers of drift nets were the highest in Hammerfest salmon district, being around 4 000 nets just some years before it was prohibited (Figs. 166 and 167).

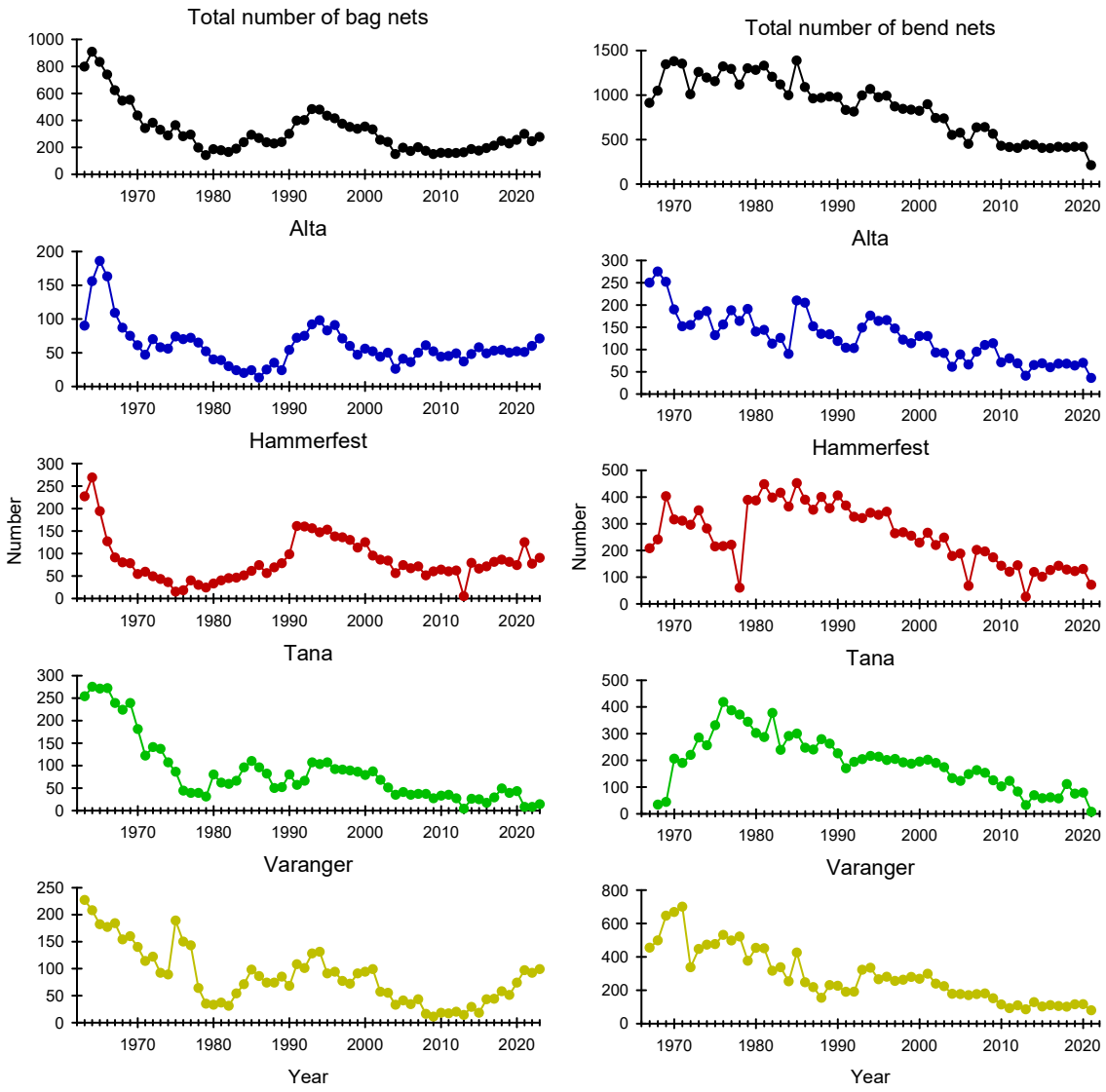


Figure 163. Annual numbers of bag nets (figure on the left) and bend nets (figure on the right) in four salmon districts in Finnmark. Source. SSB

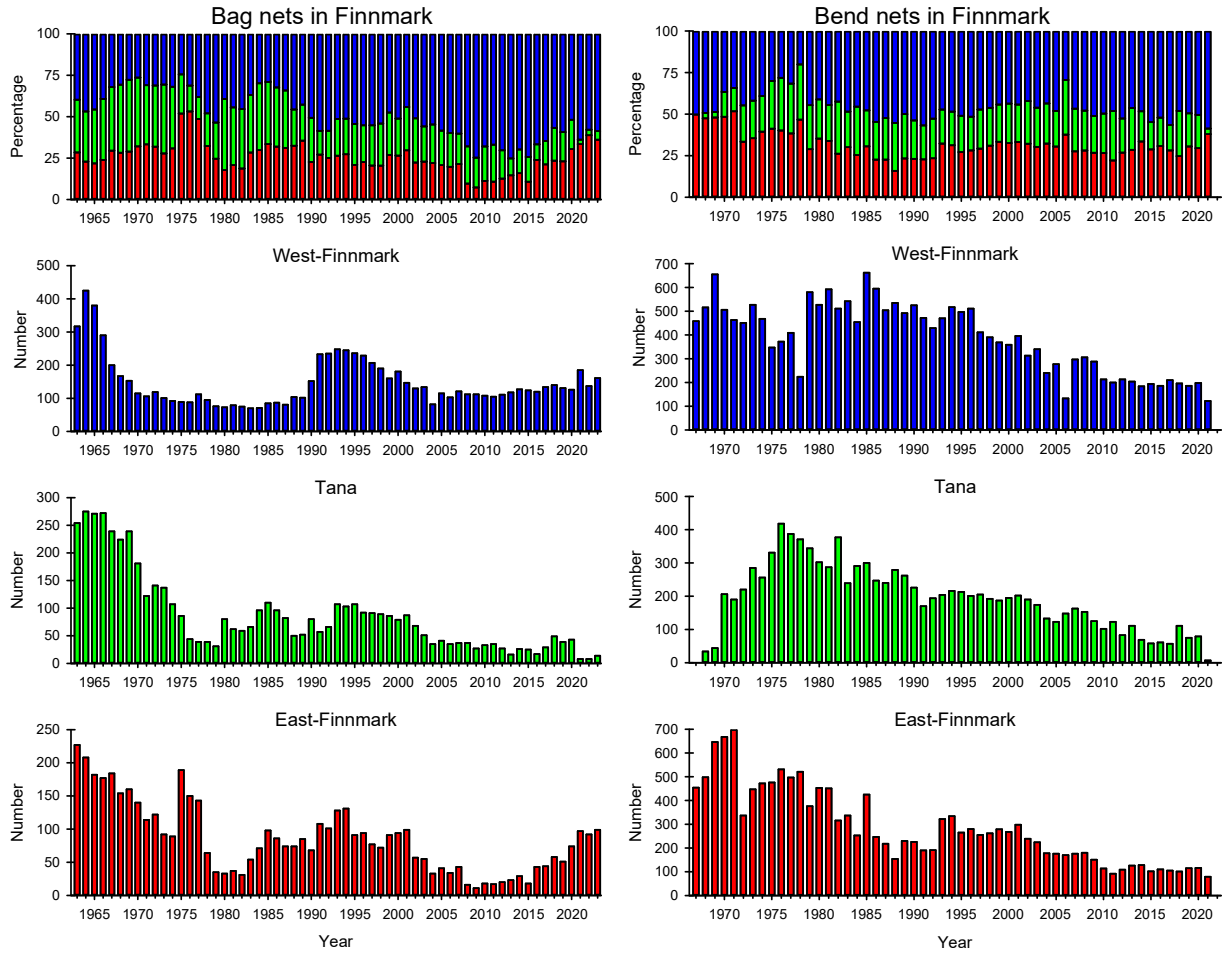


Figure 164. Bag nets (on the left) and bend nets (on the right) in West-Finnmark (municipalities), Tanafjord (municipalities) +Lebesby municipality and East-Finnmark (municipalities). Source. SSB

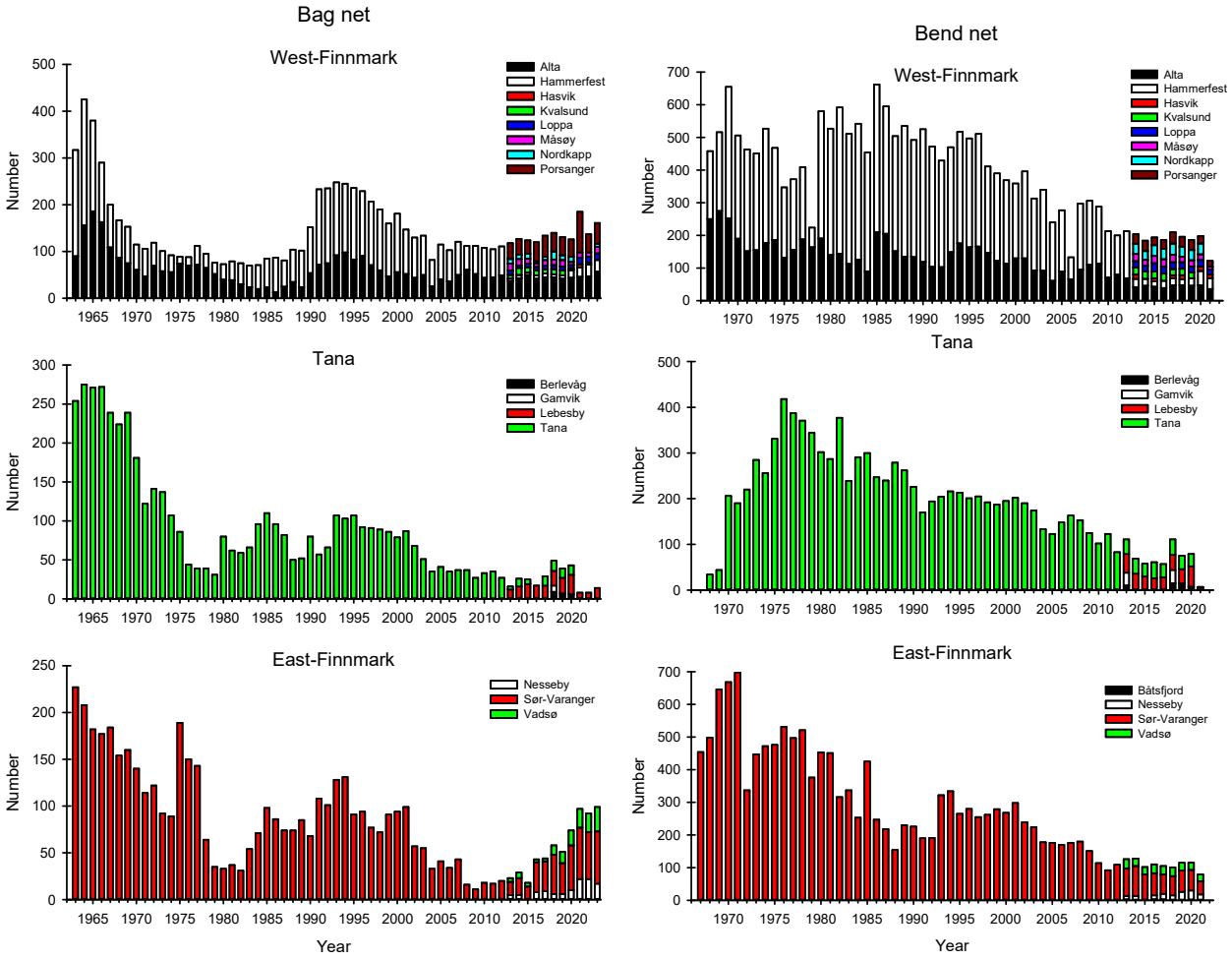


Figure 165. Numbers of bag nets and bend nets in West-Finnmark area, Tana area and East-Finnmark. Before the year 2013 municipalities are together and since the year 2013 numbers of bag nets and bend nets are for each municipality. Source. SSB

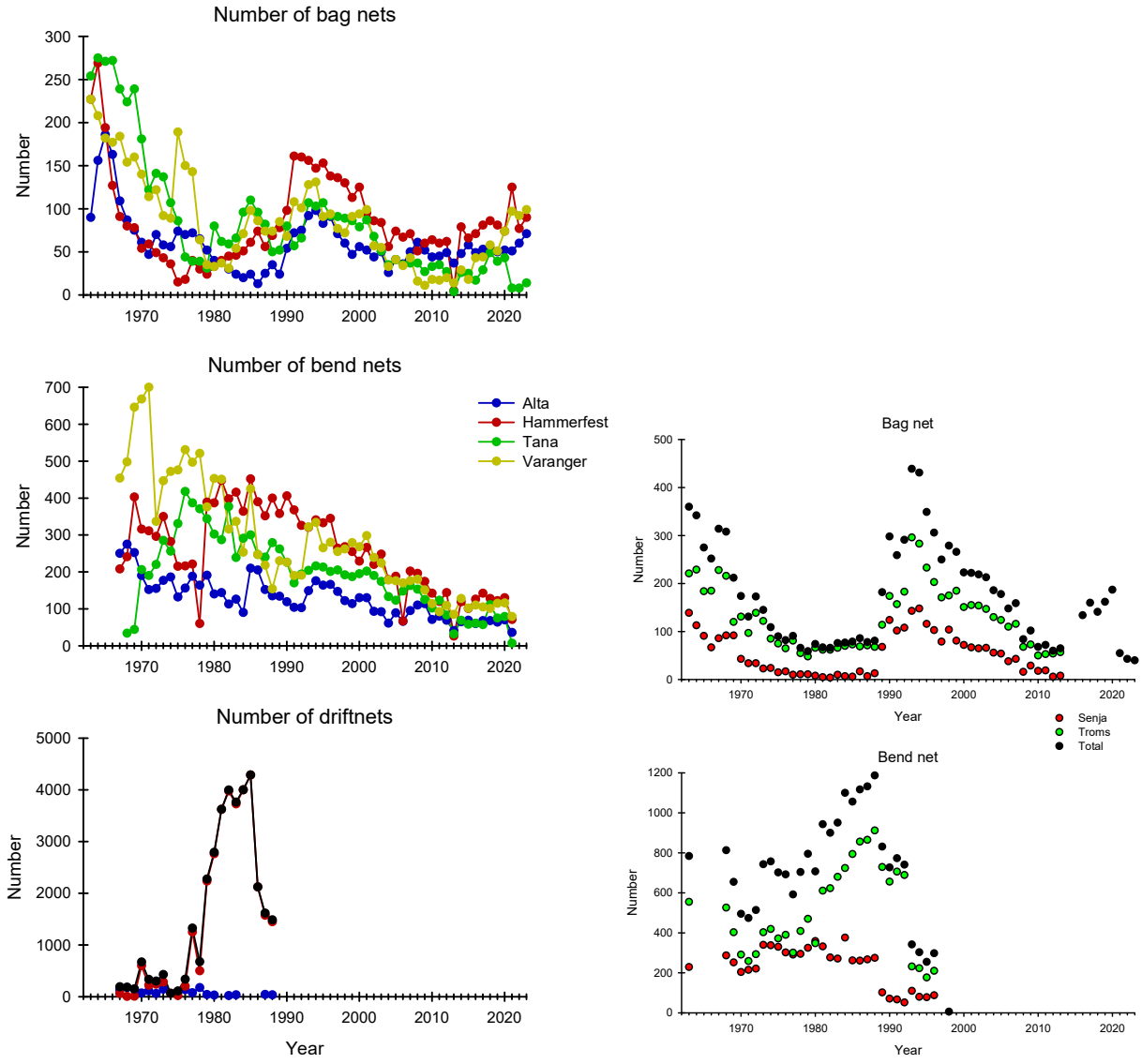


Figure 166. Numbers of bag nets, bend nets and driftnets in four salmon districts in Finnmark (figure on the left) and bag nets and bend nets in Troms and Senja in Troms County (figure on the right). Source: SSB

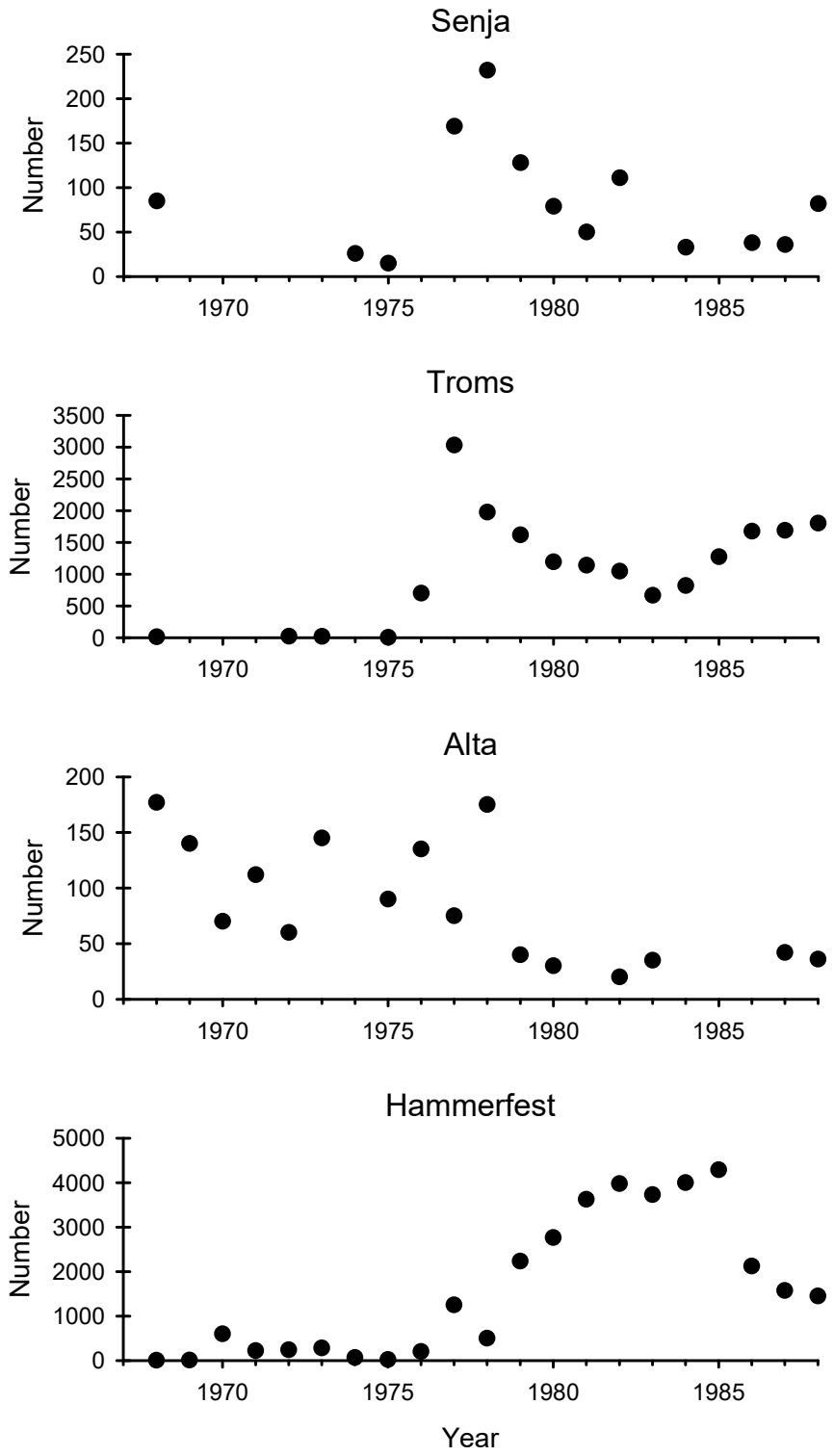
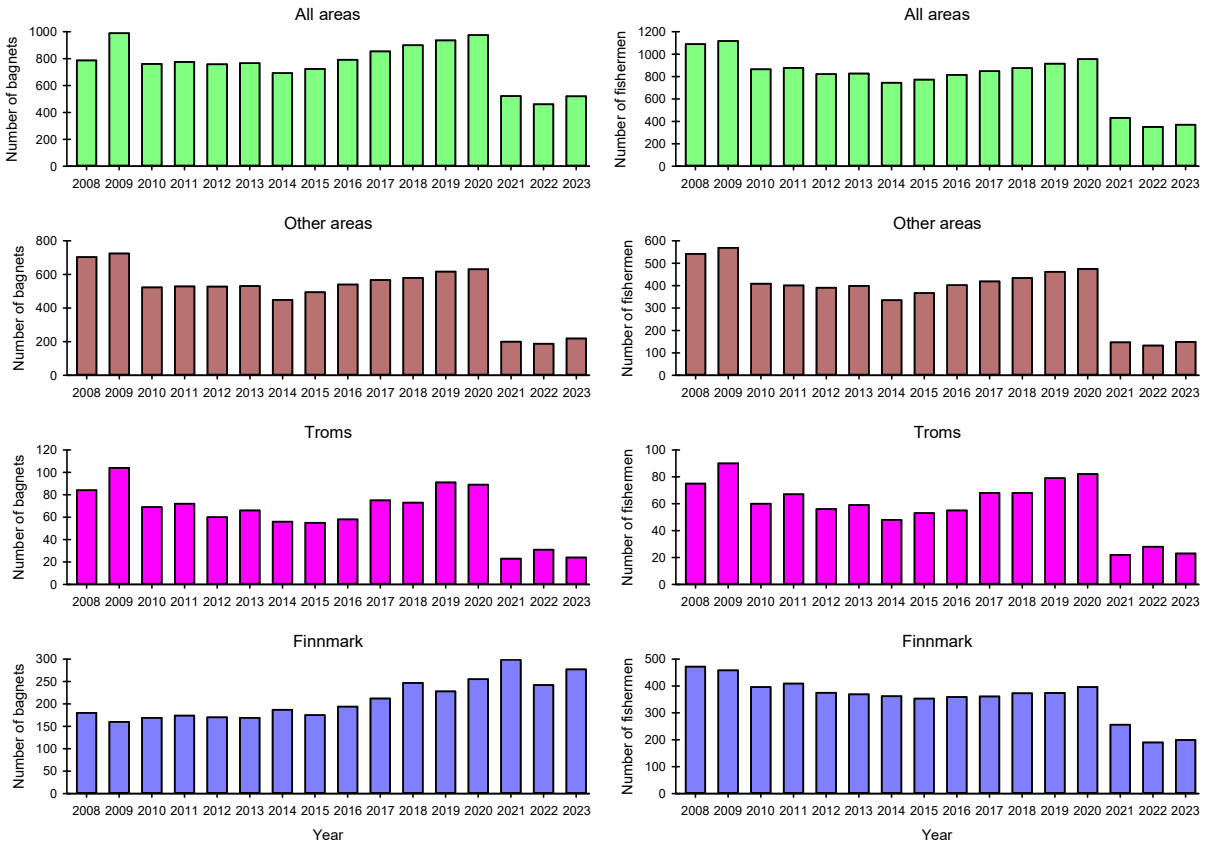


Figure 167. Annual numbers of driftnets in Finnmark and Troms counties. Source: SSB



168. Annual numbers of bag nets (figure on the left) and fishers (figure on the right) in Finnmark, Troms, other areas in Norway and all areas together. Source: SSB

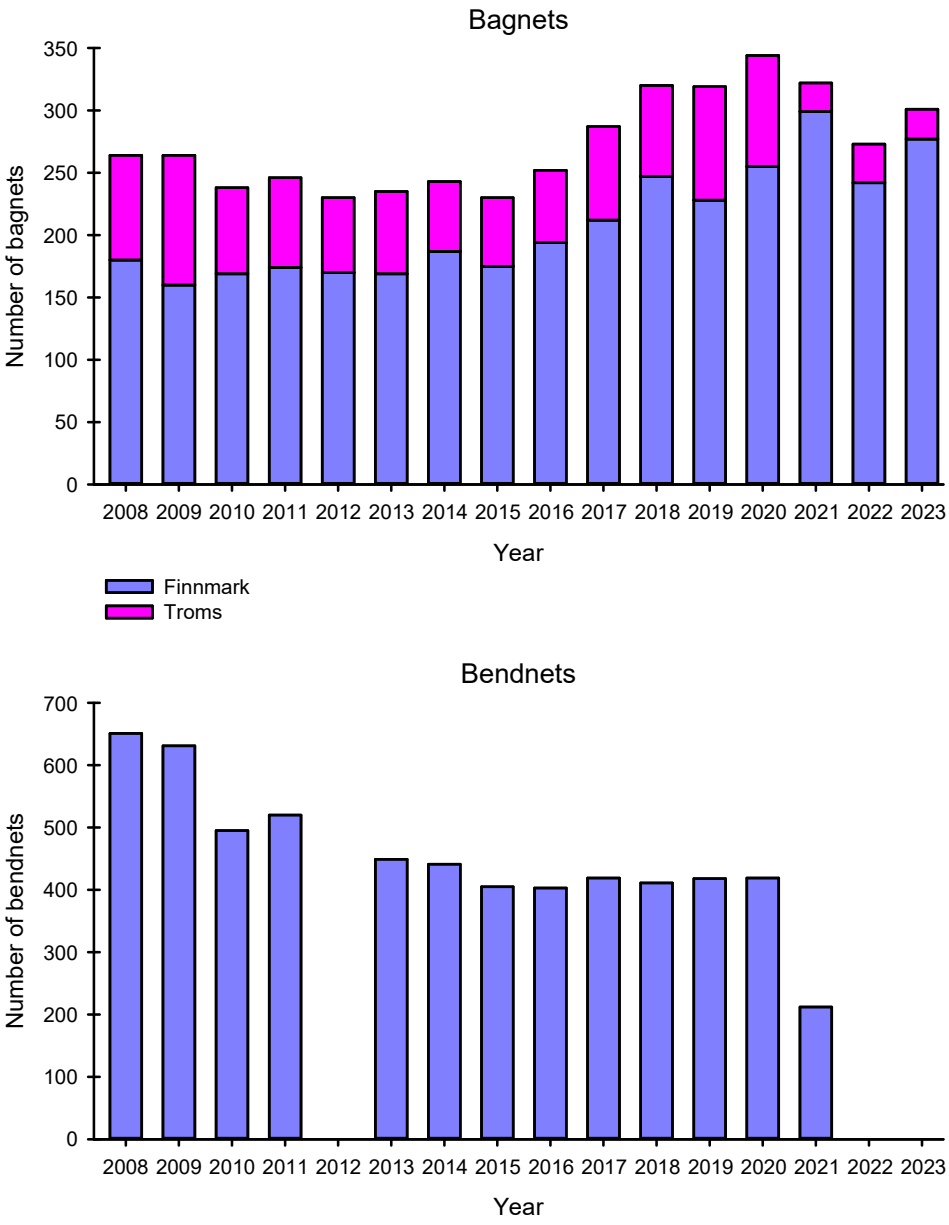


Figure 169. Annual numbers of bag nets in Troms and Finnmark counties and bend nets in Finnmark. Source: SSB

45. Numbers of salmon fishers in Finnmark areas and in Finnmark municipalities

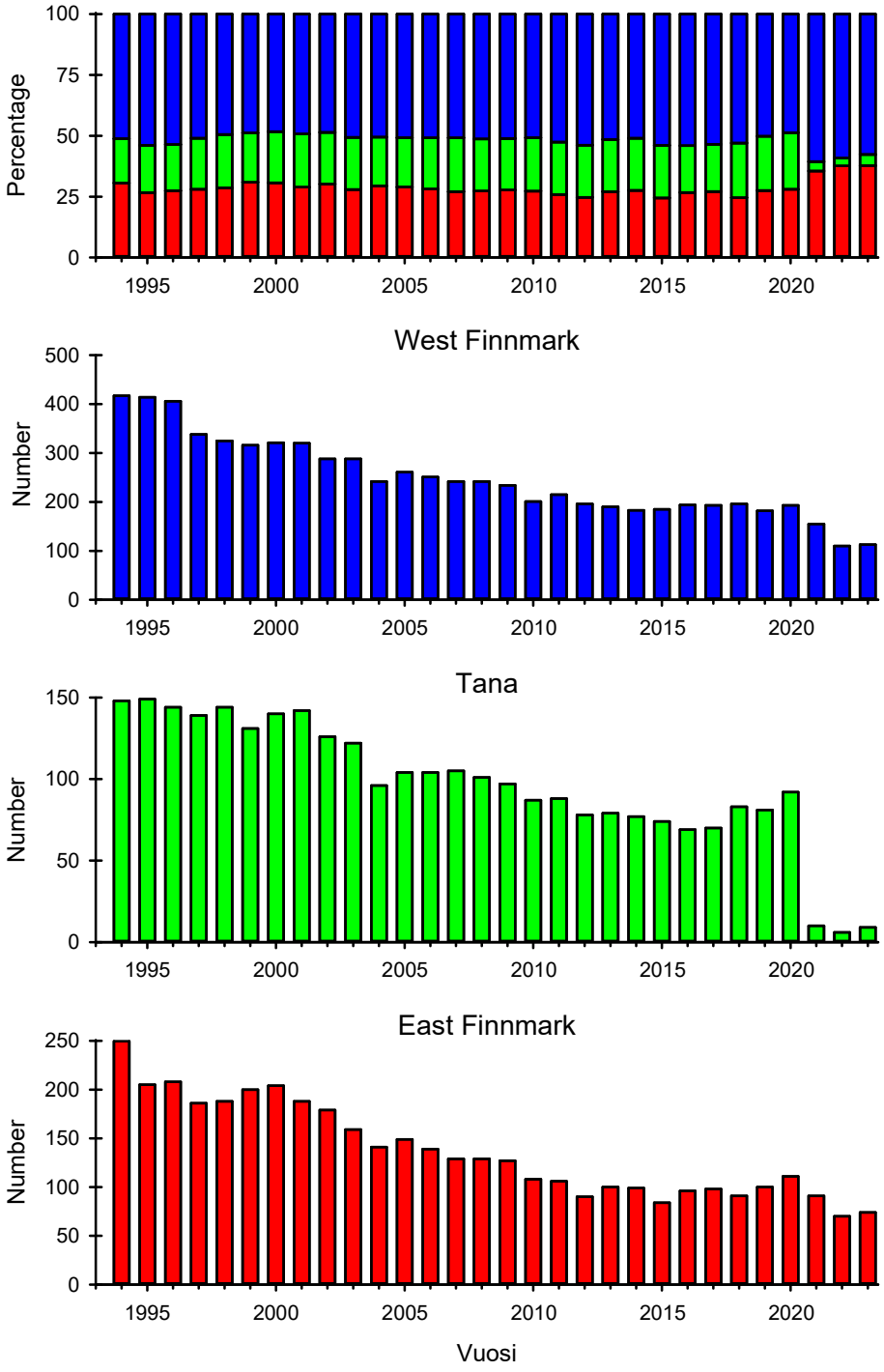


Figure 170. Numbers of salmon fishers in West-Finnmark, Tana area and East-Finnmark. West-Finnmark includes municipalities Loppa, Hasvik, Alta, Hammerfest, Kvalsund, Måsøy, Nordkapp and Porsanger; Tana includes municipalities Lebesby, Gamvik, Tana and Berlevåg; East- Finnmark includes municipalities Båtsfjord, Vardø, Nesseby, Vadsø and Sør-Varanger. Source. SSB.

Numbers of salmon fishermen have declined in each municipality in Finnmark along the years simultaneous with the declining of salmon fishing sites (Figs. 170-173).

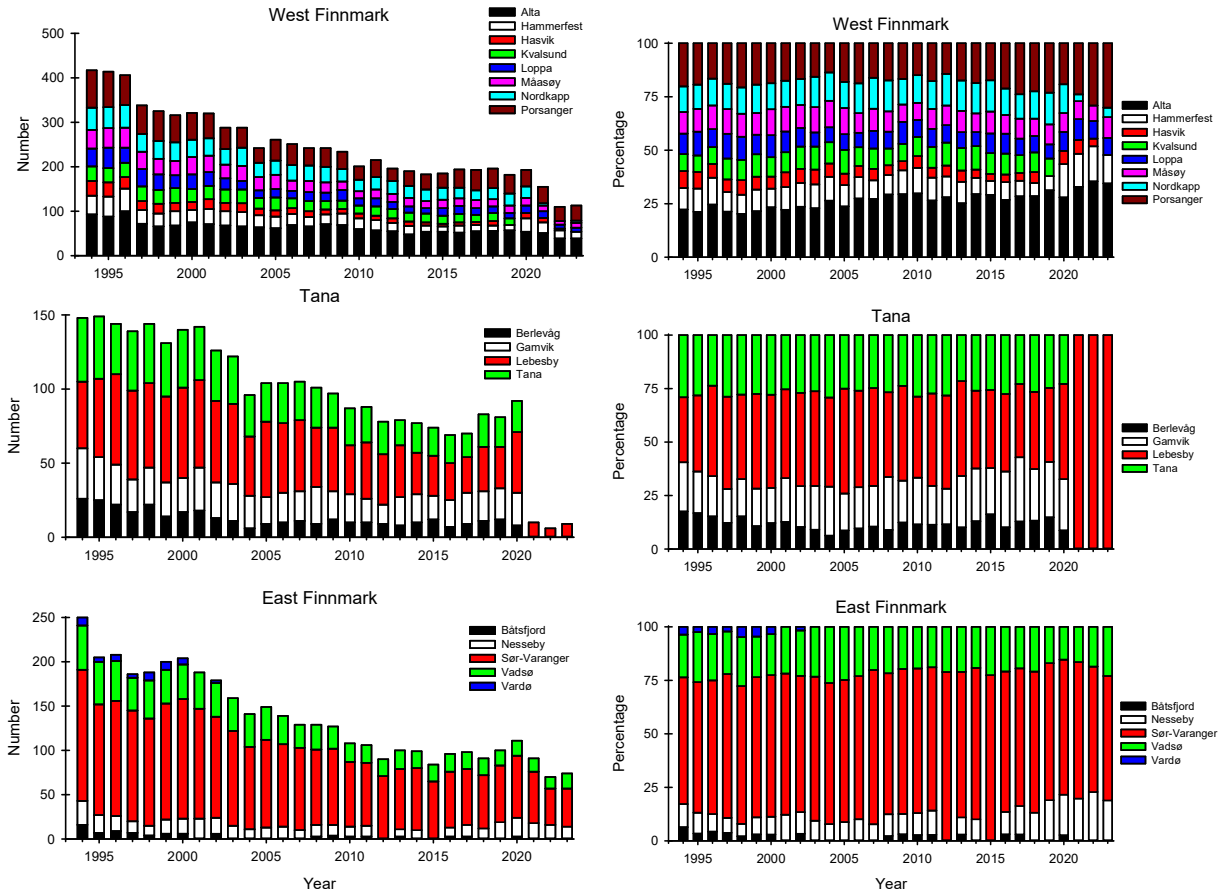


Figure 171. Numbers of salmon fishers in municipalities in West-Finnmark, Tana area and East-Finnmark. Source: SSB.

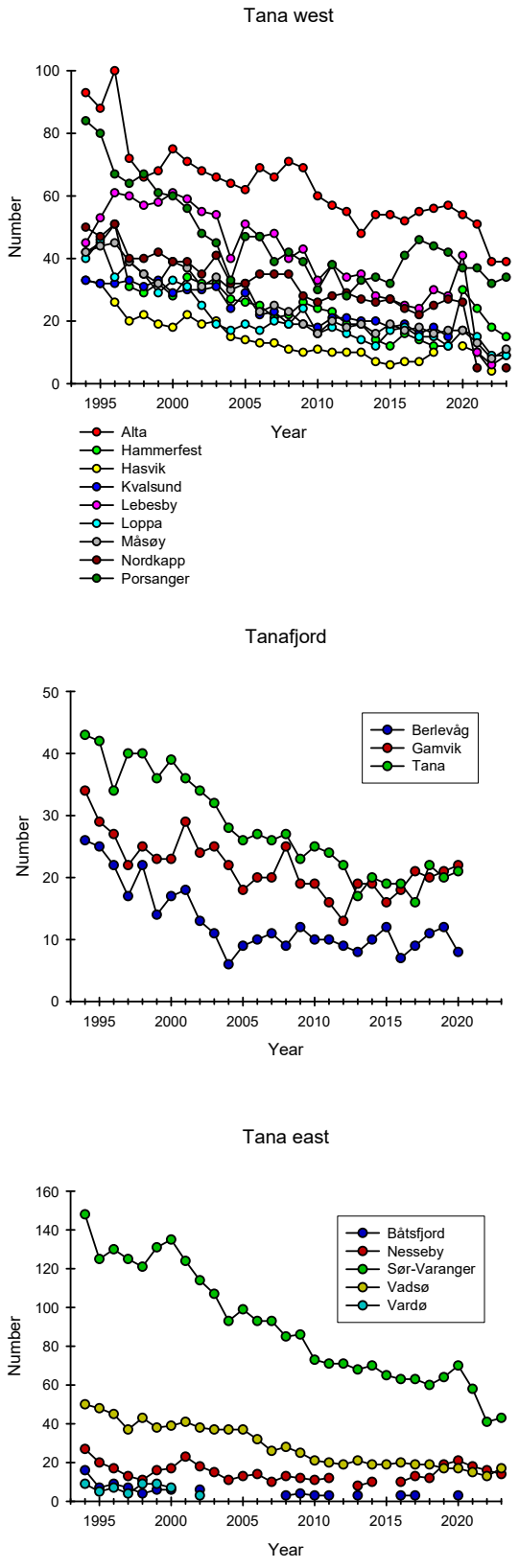


Figure 172. Annual numbers of salmon fishers in municipalities in the area east from Tanafjord (lowest figure), in Tanafjord (figure in the middle) and in the area west from Tanafjord (uppermost figure). Source: SSB.

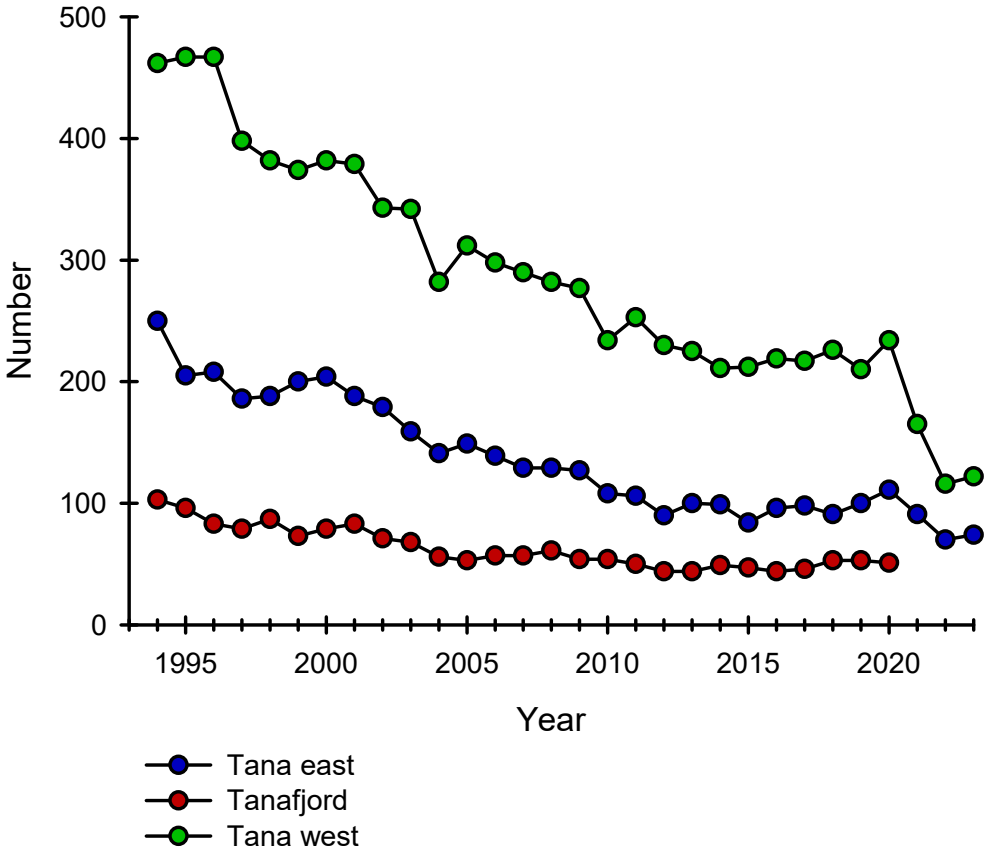


Figure 173. Annual numbers of salmon fishers in the area east of Tanafjord, in Tanafjord and in the area west of Tanafjord. Source: SSB.

46. Total salmon catches caught at sea in three northern counties and in other areas in Norway

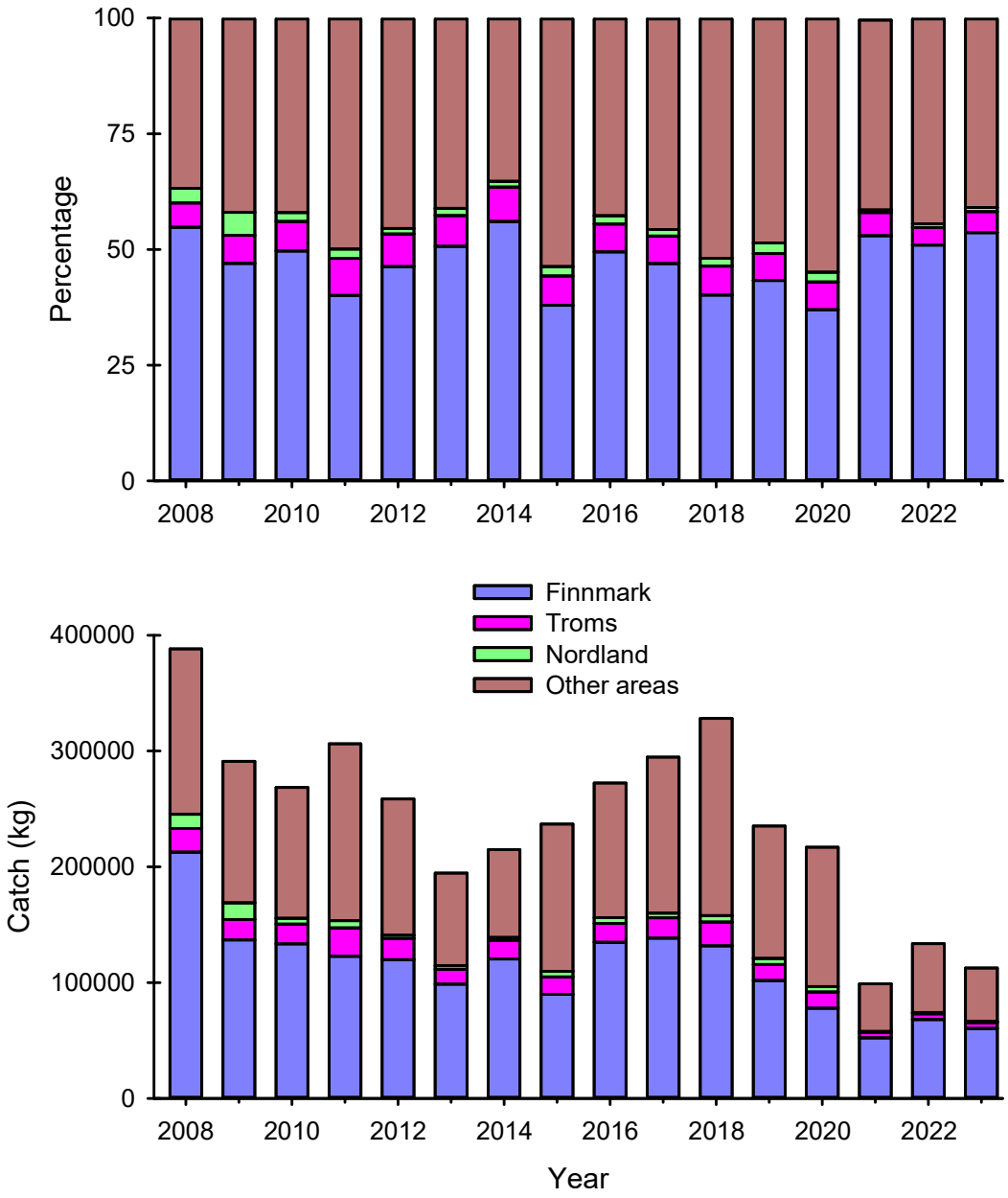


Figure 174. Total salmon catch caught with bag nets and bend nets in three northern counties and in other areas in Norway. Source: SSB.

Finnmark is the most important county in Norway within the sea salmon fishery, having appr. 50% of the annual catches from bag net and bend net fishery (Fig. 174).

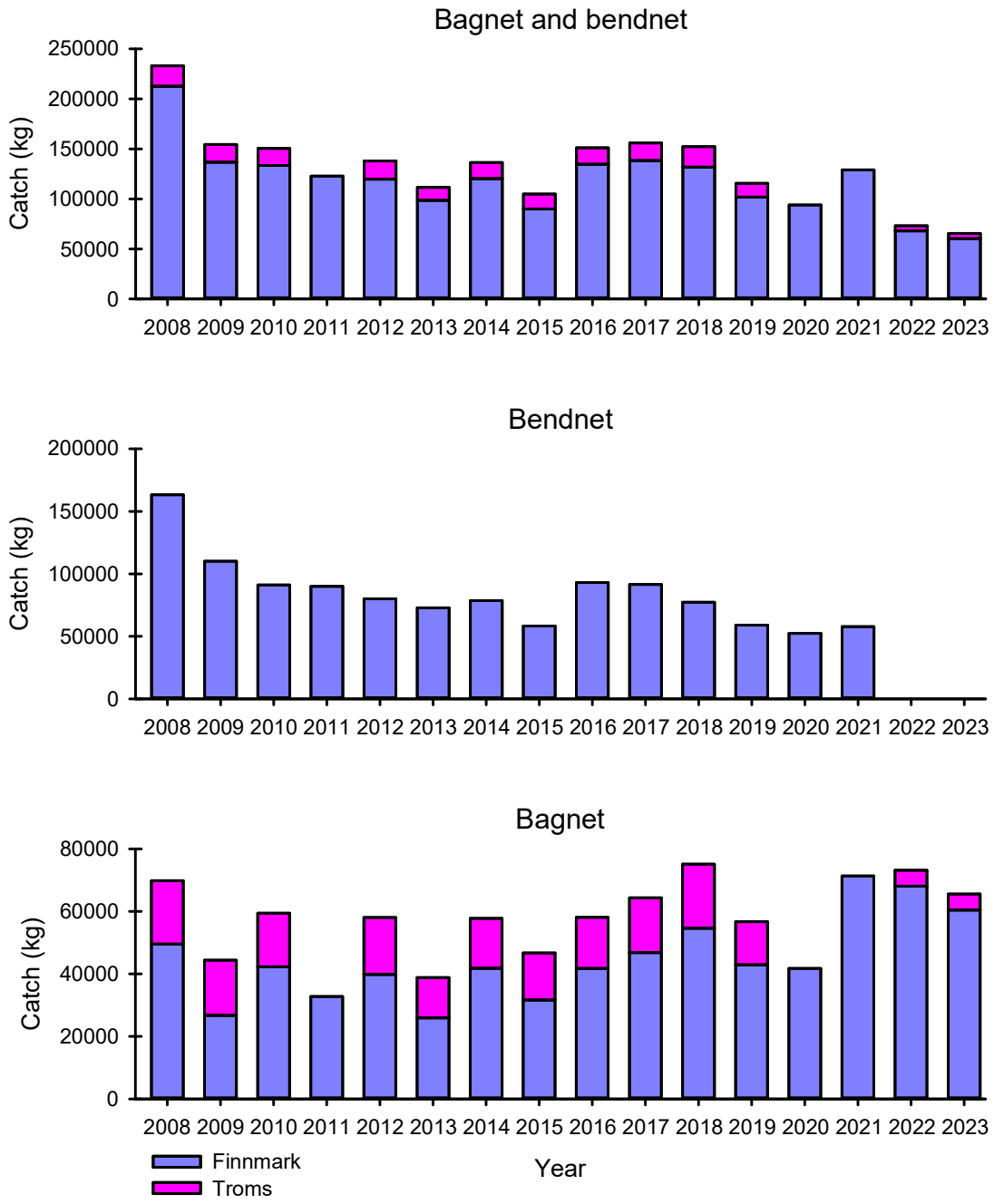


Figure 175. Total salmon catches caught with bag nets in Finnmark and Troms and with bend nets in Finnmark. Source: SSB.

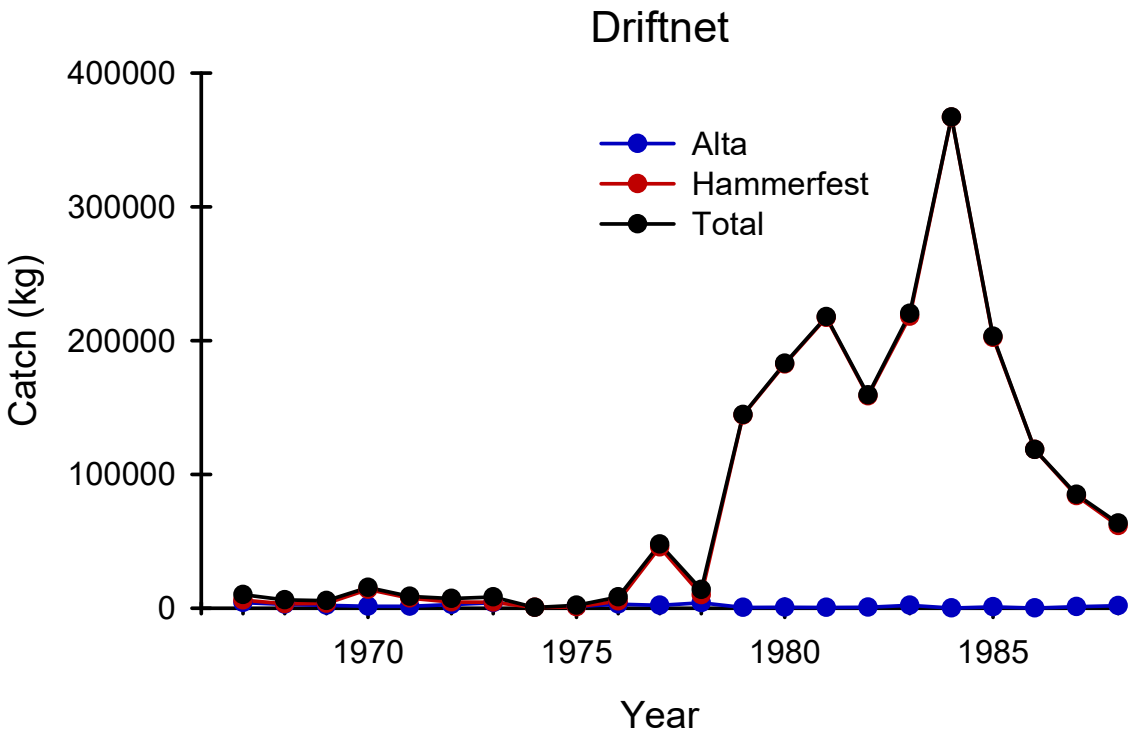


Figure 176. Total annual salmon catches caught with driftnet at sea in Finnmark in the municipalities Alta and Hammerfest. Source: SSB

47. Summary from the salmon catches in the years 1993-2023 divided into size groups at sea and in northern rivers

Total salmon catches at sea and in the rivers in the whole Norway and separately in Finnmark and in Troms counties have declined since the early 2000's towards the year 2023, without any clear peaks (Figs. 177-178). Small salmon (< 3 kg), made in general up approx. 50% of the catches at sea, based on the numbers of salmon. The proportions of small, medium and large sized salmon have had only very small differences between the years 1993-2023. This indicates that there have not been annually clear differences in the size selection from net fishing methods and in mesh sizes in the nets.

In the salmon catches at sea, in terms of weight, medium size and large size salmon have almost always made up 75% or more from annual catches in Finnmark county in the years 1993-2023 (Fig. 177). Figures 178-179 indicates, however, that in the rivers in Finnmark (not Tana and Neiden included), medium size and large size salmon make up smaller proportions, approx. 60%, from the annual catches in terms of weight. In the River Tana, medium size and large size salmon have made up approx. 75% from annual catches in term of weight, with remarkable annual variations.

In the years 2022 and 2023 the use of bend nets in salmon fishing at sea became prohibited also in Finnmark county. It is known that bend nets with larger mesh sizes are selecting larger size salmon than bag nets with smaller mesh sizes. It was expected to observe changes in the catches at sea caught with bag nets already in the years 2022 and 2023. In those two years after the total moratorium of bend net fishery the proportions of small sized salmon increased in bag net fisheries at sea in Finnmark and Troms. Earlier, some amounts of those small sized salmon could escape through the meshes in bend nets and in the years 2022 and 2023 they were caught more in bag nets compared to earlier years.

In the catches in the rivers in Finnmark and separately in the River Neiden, the proportions of medium and large size salmon slightly increased in the years 2022 and 2023 compared to some earlier years. That development was expected to happen because earlier bend net fishery targeted to medium and large size salmon and after the prohibition of bend nets those medium size and large size fishes survived better on their way to the rivers where their proportions increased compared to the earlier year (Fig. 179).

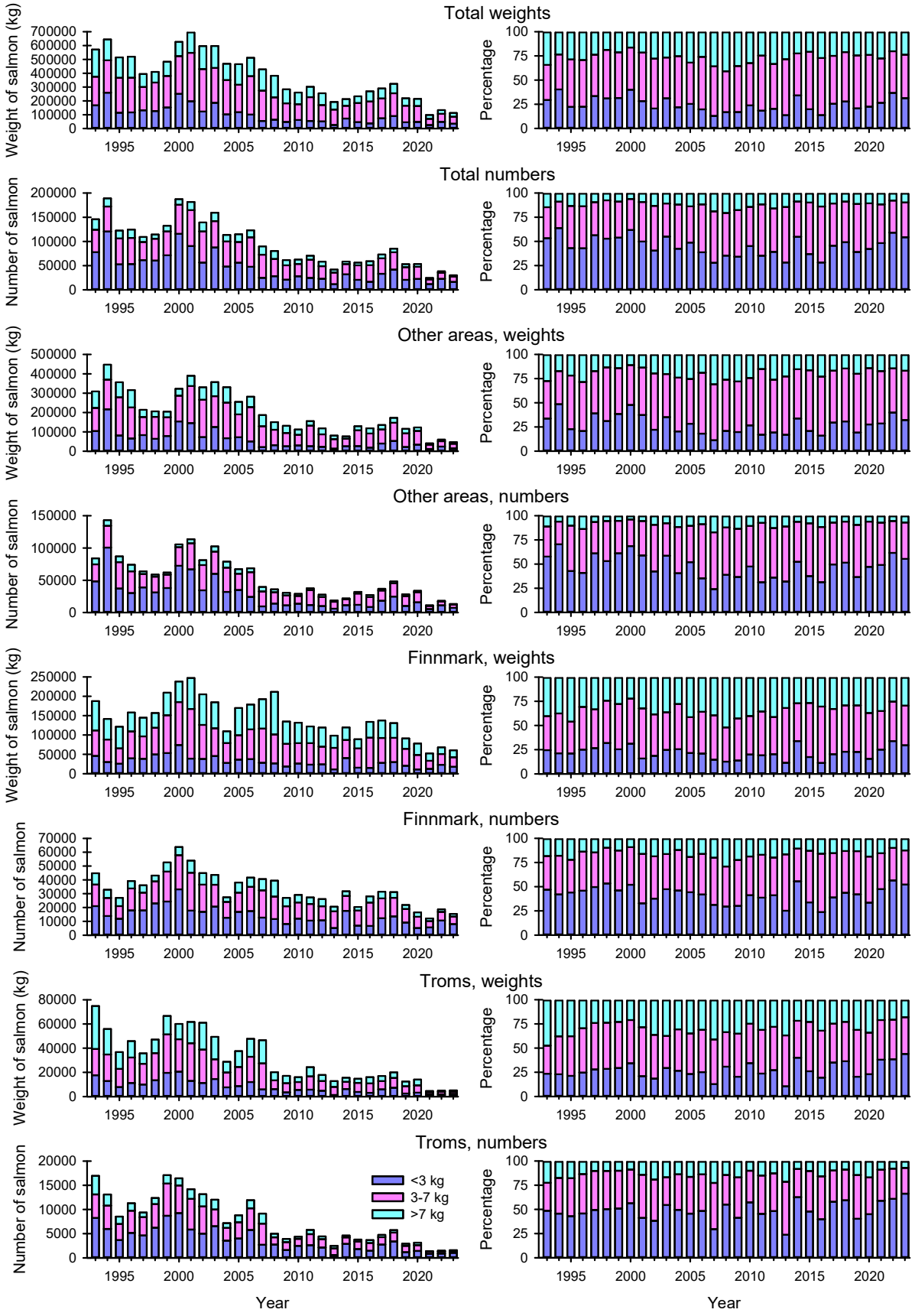


Figure 177. Long-term annual salmon catches in size groups at sea in Norway. Source: SSB.

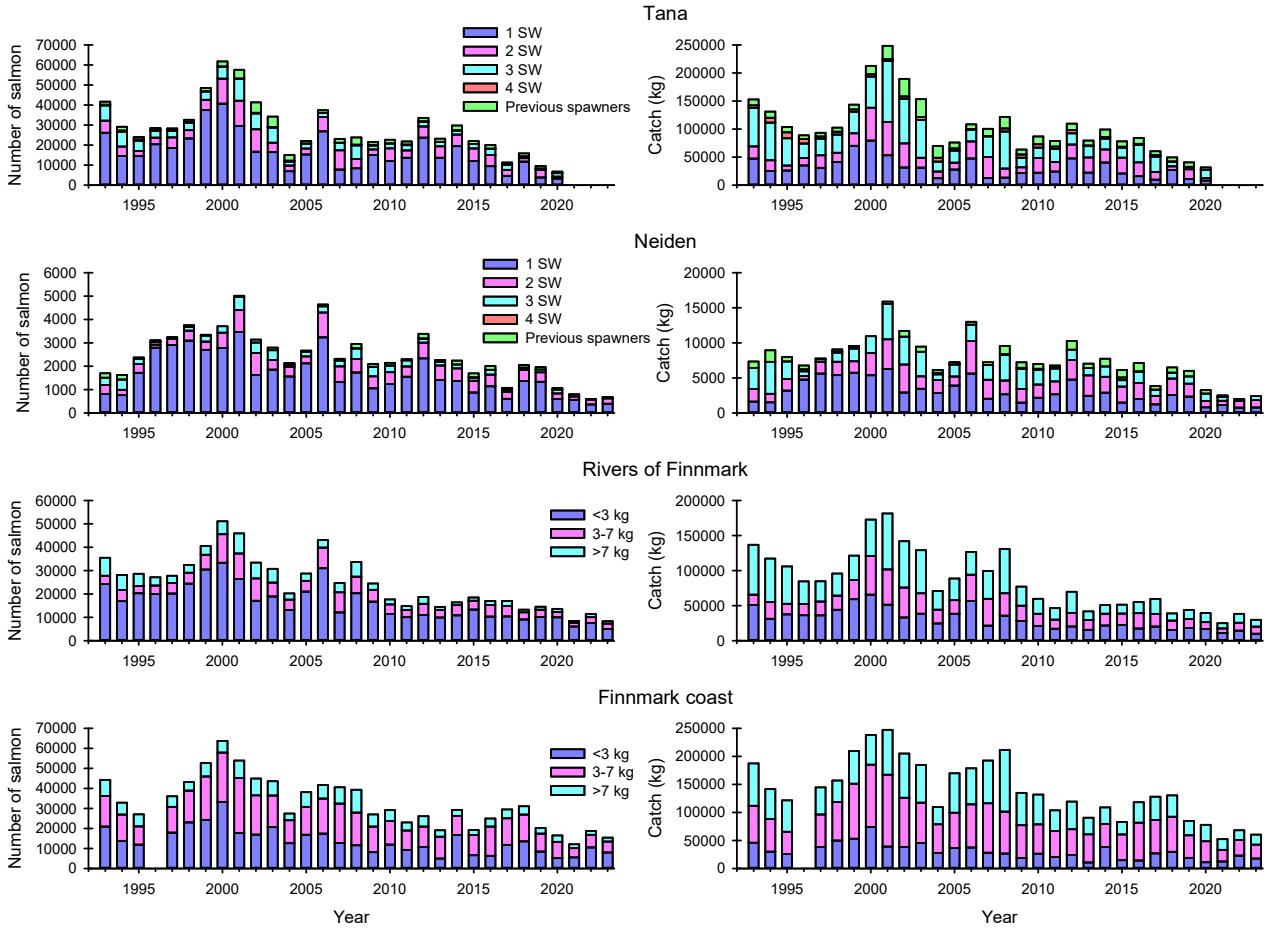


Figure 178. Long-term salmon catches at sea and in the rivers in Finnmark and separately in the rivers Tana and Neiden, Norwegian and Finnish catches combined. Source: SSB, Luke.

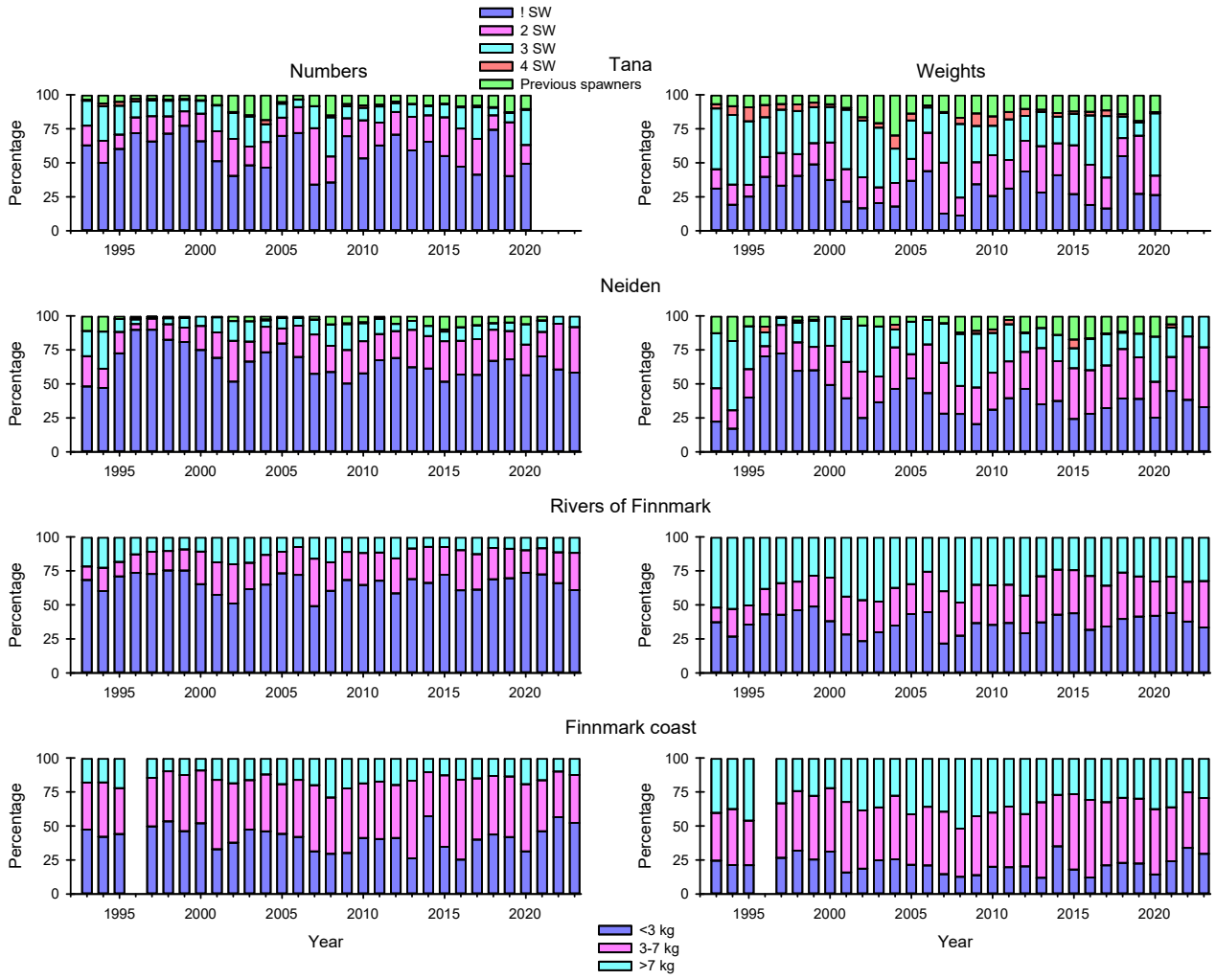


Figure 179. Annual sea-age distributions in the rivers Tana and Neiden Norway and Finland combined and size distributions in other rivers and in the sea fishery in Finnmark. Legend for sea-ages (above the graph the River Tana) is for the rivers Tana and Neiden. Legend for size groups (below the graph Finnmark coast) is for the graphs Rivers in Finnmark and Finnmark coast. Source: SSB, Luke.

Literature

ICES. 2023. Working Group on North Atlantic Salmon (WGNAS). ICES Scientific Reports. 5:41. 477 pp. https://doi.org/10.17895/ices.pub.22743713

Appendix

SUMMARY REPORT XXIV; Salmon fishery at sea in Finnmark; long-term changes in fishing activity, catch distributions between fishing methods and fishing areas, timing of catches and catches after the total moratorium of bend net fishery after the year 2021.

Kolarctic CBC ENI – Project KO4178; Conserving our Atlantic salmon as a sustainable resource for people in the North; fisheries and conservation in the context of growing threats and a changing environment.

Photo 1 is illustrating modified bag net fishing method where normal bend net with real hook is used opposite to the bag net. This kind of fishing gear is not according to the rules.

Photos 2-14 are illustrating the approved salmon fishing sites in Finnmark and in northernmost Troms and their annual changes.

Photo 1. Photo shows the use of modified trapping device, so-called patent bag net (patent not) where the ordinary bend net with effective hook-shaped net is combined into the single bag net trapping method. According to the new rules this kind of modified trapping device where the ordinary bend net with hook shape is also used to capture salmon is not allowed. On the opposite side in the fishing system is the bag net which is the real capturing unit.

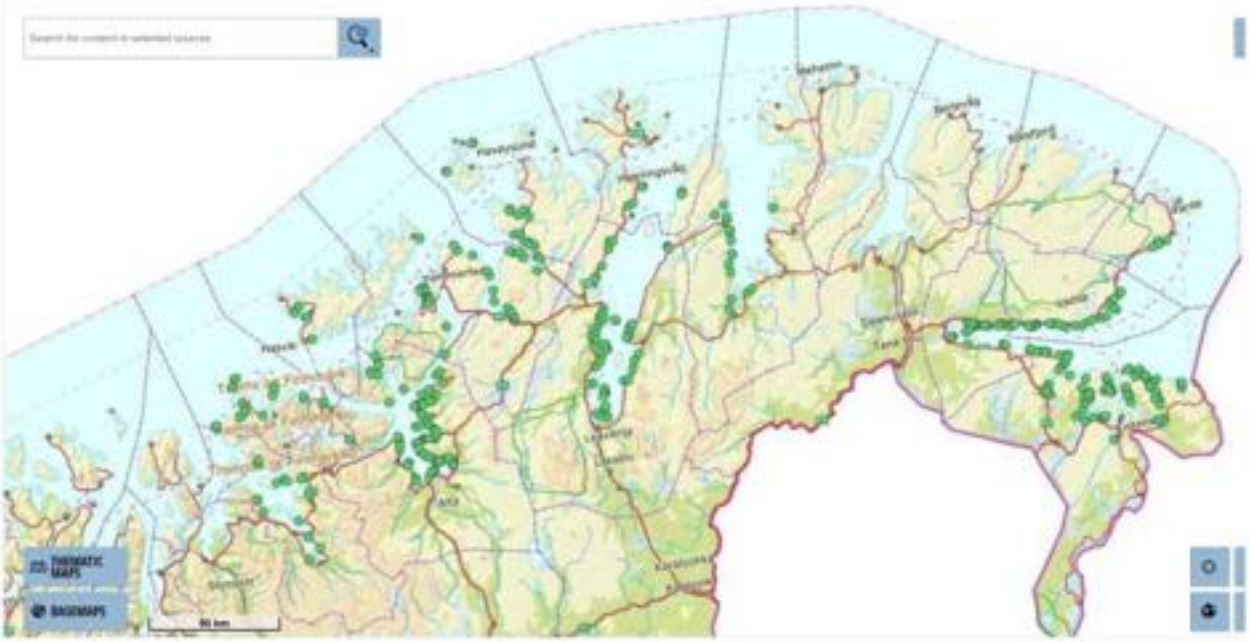


Photo 2. Approved salmon fishing sites in Finnmark and in the northernmost Troms in the year 2023. Salmon fishing was prohibited in Tana fjord and in the nearby coastal areas. Source: Lakseregisteret-Sjølaksefiske.

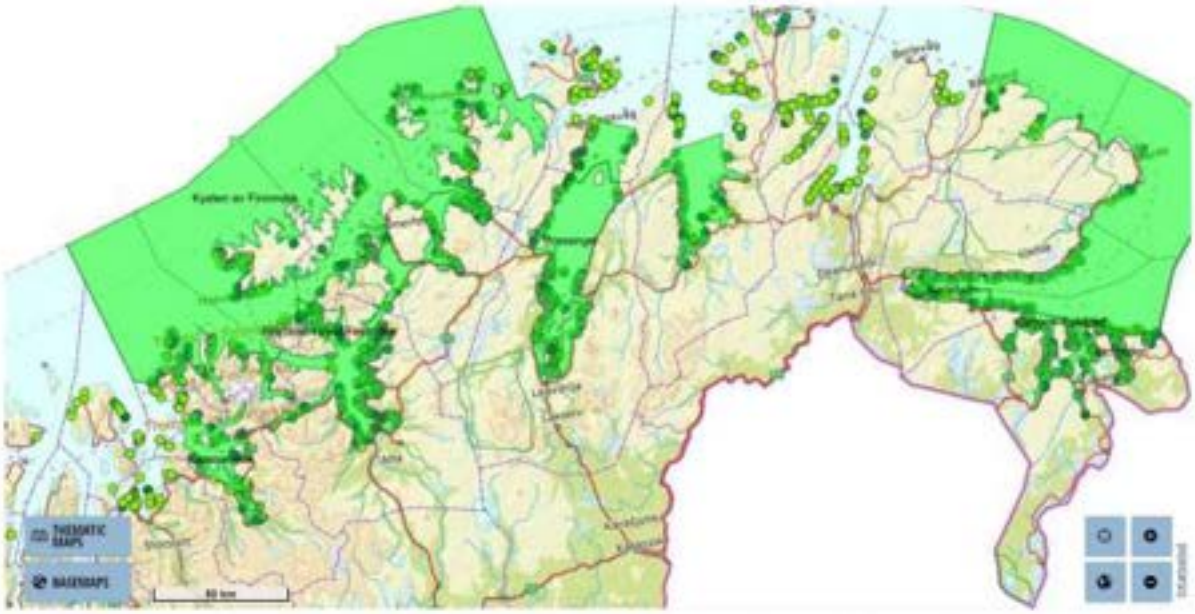


Photo 3. Approved salmon fishing sites in Finnmark and in the northernmost Troms in the year 2023. Salmon fishing was prohibited in Tana fjord and in the nearby coastal areas. In the green areas salmon fishing was allowed. Source: Lakseregisteret- Sjølaksefiske.

Photo 4. Approved salmon fishing sites in Finnmark and in the northernmost Troms in the year 2022. Salmon fishing was prohibited in Tana fjord and in the nearby coastal areas. Source: Lakseregisteret- Sjølaksefiske.

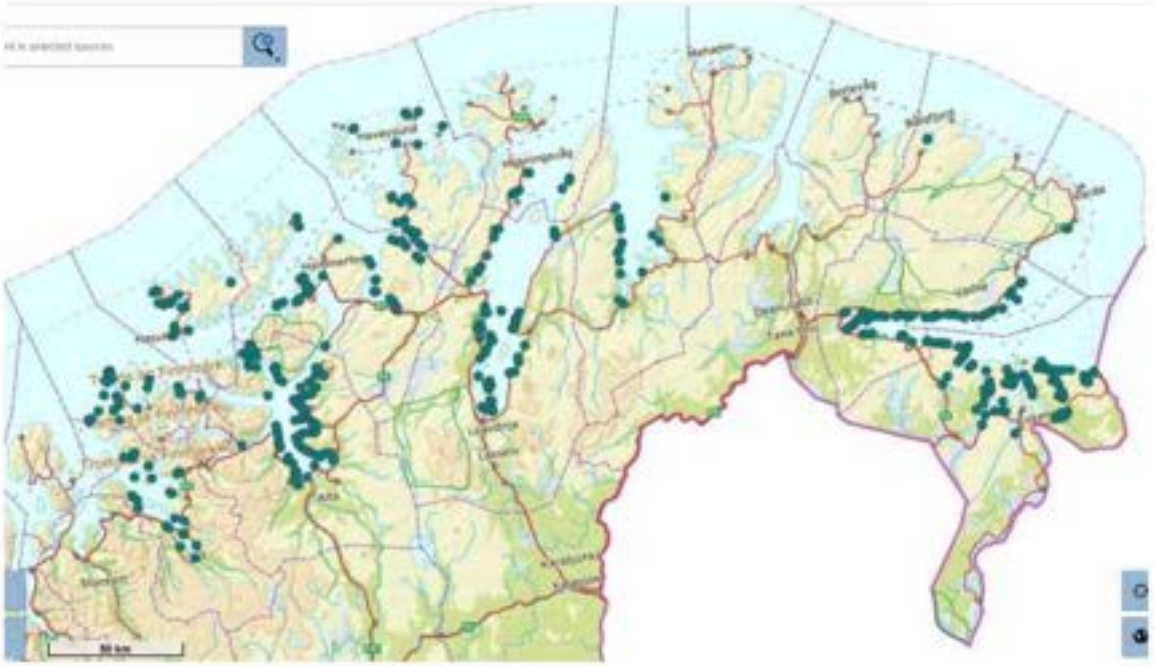


Photo 5. Approved salmon fishing sites in Finnmark and in the northernmost Troms in the year 2021. Salmon fishing was prohibited in Tana fjord and in the nearby coastal areas. In the green areas salmon fishing was allowed. Source: Lakseregisteret- Sjølaksefiske.

Photo 6. Approved salmon fishing sites in Finnmark and in the northernmost Troms in the year 2020. Source: Lakseregisteret- Sjølaksefiske.

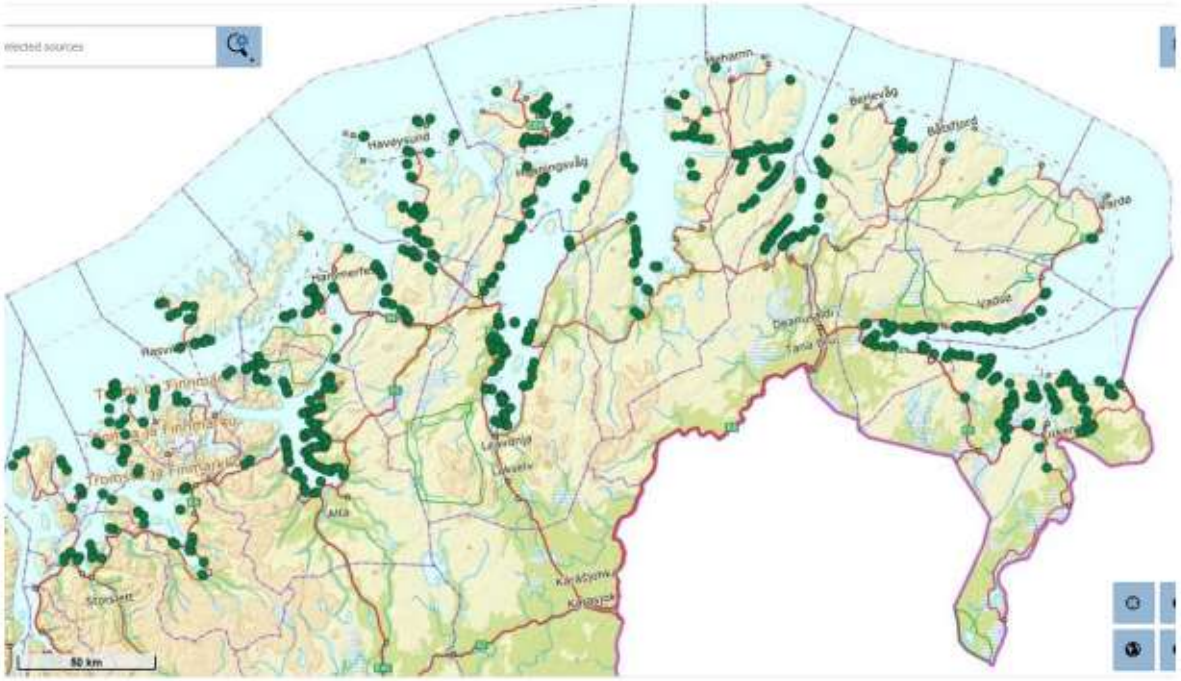


Photo 7. Approved salmon fishing sites in Finnmark and in the northernmost Troms in the year 2019. Source: Lakseregisteret- Sjølaksefiske.

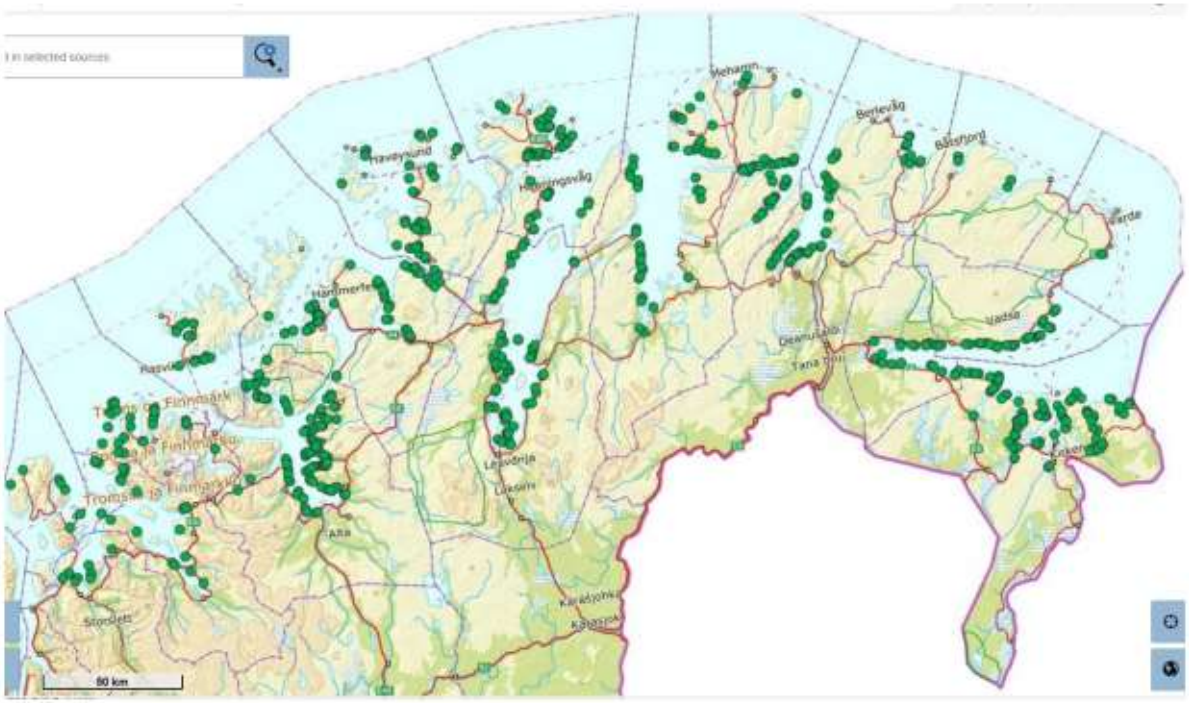


Photo 8. Approved salmon fishing sites in Finnmark and in the northernmost Troms in the year 2018. Source: Source: Lakseregisteret- Sjølaksefiske.

Photo 9. Approved salmon fishing sites in Finnmark and in the northernmost Troms in the year 2017. Source: Lakseregisteret- Sjølaksefiske.

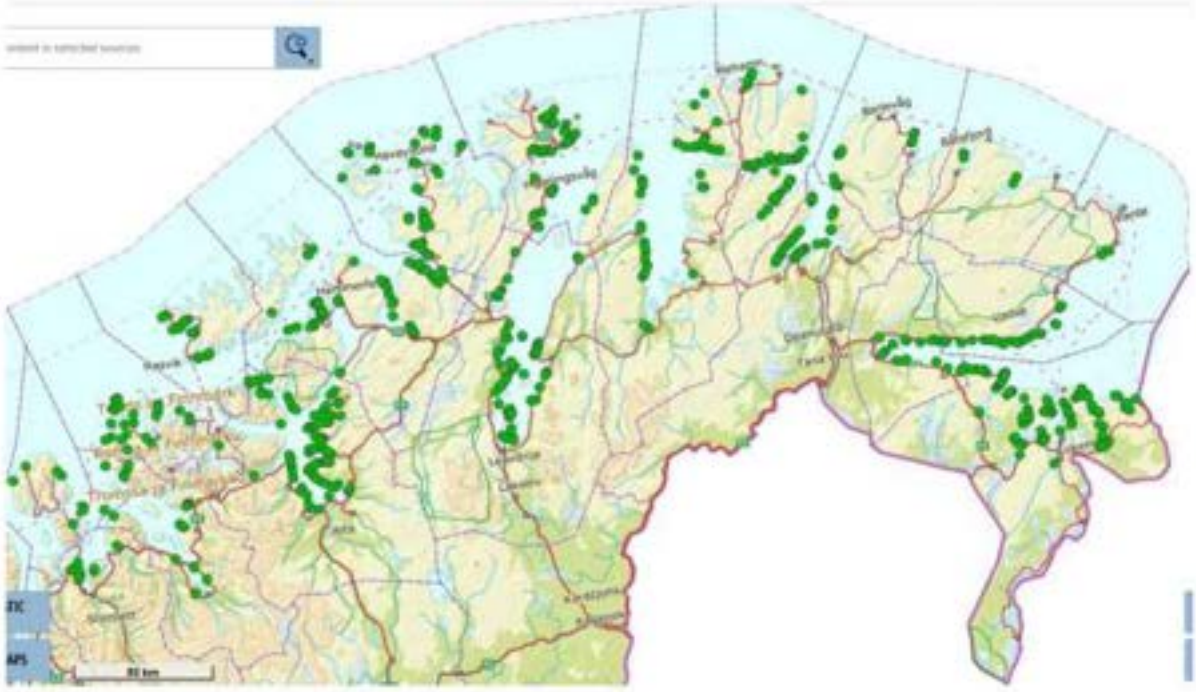


Photo 10. Approved salmon fishing sites in Finnmark and in the northernmost Troms in the year 2016. Source: Lakseregisteret- Sjølaksefiske

Photo 11. All salmon fishing sites in Finnmark and in Troms which have been registered before and during the year 2016. Source: Lakseregisteret- Sjølaksefiske

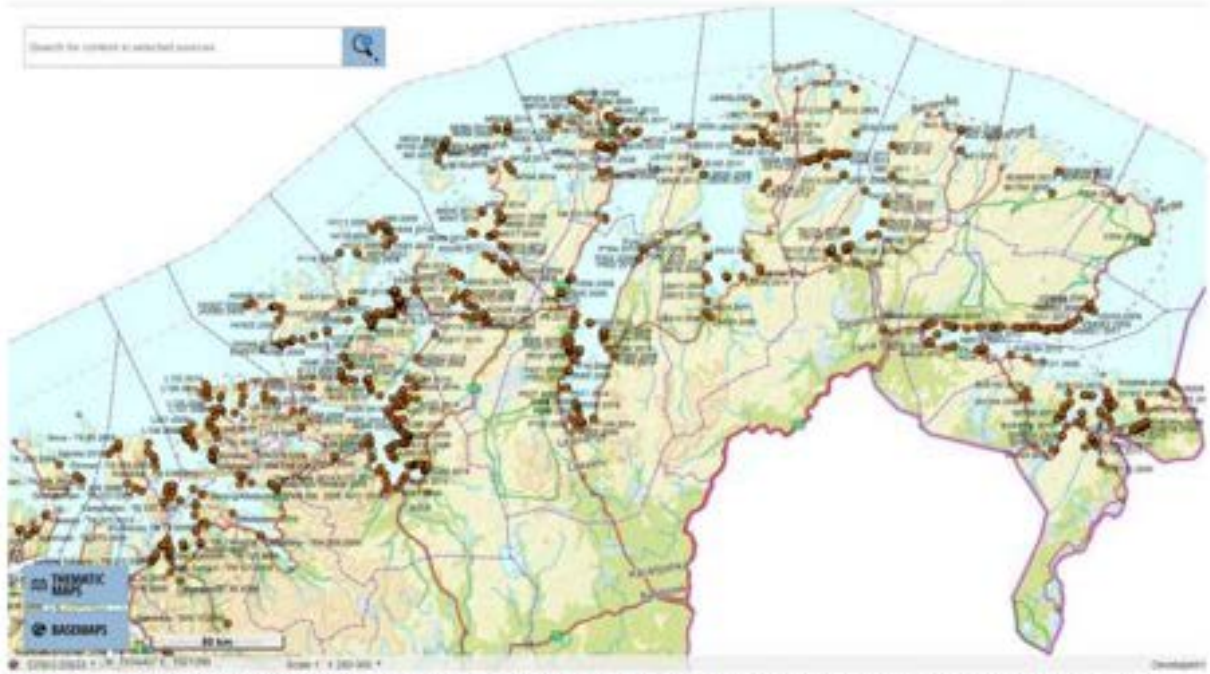


Photo 12. Registered historical salmon fishing sites which were available for fishing in the seasons from the year 2007 to the year 2015. Source: Lakseregisteret- Sjølaksefiske

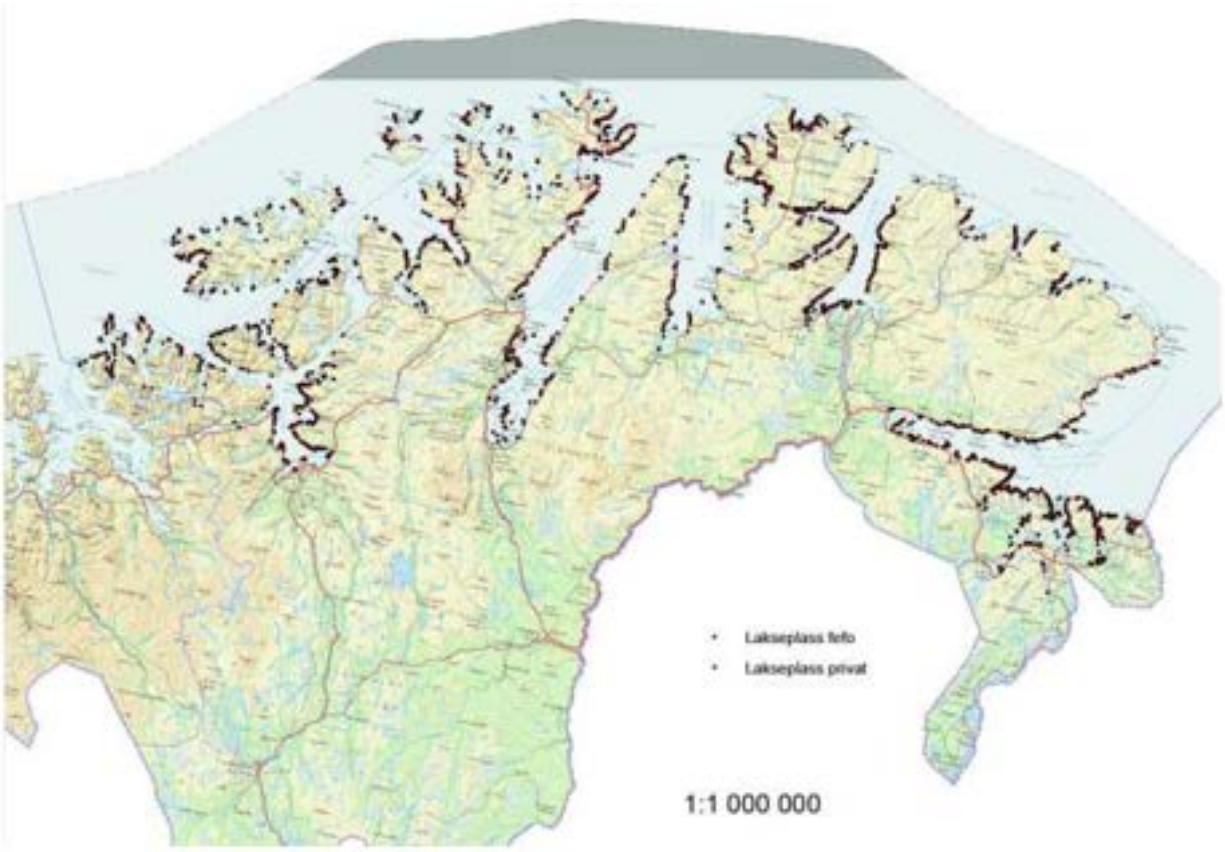


Photo 13. Registered salmon fishing sites which were available for fishing in the season 2007. Many of the sites were not used. The map presents the sites belonging to the Finnmark estate (Lakseplass fefo) or to private persons (Lakseplass privat). Source: Lakseregisteret- Sjølaksefiske

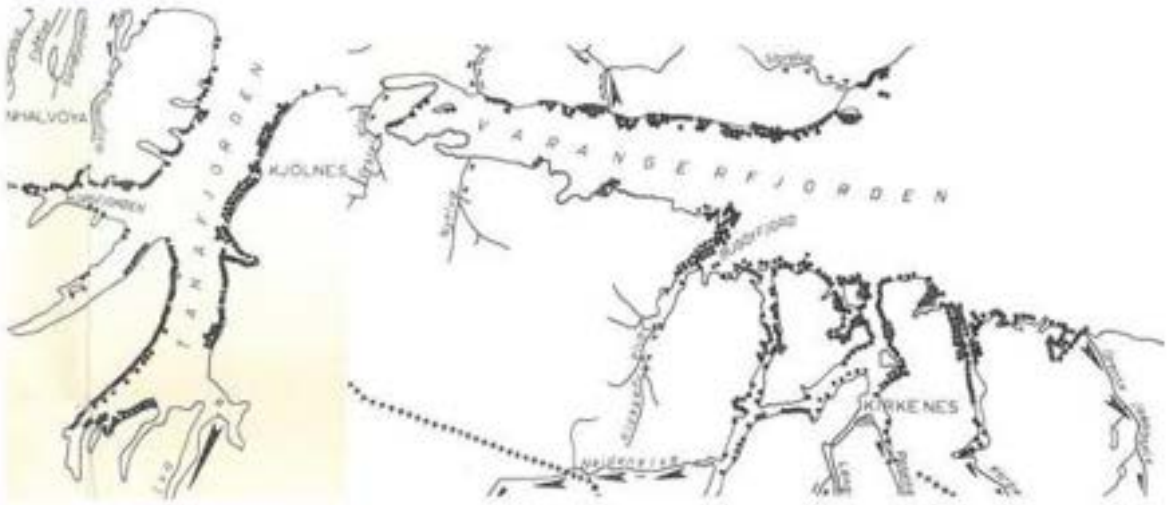


Photo 14. Salmon fishing sites used in Tana fjord (figure on the left) and in Varangerfjord (figure on the right) for bag net fishing in the years 1948-1950. Source: Magnus Berg 1964.