



**West Greenland Commission**

**WGC(20)04**

***2019 Report on the Salmon Fishery in Greenland***



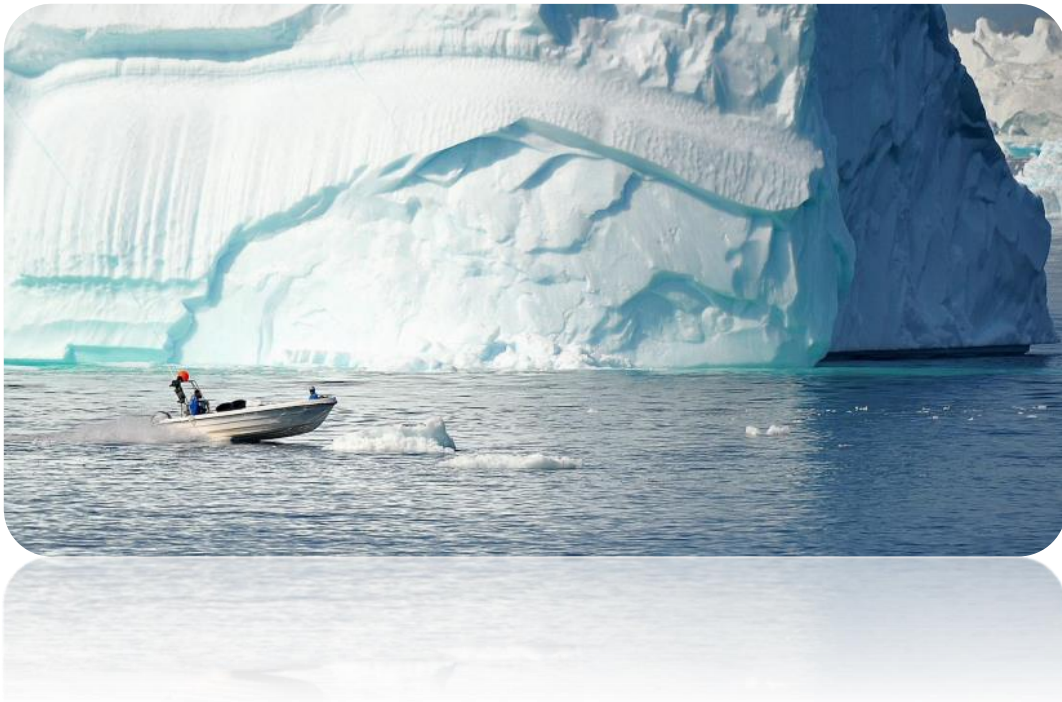


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# 2019 REPORT ON THE SALMON FISHERY IN GREENLAND

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West Greenland Commission



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MINISTRY OF FISHERIES, HUNTING AND AGRICULTURE

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## Introduction

According to the *Multi-Annual Regulatory Measure for fishing for salmon at West Greenland in 2018, 2019 and 2020 (WGC(18)11)* Greenland agrees to, in a timely manner, inform NASCO and, as appropriate, ICES, of improvements of the monitoring, management, control and surveillance or any modification to the management of the Atlantic salmon fishery and to provide an annual report on the outcome of the fishery.

This report outlines the outcome of the 2019 salmon fishery in Greenland, including East Greenland and the modifications that the Government of Greenland has made to the management and monitoring, control and surveillance. Moreover, it describes the initiatives taken towards improving further for the 2020 fishing season.

## Subsistence Fishery

It is important to have in mind that the salmon fishery in Greenland is a subsistence/internal-use fishery and not by any means a commercial fishery.

It is vital to Naalakkersuisut, the Government of Greenland, that all people have the right to provide for themselves and their families. This is an essential part of the life and culture in Greenland. Therefore, it is normal that everybody can fish what he or she need for their own consumption without having to report to the authorities. It is only the professional fishermen that normally have this obligation. Furthermore, in the commercial fisheries the fishermen sell their catch to a land based factory or facility, that then provides the reporting to the Greenland Fisheries License Control Authority (GFLK). It is unique to the salmon fishery in Greenland that private people that fish for their own consumption have to hold a license in order to fish for their own livelihood and that they also have to report their catches.

Thus, the management and control regime for salmon is very different from the normal management measures and behavior of the fishermen. This introduces an extra workload on the GFLK and the Ministry of Fisheries, Hunting and Agriculture that have limited resources and since Greenland lives of its fisheries, (more than 90 % of our export value) must prioritize its resources, both human and economic.

The Ministry of Fisheries, Hunting and Agriculture and GFLK has for a number of years made an enormous effort to improve the management, control and reporting of the salmon fishery – and will continue to do so in the coming years. However, it is essential that there is an understanding of the constraint that we have – and that there is a need for proportionality in the measures implemented.

## The 2019 Fishing Season

In line with the *Multi-Annual Regulatory Measure*, the export ban continues to be in place and there are still no landings or sale of Atlantic salmon to fish processing factories allowed.

The 2019 fishing season started August 15<sup>th</sup> and the fishery was closed on 25<sup>th</sup> of September. The quota was 19.5 tonnes. It was reduced from 30 tonnes to 19.5 tonnes in order to compensate for a harvest above the 2018 quota. The total catch in 2019 was 30.425 tonnes.

### Catch reports during the fishing season

Figure 1 illustrates the quota uptake of salmon over time, after the opening of the fishery on August 15. The green line show the date of catch as reported by the license holders and the red line shows the date that GFLK received the catch report. These graphs shows that there was a delay of approximately 12 days from the fishing of the salmon up until the reporting was received by GFLK. As the season was short (approximately six weeks), it was difficult to detect this issue of the delay in reporting, in order to react in time.

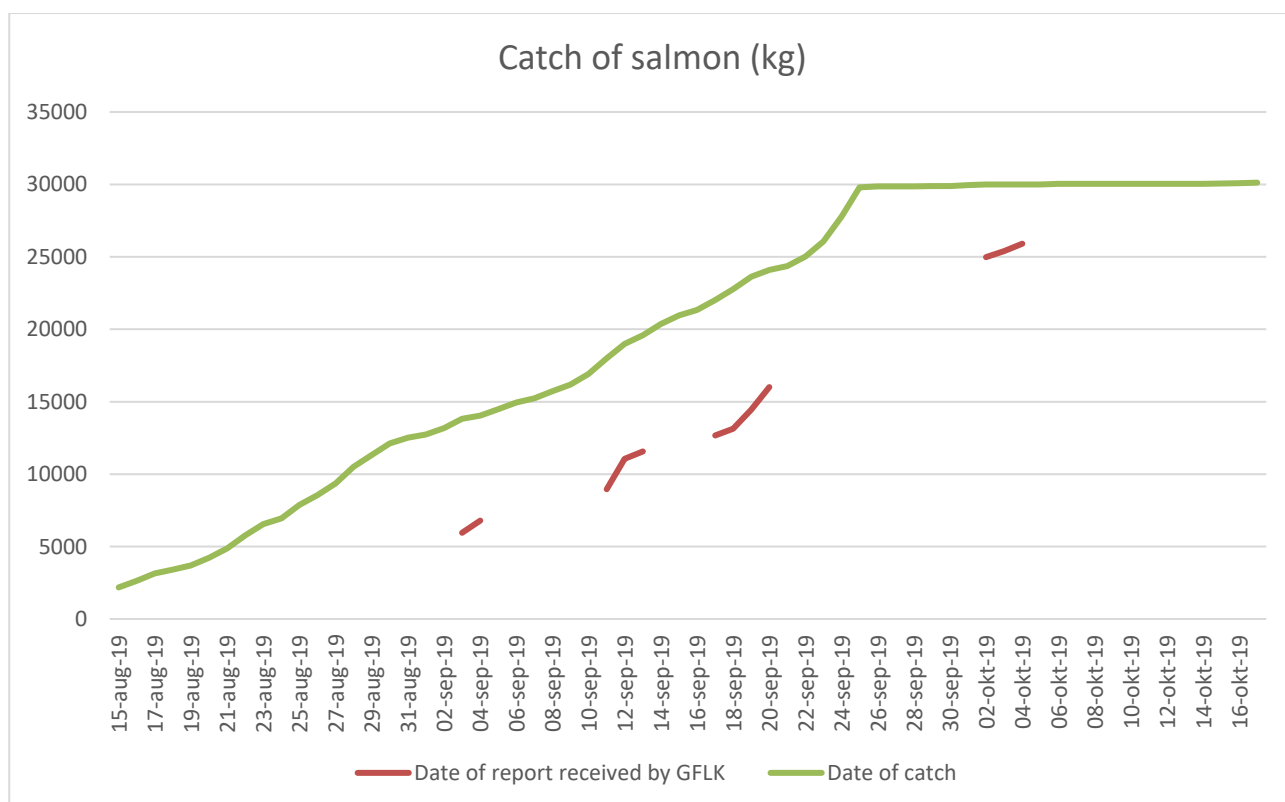


Figure 1. Catch statistics of the 2019 salmon fishery in Greenland. The figure shows the amount of salmon (in kilograms) caught over time.

The issue of delayed reports was also present in the 2018 fishery, however, the extent of the delay was unknown until this analysis was possible to perform.

The investigation of the delay in reporting is useful new knowledge, which can be used in future management strategies of this fishery.

## Licenses and catch reports

In the following paragraph, a detailed description of the reporting behavior of licenses holders and catch reports will be provided. In order to have an overview of the catch reports, the results in table 1 are divided into three groups; (1) catch reports received within season, (2) catch reports received between time of closure and last date of reporting, and (3) catch reports received after last date of reporting. The same grouping is used in table 2, which described the results on the level of license holders rather than catch reports.

A total of 1539 catch reports has been received by the GFLK (table 1), with the majority of reports received during the fishing season. 393 of the 1539 catch reports were 0-catch reports, corresponding to 26 % of the total reports received (table 1). 89 % of the 0-catch reports were received timely, and a smaller part of the 0-catch reports was received late (11 %), i.e. after 1<sup>st</sup> of December.

The last catch report was received by GFLK on December 18. This, and the fact that just 7 % of the reports were send to GFLK between December 1<sup>st</sup> and December 18<sup>th</sup> shows an improved reporting behavior of the license holders, compared to 2018. In 2018, it was experienced that catch reports would be send to GFLK several months after the fishery was closed and continued to be send in until early spring in 2019. The aim is, that this trend will continue to improve and that the majority of catch reports (0-catch reports excluded) will be within the season. The management strategy toward this aim will be described later in the report.

<b>Table 1. Catch reports</b>	<b>Count</b>	<b>Percentage</b>
<b>Overview</b>		
<i>Catch reports received within the season</i>	741	48%
<i>Catch reports received between time of closure and last date of reporting</i>	697	45%
<i>Catch reports received after last date of reporting</i>	101	7%
<i>Total number of catch reports received (incl. 0-catch reports)</i>	1 539	100%
<b>Catch reports with &gt; 0 catches</b>		
<i>Catch reports received within the season</i>	676	59%
<i>Catch reports received between time of closure and last date of reporting</i>	414	36%
<i>Catch reports received after last date of reporting</i>	56	5%
<i>Total number of catch reports</i>	1 146	74% <sup>a</sup>
<b>Catch reports with 0-catches</b>		
<i>Catch reports received within the season</i>	65	17%
<i>Catch reports received between time of closure and last date of reporting</i>	283	72%
<i>Catch reports received after last date of reporting</i>	45	11%
<i>Total of number of 0-catch reports</i>	393	26% <sup>a</sup>
<sup>a</sup> percent of the total number of catch reports of 1553.		

It was evaluated whether to divide the license holders into two sub-groups; professional and private. This was found unnecessary to include these numbers, as the two sub-groups would have been very similar and the results of this would not be directly useful in further considerations in management of the fishery.



<i>Table 2. Overview of licenses in the salmon fishery in 2019</i>	<b>Count</b>	<b>Percentage</b>
<b>Number of licenses issued in total</b>		
- Professional	303	42%
- Private	416	58%
- Total	719	100%
<b>Overview:</b>		
Number of license holders reporting in total	603	84%
License holders not reporting	116	16%
License holders only reporting 0-catches	283	39%
License holders reporting catches > 0	320	45%
License holders reporting within season	120	17%
License holders reporting between time of closure and last date of reporting <sup>a, b</sup>	128	18%
License holders reporting after last date of reporting <sup>b</sup>	25	3%
<sup>a</sup> licenses reporting 0-catch excluded. This was done because a 0-catch reported after closure of season and before the last date of reporting is not perceived as a late report.		
<sup>b</sup> license holders who also reported within season is excluded here		

At first, it is important to note that 39 % of the license holders only reported a 0-catch report. The majority of these were reported between time of closure and last date of reporting. 25 persons reported late (corresponding to 3 %), i.e. after December 1<sup>st</sup>, and none reported within the season.

The low percentage 17 % of license holders reporting within the season is not satisfying, suggesting that there is room left for improvements.

However, if we consider the target group for improvements to be the license holders that has a catch of salmon and who reports too late (after closure), it is approximately 21 % of the license holders that need to improve their reporting practice. Adding the 116 license holders, that have not reported at all, the target group ends at 37 % of the license holders.

Lastly, 84 % of all license holders reported their catches (incl. 0-catches) at some point, which is an improvement compared to the 2018 season, where 74% of license holders reported their catches.

## Management of the 2019 Salmon Fishery

The Executive Order on fishing after salmon from 2018 remained in place and thus, the requirements for all segments to hold a license, 0-catch reporting requirements and the requirement for reporting in order to get a license the following year is still valid.

Thereby, the following criteria for the salmon fishery remained in place in 2019:

Criteria that you need to fulfil, in order to be eligible for a commercial license:

- Only fishermen with the majority of the income from fishery and hunting and a permanent association to Greenland<sup>1</sup> can obtain a commercial license.
- Full accounting of fishing activities and harvest, including zero (0) catch for the previous year must have been reported.
- Own salmon nets and a vessel not longer than 42 feet
- Information on number of salmon nets, type and brand must be reported in connection with the application for a license.
- Only hooks, fixed nets or up to 20 nets tied in a driftnet can be used.
- Nets must be marked with the owner's/vessel name with external identification code
- Nets must be tended on a regular basis
- Full-time licensed fishermen can sell their catches at the local open air market or used for private consumption
- Sold catch must be reported separately.

For private people, the following criteria and regulations apply;

- Permanent association to Greenland<sup>2</sup>
- If a license was issued in the previous season, a full accounting of fishing activities and harvest, including zero (0) catches must have been provided.
- Private licensed fishermen can only use hooks or 1 anchored gillnet (2000 knot ~60m).
- All nets must be marked with the owner's name
- Nets must be tended on a regular basis.

## New initiatives implemented

2018 was the first year of the new regime under the revised Executive Order and *Multi-Annual Regulatory Measure* and thus, it was the first year that required all fishermen, professional and private, to hold a license and with new reporting requirements as outlined above.

Therefore, the Ministry, GFLK and KNAPK (the Fishermen and Hunter's Association) held an evaluation meeting in order to address a number of issues that had arisen during the 2018 fishing season. A number of

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<sup>1</sup> Executive Order on Fisheries: *Landstingslov nr. 18 af 31. oktober 1996 om fiskeri, §3, stk. 4:* " 'Permanent association to Greenland' is understood in this law as persons that by purchase of a household, by renting or buying a home or by other arrangements indicates intension to have Greenland as a place of residence."

<sup>2</sup> Same

initiatives that should improve the implementation of the Executive Order was introduced for the 2019 fishing season as described in the report for the 2019 NASCO Annual Meeting (.

The Ministry, GFLK and KNAPK also held a start-up meeting before the season started – and a meeting during the season. Meetings has also been held with NGOs, before, throughout and after the season.

- The Ministry drafted and shared instructions with the municipalities concerning the reporting. There was still some issue in 2019 with Municipalities that submitted reports on behalf of fishermen to GFLK rather late. But there were not as many issues as during 2018.
- The Public citizen website Sullissivik.gl was updated with current and relevant information about the salmon fishery.
- Radio spots reminding people to apply for a license before fishing and to report timely ran daily in national radio throughout the season.
- Following the closure of the fishery, letters was sent out to fishermen that held a license but had not yet reported to remind them to report before 1. December otherwise, they will not receive a license in 2020. Furthermore, Press Releases were also sent out through national media.

Further initiatives were initiated and is outlined below.

## Greenland Salmon Fishery Research Projects

In 2019, two research projects conducted in collaboration with Dartmouth College, Greenland Fisheries License Control Authority (GFLK), the Association of Hunter and Fishers in Greenland (KNAPK), the Fisheries Division under the Government of Greenland and Atlantic salmon conservation organizations was initiated.

### A. SMS Experiment:

GFLK and fisheries scientist Hunter T Snyder (HTS) of Dartmouth College, USA, conducted an experimental study during the 2019 fishery for wild Atlantic salmon (*Salmo salar*) in Greenland. The rationale for conducting the study was that not all salmon fishing license holders report their catches, and that the salmon fishery in Greenland is costly to manage. In 2017, about one third of all license holders reported their catches. In 2018, a regulation was implemented where license holders who did not report catches (even if they caught zero fish) would not receive a license for the 2019 season. The reporting rate surged to 74 %.

The assumption amongst the research team was that GFLK can notify license holders during the salmon fishing season to motivate them to report their catches and help secure higher reporting rates. HTS suggested that the notifications should leverage positive emotions, frame messages to personal values and interests, and that they should be timely. HTS and GFLK worked together to execute the study.

HTS proposed a research design that involved sending SMS text messages to 50 % of all salmon license holders, leaving the remaining 50 % unnotified. Contacting only 50 % meant GFLK could reduce notification costs and research design complexity; notifying only 50 % allows GFLK to evaluate whether the notifications affect the number of reported catches; and, importantly, if the notifications are perceived negatively by recipients, fewer license holders would be affected.

SMS text messages were sent by GFLK via SMS gateway to license holders on 23<sup>rd</sup> August, 18<sup>th</sup> September and 24<sup>th</sup> September. The reporting rate for the 2019 fishery is up from 74 % in 2018 to 84 % in 2019. Whether the increase in reporting could be attributed to the SMS messages required fitting a basic statistical model to the data. In February 2020, HTS created a scrambled list of salmon license holders, including attributes of whether they caught any fish, reported their catches, and how many text messages they received. He then fit a logit, identifying the outcome variable as the license holders' reporting status (reported catches/did not report catches) and the predictor variable as the treatment status (received SMS messages/did not receive an SMS messages). In addition to the positive increase in reporting rate, initial results suggest that the SMS text messages had a statistically significant effect on a license holders' catch reporting ( $P < .0211$ ). Final results from the SMS study will be ready in June 2020.

### B. Salmon Fishing Survey

HTS has been developing a Salmon Fishing Survey. KNAPK, GFLK and Atlantic Salmon Federation have provided input to the survey. The survey, to be distributed to all salmon fishing license holders, focuses upon salmon catch use, method and constraints to report catches, current enforcement and regulations, and perceptions of salmon abundance, distribution, and timing. This survey will be distributed from 1<sup>st</sup> March 2020, with preliminary results available in June 2020.

### Management of the 2020 Salmon Fishery

The Ministry of Fisheries, Hunting and Agriculture, GFLK and KNAPK again held an evaluation meeting after the closure of the 2019 fishing season.

It is obvious that there is an improvement in the reporting and that the implementation of the new management regime is progressing. However, there is still adjustments to make for the coming season.

Additional, to any initiatives that might come from the results of Hunter Snyder's survey and results of the SMS campaign, a number of initiatives has already been agreed and work has been initiated:

- A revision of the Executive Order to better reflect the needed implementation of the Regulatory Measure,
- Further coordination with the municipalities on timely reporting,
- An electronic reporting system that allows people to enter their catches directly online. The first meeting with Sullissivik.gl has been held and the drafting of a process-description is underway,
- Improvement of the calculation model for when to close the fishery,
- Continuation and adaption of the SMS-campaign to license-holders,
- Continuation of the media-campaign,
- Online application-system for all coastal licenses, including for salmon.

As mentioned, further initiatives might be implemented when we have the results from the survey. Thus, further information on the 2020 management measures might be outlined during the 2020 NASCO Annual Meeting.