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**Results of the phone interview survey of licensed Greenlandic salmon fishermen
conducted in February 2015.**

by

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Summary

The fishery for Atlantic salmon in Greenland waters started around 1960 and peaked in the early seventies at a catch of more than 2,000t a year. The fishery was quota regulated from 1972, but due to declining stocks, in June 1998 NASCO agreed that no commercial fishery for salmon should be allowed, but that the catch at West Greenland should be restricted to *'that amount used for internal consumption in Greenland, which in the past has been estimated at 20 tones'*. Since then export of salmon from Greenland has been banned by law and catches has been limited by internal by internal consumption, season and gear limitations. Unlicensed fishery for private consumption has always been allowed but limited to one gillnet per unlicensed fisherman. In order to sell catches and use more than 1 gillnet a license is required. From 2002 to 2011, licensed fishermen were only allowed to sell salmon to institutions, local markets and restaurants. However, in 2012 landing to factories producing for the Greenlandic home market was re-opened and a 35t quota was set by Greenland. The export ban, however, persists. The quota was not reached in either 2012 (13.7t) or 2013 (25.6t) and in 2014 the factory quota was reduced to 30 tons. However, in 2014, the factory quota was reached by September 22 and the factory landings stopped. After the factory landings had ceased it turned out, that a production facility that had not previously taken fish, had received salmon and the quota had therefore been exceeded by 5t. In 2014 the reported catches by February 2015 amounted to 58t of which 35t was landed to factories.

After 1997, it has been mandatory to report both private catches of salmon, but since most of the fisheries were for local or private consumption in a huge country with a small and scattered population, it is difficult to know how much unreported fisheries exists. The unreported catches have per tradition been estimated to 10 tons in lack of data. The fishery can be divided into segments with different sets of rules applying but in general the discrimination between the two is not straight forward. In order to obtain better knowledge about the fisheries and non reported catches, a phone interview was conducted among the licensed fishermen, asking questions about catches, effort, by-catches biological observations and opinion. In total 321 professional fishermen had obtained a license in 2014, but only 98 had reported catches by February 2015. The interviewers managed to get in touch with 207 people including at least 11 nonprofessional fishermen. In 119 cases, licensed fishermen informed that they had had catches but seemingly without reporting by the end of the season. The total underreporting by these 119 people amounted to 12.2 tons in the 2014 season. After the interview had been conducted, 98 of the 321 license holders, were still unaccounted for. About 2/3 of the unreported catch was provided by the 8 highest observations of non-reported catches and the majority of the 119 people that that had failed to report catches had taken minor amounts.

It was not possible to do a similar survey among non-licensed non-professional people since the potential pool of participants include all people owning a boat in Greenland.

Materials and methods

There are several ways that catches of Atlantic salmon are reported to the Greenland authorities. Salmon is the only species that must be reported by people fishing for their own households. Salmon landed to fish factories are reported to the authorities (GFLK¹) by the factory once a week, along with other species landed. Factories also report effort data, fishing location, names, dates and more, besides purchased amounts. Licensed fishermen are also obligated to report their catches directly to the license office. Salmon sold directly to consumers or caught for personal consumption must be reported directly to the authorities (GFLK) by the person conducting the fishery. The two sources of statistics were compiled and screened for errors, missing values and duplicate values. A license list was then used to collate information on the city or settlement and identify whether the fishermen had a license or not. In the 2014 season, 73 direct reports were identified as already reported by the factories (same fisherman, date and catch) and the duplicate reports were omitted from the analysis. An estimated weight was added to reports only containing a number of salmon caught (3.25 kg/salmon). The factory landings only contain a total weight and in this case the number of salmon was estimated via the 2012 mean weight. (3.25 kg gutted weight/salmon in 2012). Since 2005 it has been mandatory to report gutted weights, and data was converted to whole weight by means of a conversion factor of 1.11. In February 2015, the license office provided a list of license holders with contact information and three interviewers from GFLK called the license holders and did a phone interview asking questions about their salmon activities. Interviewer 1 (Juliane) interviewed fishermen from NW-Greenland, Interviewer 2 (Kirsten) interviewed fishermen from W-Greenland, and interviewer 3 (Per) interviewed fishermen from SW- and E-Greenland. The phone interview replies were then translated to Danish and finally English by the author and screened for errors. One interviewer had made 8 errors (same name for several people being interviewed) when noting the names of the person and in 6 cases there was no obvious match (noted as unknown 1-6) to the noted name. The other interviewers entered the phone interview results directly in an excel spreadsheet. One interviewer had also phoned at least 11 unlicensed but known nonprofessional fishermen that were interviewed. In general, these observations did not differ from licensed fishermen fishing for their own personal use and the interviews were accepted in the analysis.

Results

Do you fish salmon using Salmon nets?

The question was used as an introductory question, in order not to push directly to the answer. The question was asked to find out whether fishermen involved in other fisheries had applied for a salmon license in order to be able to sell by-catch taken in fisheries targeting other species and using different types of gears. This seemed to be the case for only two of the participants and therefore it seems reasonable to conclude that all license holders indeed use salmon nets to catch salmon. 69 fishermen (mostly IDEF) had also reported the number of gillnets used/owned and it is clear that most license holders only use (1-2) gillnets and in general fish for their family and friends households.

¹ License office – Government of Greenland office issuing licenses.

¹ GFLK - Greenland Fisheries License Control Authority. Government of Greenland institution dealing with control and enforcement of fisheries hunting and landing statistics.

Did you catch salmon using other types of gear?

The question was asked to find out more about the potential unreported by-catch of salmon in other types of gear outside the season. However all who replied said “no” meaning that they use Gillnets to catch salmon.

Did you have salmon by-catch outside the season ?

The question was asked to find out more about the potential unreported by-catch of salmon and occurrence of salmon outside the season. Since the salmon season normally runs from august 1 to the end of October, most fishermen targeting salmon will be involved in other types of fisheries outside the season. From the noted answers it seems clear that the questions were often mistaken for information on by-catch of other species in the salmon fishery. However, several comments implied that by-catches do occur in both poundnets, sinking gillnets and on sinking longlines, year around, but the total number observed was 1-2 per year by fishermen who had experienced it.

How much salmon did you catch in 2014 (kg)?

Obviously the main question of the whole interview. In total 321 professional fishermen had obtained a license in 2014, but only 98 had reported catches by February 2015. The interviewers managed to get in touch with 207 people including at least 11 nonprofessional fishermen. In 119 cases, licensed fishermen informed that they had had catches but seemingly without reporting by the end of the season. The total underreporting by these 119 people amounted to 12.2 tons in the 2014 season. After the interview had been conducted, 98 of the 321 license holders, were still unaccounted for. About 2/3 of the unreported catch was provided by the 8 highest observations of non-reported catches and the majority of the 119 people that that had failed to report catches had taken minor amounts (figure 1). From the comparison between the logtransformed reported catches and the logtransformed interview catches there does not seem to be any systematic under or overestimate of the catches based on the memory (figure 2). Therefore it likely that the fishermen who did report their catches by the end of the season, had reported all of their catches during the season.

How much salmon did you catch in 2014 (Number)

In many cases where small catches are taken, the total number is given instead of a total weight. In these cases a total weight was estimated by applying an estimated weight of 3 kg/ salmon. However this may lead to a systematic bias, but in general this correction was made for smaller catches.

How much did you land to factories?

The question was asked to compare factory landing reports with claimed landings by fishermen. In 2014, the different factories accepting salmon had reported catches by 48 different fishermen (all licensed). In the phone interviews only 17 fishermen provided an estimated factory landing. Only one incidents of non-reporting by factories were observed, but

this seems likely due to typing error by the interviewer, as the claimed factory landing was unusually small (50 kg- smallest observed) for a factory landing (figur3).

How much did you sell at the local market?

no analysis

How much did you sell to hotels and institutions ?

no analysis

How much did you use privately?

109 licensed fishermen claimed that they were only fishing for private consumption, and most of them claimed fairly small catches (0-150 kg).

Where did you live when fishing salmon and Where did you sell the salmon ?

These questions were asked in order to clarify whether any transportation of salmon caught in settlements were landed in neighboring cities. In general, these questions were not well answered, but in two instances the fisherman informed that he was living in at settlement (Napasoq) and landing in a city with a factory (Maniitsoq).

How much salmon did you catch in 2013 (kg) or (number)?

No analysis performed.

Do you fish salmon every year ?

99 fishermen of 125 or almost 80% answered confirmed that they fish every year to some extent.

When did you start fishing salmon ?

No analysis

Do you fish salmon alone ?

The answer was asked in order to find out whether fishermen were cooperating and sharing nets which could lead to confusion in terms of reporting person. However most people claimed to fish alone, but in some instances people were working together.

Biology ?

The questions was asked to get a systematic impression about the fishermen's opinion. No results presented.

Comments UK regarding the salmon fishery ?

In general fishermen agreed that there is a lot of salmon in Greenland and there were a strong wish to increase the fishery. There was also a general wish to extend the season to include November, particularly in NW Greenland. There was also a general wish for factory landing opportunities in cities that did not already have this, and some also argued for a reopening of exports. Several fishermen also complained about gillnets not being tended regularly and being abandoned at the end of the season. The complaints were made by several people in Narsaq

and Qaqortoq. Therefore it seems possible that the abandoned nets were observed in the same area.

Discussion

Since the phone interview involved several levels of translation from Danish to Greenlandic and back, some meaning of the answer may be lost in translation. Likewise it seems likely that some of the phone interviews were performed over a poor phone connection and while the fisherman being interviewed was engaged with other businesses while being interviewed. If the interviewer conducted the interview in Danish there is a risk of mistaking salmon for arctic char which is also caught in gillnets (smaller meshes) during the summer, but in Greenlandic which was most likely used there is not the same risk of misinterpretation.

Table 1. Number of Gillnets owned/used per salmon fisherman.

Number of gillnets used/ owned per fisherman	NAFO ICES area											
	1AUM	1AUP	1AX	1B	1C	1D	1E	1F	SUB1	XIV	(blank)	Total
1						8	3	8		4		23
2						2	2	8		1	1	14
3			1			1	1	2				5
4						3						3
5						1		1				2
6			1			1						2
7						3		1				4
8							2					2
9						1	1				1	3
10						1	1	3				5
12								1				1
18								1				1
20			1				1	1				3
21							1					1
Grand Total			3			21	12	26		5	2	69

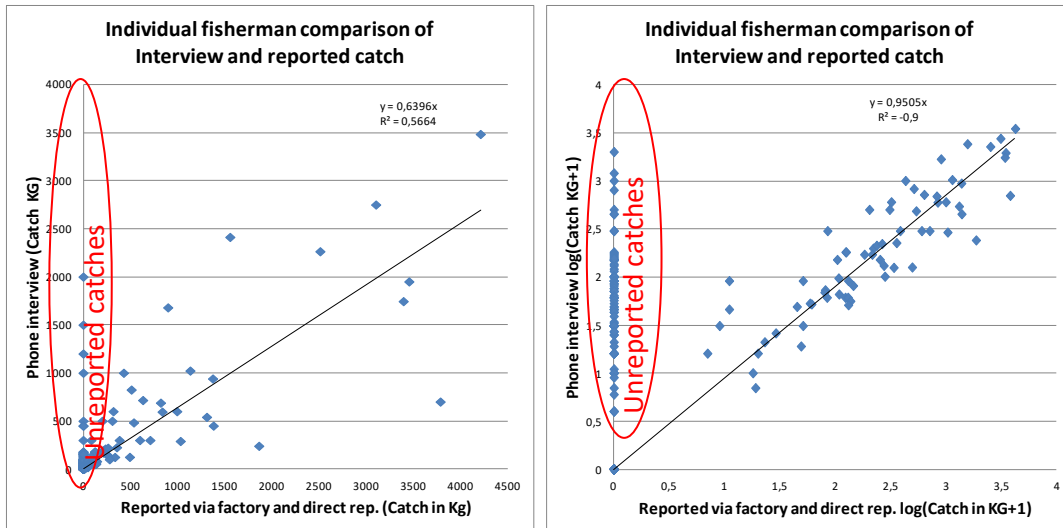


Figure 1. Individual fishermen comparison of reported catch by the end of the season through regular channels (whole weight) plotted against phone interview totals. The unreported catches amounts to 12.2 t in 2014.

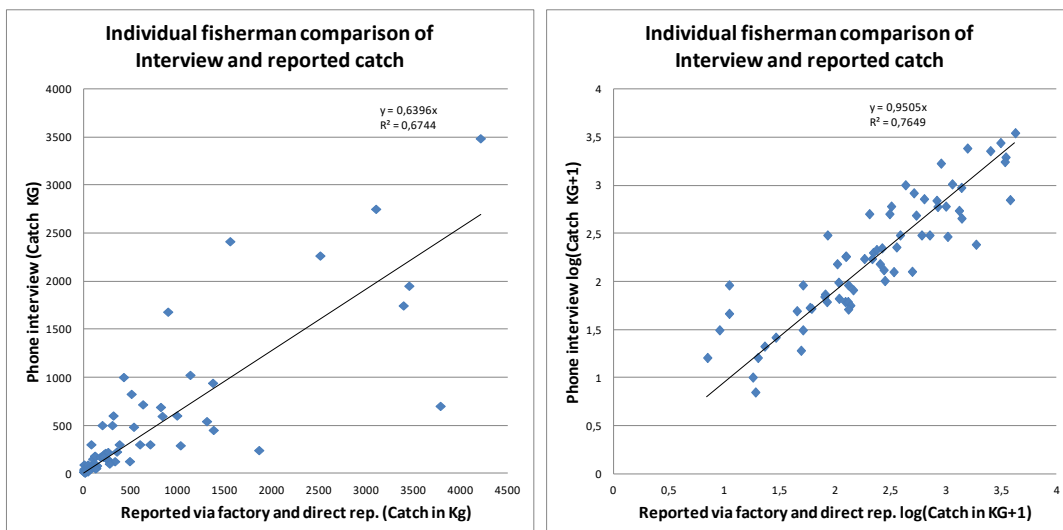


Figure 2. Individual fishermen comparison of reported catch by the end of the season through regular channels (whole weight) plotted against phone interview totals, excluding fishermen who did not report their catches by the end of the season.

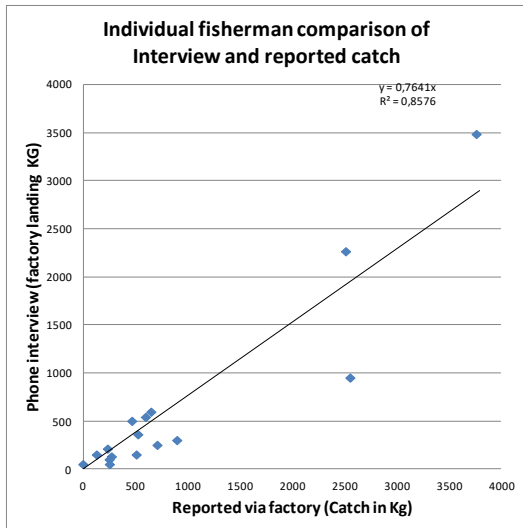


Figure 3. Comparison of factory landing totals per fisherman compared to phone interview estimates of factory landings.

Appendix I.

1AUP is the Upernavik district, 1AUM is the Uummannaq fjord district, 1AX is the Disko Bay, 1B-F is the rest of the Greenlandic West coast and ICES XIV is E-Greenland.

CITY / Settlement	NAFO / ICES Area	Reported Whole weight	Phone interview based on memory	CommentUK
Niaqornat	1AUM	0	45	the season should be extended. It is bad that there is no possibility for factory landing.
Uummannaq	1AUM	0	0	sincerely hopes that the season will be extended.
Kangersuatsiaq	1AUP	0	15	ok. If they (salmon, editor) could be factory landed more would fish for them.
Kangersuatsiaq	1AUP	0	90	he mostly fishes for Greenland halibut. Since there is no factory landing he mostly sels salmon by him self. If there was facrory landing oppertunity he would work more with salmon
Kangersuatsiaq	1AUP	0	6	ok. Because in Kangersuatsiaq they mostly have cod and wolffish (interpretation possible, editor)
Kangersuatsiaq	1AUP	0	75	the controlers doesen't control so much. Wishes that there was factory landing oppertunity because there really is a lot of salmon
Kangersuatsiaq	1AUP	0	30	ok
Kangersuatsiaq	1AUP	0	60	ok. Because in Kangersuatsiaq they mostly have cod and wolffish (interpretation possible, editor)
Kangersuatsiaq	1AUP	0	0	ok
Kangersuatsiaq	1AUP	0	30	it would be better if the season could be extended till the end of november. Hopes for factory landing oppertunity.
Kangersuatsiaq	1AUP	60	51	ok. If there was oppertunity for factory landing more would fish salmon.
Kangersuatsiaq	1AUP	118		he hopes that salmon can be factory landed.
Kangersuatsiaq	1AUP	122	60	ok. It is bad that they can't be factory landed.
Kangersuatsiaq	1AUP	0		
Kangersuatsiaq	1AUP	97		
Tasiusaq	1AUP	0		
Upernavik	1AUP	0	0	He doesen't know so much about salmon, so he doesent fish for them. He has attempted to get a license (unaware that he has a licence, editor).
Upernavik Kujalleq	1AUP	103	150	The biologists are not always right. As a professional fisherman that is felt because there really is a lot of salmon.
Upernavik Kujalleq	1AUP	0		
Aappilattoq Upernavimmi	1AUP	0	0	ok
Aappilattoq Upernavimmi	1AUP	0	3	ok, because he mostly fish for Greenland halibut.
Akunnaaq	1AX	0	20	the season ends too early.
Akunnaaq	1AX	0	30	when they (the salmon,editor) have just arrived the season ends.
Akunnaaq	1AX	0	30	it would be good if there was a factory. The season ends to early.
Akunnaaq	1AX	0	15	it is bad that the season ends just when the salmon arrives.
Akunnaaq	1AX	17		nobody is fishing outside the season. The season is too short.
Akunnaaq	1AX	0	33	
Akunnaaq	1AX	0		
Ikamiut	1AX	0	75	when the salmon has just arrived, the season ends.
Ikamiut	1AX	0	48	the season ought to include November

Ikamiut	1AX	0	18	the season ends too early.
Ikamiut	1AX	0	9	when they have just arrived the season ends.
Ikamiut	1AX	10	45	the salmon season is too short.
Ikamiut	1AX	63		
Ikamiut	1AX	0	0	
Ilimanaq	1AX	0	3	Wishes that the season be extended, also for eiders, Guillemots and geese.
Ilulissat	1AX	0	0	has experienced that the catches were stolen by others :-(but the hunting officer didn't pick up the phone.
Ilulissat	1AX	0	24	when the salmon arrives the season ends. The season ought to be extended.
Ilulissat	1AX	0	0	he doesn't fish illegally in Uummannaq (??? editor)
Ilulissat	1AX	0	0	it is necessary that the season be extended.
Ilulissat	1AX	0	0	dislikes that the season ends too soon.
Ilulissat	1AX	0	0	dislikes that the season ends too soon.
Ilulissat	1AX	0	0	dislikes that the season ends too soon.
Ilulissat	1AX	0	30	dislikes that the season ends just when the salmon has arrived.
Ilulissat	1AX	0	0	dislikes that the season ends just when the salmon has arrived.
Ilulissat	1AX	0	15	he disagrees that the season must end so early, when the salmon has just arrived.
Ilulissat	1AX	327		
Ilulissat	1AX	0	0	
Ilulissat	1AX	0		
Ilulissat	1AX	0		
Ilulissat	1AX	0		
Kitsissuarsuit	1AX	0	63	the season ends too early.
Kitsissuarsuit	1AX	0	0	it is bad that there is no factory.
Kitsissuarsuit	1AX	0	9	dislikes that the season ends so early.
Kitsissuarsuit	1AX	0		
Kitsissuarsuit	1AX	0		
Qasigiannuit	1AX	0	100	the season ends too soon. They do not arrive until the end of the season.
Qasigiannuit	1AX	0	30	dislikes that the season ends so early.
Qasigiannuit	1AX	0	0	it is bad that the season ends just when the salmon arrives.
Qasigiannuit	1AX	0	100	just started in 2014.
Qasigiannuit	1AX	0	9	wishes that the season will be extended.
Qeqertarsuaq	1AX	0	42	one could live from salmon fishery, if the season did not end so soon.
Qeqertarsuaq	1AX	0	135	It is necessary that the season be extended.
Qeqertarsuaq	1AX	0	0	if the occupation (fishermen, editor) was taken better care of, it would be easier to live as a fisherman.
Qeqertarsuaq	1AX	0	0	wishes that the season be extended.
Qeqertarsuaq	1AX	0	42	the season is too short.
Qeqertarsuaq	1AX	0	0	has a bad bag so has stopped fishing.
Qeqertarsuaq	1AX	0	114	from July to August there is no salmon. A little arrives in September. In October there is plenty. Hopes that the season can be extended to mid November.
Qeqertarsuaq	1AX	0	450	the season opens too soon in Sisimiut. The season should start later.
Qeqertarsuaq	1AX	0	30	thinks that the season ends too soon and starts too soon. It is bad that there is no factory and therefore he doesn't fish for salmon.
Qeqertarsuaq	1AX	18	6	hopes that the season be extended.

Qeqertarsuaq	1AX	1865	240	has been fishing with his father since childhood. Does not think that the season should be extended.
Qeqertarsuaq	1AX	123	180	the salmon arrives late and the season ends early.
Qeqertarsuaq	1AX	130	90	the season is fine, because the weather gets unstable late in the season
Qeqertarsuaq	1AX	83	60	(meaning difficult to understand in Greenlandic, editor)
Qeqertarsuaq	1AX	105		
Qeqertarsuaq	1AX	0	0	
Qeqertarsuaq	1AX	0		
Qeqertarsuaq	1AX	134		
Qeqertarsuaq	1AX	0		
Qeqertarsuaq	1AX	84	300	
Qeqertarsuaq	1AX	0	0	
Aasiaat	1AX	0		
Aasiaat	1AX	25		
Aasiaat	1AX	88		the season should be longer.
Aasiaat	1AX	6	15	the season ends too early.
Aasiaat	1AX	48	18	dislikes that the season ends so early.
Aasiaat	1AX	0	0	the season closes too early. Hopes it can be extended. It would be fine to include November in Aasiaat.
Aasiaat	1AX	0	30	the season is open to little time.
Aasiaat	1AX	0	0	The salmon arrives when the season ends. That not good.
Aasiaat	1AX	0	45	dislikes that the season ends so early.
Aasiaat	1AX	0	3	There is good control. The season ends too soon.
Aasiaat	1AX	0	0	it is too early that the season ends.
Attu	1B	50	30	hasn't caught so much in rivers. (related to previous quest, editor)
Attu	1B	0	45	one can't catch so much. Wishes that the season will be extended. In 1970-1980 they received bonus (if they landed more, editor)
Attu	1B	0	9	It is difficult to sell salmon, so he doesn't fish a lot for them. The season ends too soon.
Iginniarfik	1B	0	10	the season should be extended.
Iginniarfik	1B	0	0	dislikes that the season ends so early.
Kangaatsiaq	1B	0	30	the salmon seems to arrive later so the season ought to be extended.
Kangaatsiaq	1B	0		
Kangaatsiaq	1B	0		
Kangaatsiaq	1B	0	0	
Kangaatsiaq	1B	0		
Sarfannuguit	1B	0	90	no
Sisimiut	1B	0	0	Salmon arrives in Sisimiut first and moves northward in September, October. There is a lot of salmon. About 100 years ago there was a shop owner (Daaversuaq) in Sarfannuguit/Sisimiut, who made and sold canned salmon, and later became the wealthiest man in the settlement and acquired Greenland's first bigger wooden boat.
Sisimiut	1B	0		it is way (the access, editor) to open for fishery of salmon and to many non-professional fishermen, one can't control during the season.
Sisimiut	1B	0	60	no
Sisimiut	1B	0	0	in 2013 at Napasoq there were small salmon in gillnets (about 40 cm.)
Sisimiut	1B	0	60	In south Greenland 10 tons more are landed (interpretation possible, editor). In mid Greenland the factory landing is to

				small, maybe one ought to distribute the quota more evenly and extend the factory landing (season, editor).
Sisimiut	1B	0	1500	The salmon quota should be increased and that there is no (reason to, editor) worry about the stock.
Sisimiut	1B	319	600	The salmon season and factory landing is way to short and when teh season ends at 24:00 one can not sell salmon which are caught before midnight. Somebody ought to do something about this.
Sisimiut	1B	429	1000	likes the season
Sisimiut	1B	50	90	considering that it could be as a profession.
Sisimiut	1B	356	225	It is a problem that frozen salmon cant be sold at the local markets (local markets are not allowed to sell frozen meat, editor).
Sisimiut	1B	0		
Sisimiut	1B	0		
Sisimiut	1B	0		
Sisimiut	1B	313		
Sisimiut	1B	0		
Sisimiut	1B	0		
Sisimiut	1B	0		
Sisimiut	1B	0		
Sisimiut	1B	0		
Sisimiut	1B	0		
Sisimiut	1B	1041		
Sisimiut	1B	198		
Atamik	1C	10	90	there should be a common statement from the fishermens union (KNAPK, editor)
Atamik	1C	710	300	no, but one could reopen factory landing of salmon.
Atamik	1C	17	9	no
Atamik	1C	130	50	no, but the quota is too small.
Atamik	1C	469		
Atamik	1C	101		
Atamik	1C	143		
Atamik	1C	59		
Atamik	1C	31		
Atamik	1C	588		
Atamik	1C	72		
Atammik	1C	0	100	no
Atammik	1C	0	120	no
Atammik	1C	136	55	just changes in the gear (?, editor), it si bad to use beachfixed gillents.
Atammik	1C	0		
Atammik	1C	0		
Atammik	1C	0		
Atammik	1C	0		
Atammik	1C	0		
Atammik	1C	0		
Atammik	1C	0		
Kangaamiut	1C	0	100	no
Kangaamiut	1C	511	825	no

Kangaamiut	1C	270		no
Kangaamiut	1C	279	100	20 t of salmon for factory landing to RG in all of Greenland is not enough.
Kangaamiut	1C	0		
Kangaamiut	1C	0		
Kangaamiut	1C	1514		
Kangaamiut	1C	0		
Kangaamiut	1C	114		
Kangaamiut	1C	180		
Kangaamiut	1C	65		
Kangaamiut	1C	0		
Kangaamiut	1C	0		
Kangaamiut	1C	409		
Kangaamiut	1C	0		
Kangaamiut	1C	218		
Maniitsoq	1C	0	0	No comments.
Maniitsoq	1C	0	0	it would be good, if one could sell to factory.
Maniitsoq	1C	0	15	It would be good if salmon could be exported.
Maniitsoq	1C	0	150	arsuk area is where the salmon arrives first.
Maniitsoq	1C	0	15	Thinks that if driftnes were used, much more salmon could be caught. After they started using fixed gillnets they dont catch quite as much.
Maniitsoq	1C	0	155	Thinks that one should start selling to factories.
Maniitsoq	1C	0		no
Maniitsoq	1C	0	0	no
Maniitsoq	1C	0	0	There is indeed so many (salmon, editor), it would be (word missing, editor) if the quota is increased.
Maniitsoq	1C	0	165	no
Maniitsoq	1C	0	150	a hunting officer is missing in Maniitsoq, (the hunting officer, editor) is invisible.
Maniitsoq	1C	995	600	there are too many rules. Nonprofessional fishermen of salmon are not controlled and there are too many non-professionals.
Maniitsoq	1C	899	1680	In the beginning of may there are salmon taken in poundnets (cod target species, editor), the factory landing is too limited, and (quota, editor) should be increased. The price for salmon is too low in the local market.
Maniitsoq	1C	252	150	increase the quota
Maniitsoq	1C	384	300	thinks that it would be good for the fishermen, if one starts to factory land again.
Maniitsoq	1C	308	500	the quota is to small. It was better when there was no quota.
Maniitsoq	1C	1382	450	since there are so many salmon, it would be better if one could (factory) land them.
Maniitsoq	1C	8	30	no
Maniitsoq	1C	0		
Maniitsoq	1C	501		
Maniitsoq	1C	218		
Maniitsoq	1C	347		
Maniitsoq	1C	0	450	
Maniitsoq	1C	0		
Maniitsoq	1C	0		
Maniitsoq	1C	0		
Maniitsoq	1C	0		

Nuuk	1D	0		
Nuuk	1D	0		
Nuuk	1D	0		
Nuuk	1D	0		
Nuuk	1D	12		
Nuuk	1D	2227		
Nuuk	1D	262		
Nuuk	1D	159		
Qeqertarsuatsiaat	1D	839	595	
Qeqertarsuatsiaat	1D	3458	1950	ok.
Qeqertarsuatsiaat	1D	3398	1745	ok. There is plenty of salmon
Qeqertarsuatsiaat	1D	493	125	ok. There is plenty of salmon
Qeqertarsuatsiaat	1D	3790	700	ok. There is a lot of salmon.
Qeqertarsuatsiaat	1D	0		
Qeqertarsuatsiaat	1D	0		
Qeqertarsuatsiaat	1D	0		
Qeqertarsuatsiaat	1D	0		
Qeqertarsuatsiaat	1D	858		
Qeqertarsuatsiaat	1D	260		
Arsuk	1E	3106	2750	
Arsuk	1E	160		OK
Arsuk	1E	4216	3484	ok. The salmon flesh was brighter this year
Arsuk	1E	1558	2413	ok. There is a lot of salmon.
Arsuk	1E	2514	2264	ok. There is plenty.
Arsuk	1E	235	211	ok.
Arsuk	1E	1311	541	ok.
Arsuk	1E	633	716	ok
Arsuk	1E	214	170	ok. There really is a lot of salmon.
Arsuk	1E	0		
Paamiut	1E	0	84	
Paamiut	1E	0	32	
Paamiut	1E	1032	290	ok. It is a problem that there is no factory landing of salmon, because there is a lot.
Paamiut	1E	0	180	ok. Somebody thinks that is is ok to fish (salmon, editor) for bait.
Paamiut	1E	0	70	ok. There is plenty of salmon, but there is a need for a factory.
Paamiut	1E	0		
Paamiut	1E	0		
Paamiut	1E	0		
Paamiut	1E	0		
Alluitsup Paa	1F	336	124	ok. There is a lot of salmon, but nobody to sell to.
Alluitsup Paa	1F	0	150	ok. There is a lot of salmon, but not enough people to sell to. That is a problem.
Alluitsup Paa	1F	0	60	ok
Alluitsup Paa	1F	0	8	ok. There is a lot of salmon.
Eqalugaarsuit	1F	0	130	
Nanortalik	1F	202	500	ok. One could catch more salmon, because there is a lot, but they are not sold commercially
Nanortalik	1F	124	180	ok. It is a problem that there is no factory landing of salmon, because there is a lot of salmon.

Nanortalik	1F	0	175	OK
Nanortalik	1F	0	26	ok. It is a problem that there is no factory landing of salmon, because there is a lot of salmon.
Nanortalik	1F	0		
Nanortalik	1F	0		
Nanortalik	1F	0		
Nanortalik	1F	0		
Nanortalik	1F	43		
Narsaq	1F	80	72	
Narsaq	1F	58	52	
Narsaq	1F	601	300	ok. There is no factory.
Narsaq	1F	28	25	ok. It is a problem that some that do not tend their nets regularly, and there are lots of abandoned nets.
Narsaq	1F	182	170	ok. There is a bigger need for control, since there are a lot of gillnets that are just abandoned.
Narsaq	1F	822	689	ok. It is a big problem that there is no factory.
Narsaq	1F	0	80	ok. There is a great failure with gillnets that are just abandoned. It is a problem that there is no factory.
Narsaq	1F	0	2000	ok. He caught a tagged salmon, and says that there are many that just abandon their nets. (+ unreadable)
Narsaq	1F	0	70	ok.
Narsaq	1F	0	98	ok.
Narsaq	1F	0		
Narsaq	1F	0		
Qaqortoq	1F	106	96	
Qaqortoq	1F	0	500	
Qaqortoq	1F	536	483	ok. It is a problem that there is no direct factory landing.
Qaqortoq	1F	219	197	ok. It is very problematic that there is no factory landing. There are many who abandon their nets by the end of the season, that is a big problem.
Qaqortoq	1F	79	68	ok. There are many gillnets that are just abandoned.
Qaqortoq	1F	0	100	ok It is problematic that there is no factory landing.
Qaqortoq	1F	0	170	ok. It is very problematic that there is no factory landing. There is a big need for a factory.
Qaqortoq	1F	0	160	ok. It is problematic that there is no factory, because there is a lot of salmon.
Qaqortoq	1F	0	1000	ok It is problematic that there is no factory, because there is a lot of salmon.
Qaqortoq	1F	0	52	ok. There is a need for a factory receiving salmon, because there is a lot of salmon.
Qaqortoq	1F	0		
Qaqortoq	1F	0		
Aappilattoq	1F	0		
Nanortalimmi				
Ikerasaarsuk	SUB1	0	0	just started in 2014.
	SUB1	0		
	SUB1	0	24	ok. He landed to KGH (Royal Greenlandic trade company) many years ago. At that time the weighed 5 kg. Now they weigh 8 kg. Mostly fish for his own family as he has no factory landing opportunity.
	SUB1	0		
	SUB1	0		
Kulusuk	XIV	0		
Kuummiut	XIV	144	80	ok.

Kuummiut	XIV	0	70	ok. There is plenty of salmon, but there is a need for a factory. There is a great need for this.
Kuummiut	XIV	0		
Kuummiut	XIV	0		
Kuummiut	XIV	0		
Kuummiut	XIV	0		
Kuummiut	XIV	0		
Kuummiut	XIV	0		
Tasiilaq	XIV	0	38	ok.
Tasiilaq	XIV	0	30	ok. Fishery for salmon is only to personal use, because there is no factory.
Tasiilaq	XIV	0	56	ok. There is no factory.
Tasiilaq	XIV	0		
			147	
			11	
			301	
			90	
			48	
			90	ok
			800	ok. There is a lot of salmon.
			26	ok.

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**Results of the phone interview survey of licensed Greenlandic salmon fishermen
conducted in February 2016.**

by

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Summary

Introduction

In Greenland people have been allowed to catch salmon for personal use (food for the family) for decades, but only licensed professional fishermen are allowed to sell their catch. Both licensed and non-licensed people are obligated to report their catch. In the 2015 season 310 fishermen had received a license to fish and sell salmon, but by February 2016 only 114 had reported their catches. To find out whether the 2/3 not reporting had actually been fishing and identify the extent of unreported catches, GFLK (Greenland Fisheries Control Authority), APNN (the fisheries department) and GINR (Greenland Institute of Natural Resources) conducted a phone interview survey among the fishermen that had failed to report as they should. The survey was conducted in the end of February 2016, and managed to get in touch with 105 of the 196 (197 in table likely due to a typo in the classification of one fisherman) that had failed to report. The total estimate of unreported catch from the licensed segment in 2015 was 5t, which is far less than in 2014 (20-30t). It was not possible to do a similar survey among non-licensed people, since the number and contact information is unknown.

Materials and methods

All catch reports received by GFLK were screened for errors and the license list was merged to the data via the social security number noted on the catch reports. License holders that had not reported any catch was then identified, and the license office (fisheries department) then added the contact information to the list. Three employees (two clerks and a hunting officer all Greenlandic and Danish speaking) from GFLK then phoned and interview the fishermen. To ease the process, fewer questions was asked than in the previous year, but more effort was given in making notes about comments and correctly noting whether catch was in kg or Number of fish.

Results

The phone survey confirmed that the small catches reported from areas North of Sisimiut, was indeed because of poor fishery for those who tried and lagging fishery from the rest, within the season. Apparently it is normal that salmon has arrived late in the season in the North, but in 2015 it seems they did not arrive at all before the season ended. 34 fishermen interviewed from the Disko Bay and Upernavik only gave an additional 43 kg of salmon that had not previously been reported (Table 1). In Divisions 1B-1E the unreported catch per fisherman was fairly constant and the highest average additional catch per fisherman was found in South Greenland. The estimated catch of the fishermen that was not interviewed was estimated with a weighted average by division (Table 1). Summing the additional catch from the interview (2060kg) with the estimated catch from the rest (2941kg) gives a total estimate of 5t caught by fishermen that had failed to report their catch in the 2015 season.

Studying the comments (Table 2) provided by license holders reveals lots of useful information on the fishery and the fishermen. In division 1A many fishermen inform that they did not fish because of ice conditions and lag of salmon. They also report the general condition that salmon arrive later in the North than in the South. In the southern parts fishermen in general stats that

there are lots of salmon but they wish for factory landing opportunities and simply would fish more if they could sell the catch.

Discussion

Since the phone interview involved several levels of translation from Danish to Greenlandic and back, some meaning of the answer may be lost in translation. Likewise it seems likely that some of the phone interviews were performed over a poor phone connection and while the fisherman being interviewed was engaged with other businesses while being interviewed. If the interviewer conducted the interview in Danish there is a risk of mistaking salmon for arctic char (It is normal to call char “laks” and Salmon “skællaks” in Greenland) which is also caught in gillnets (smaller meshes) during the summer, but in Greenlandic which was most likely used there is not the same risk of misinterpretation. Particularly in the 2014 season interview there were many incidents where it was difficult to determine whether catch in kg or total number of salmon caught was noted by the interviewer, making the results somewhat uncertain. In 2015, the number of questions was reduced and there did not seem to be the same uncertainty of whether weight or number was noted and in general the data quality seemed better in the 2015 interviews. The survey on the 2015 season confirms that there was little salmon fishery available in North Greenland (1A) during the 2015 season and most fishermen did not fish salmon for various reasons (Ice conditions, poor fishery of colleagues).

Whereas fishermen’s organizations and spokesmen often give the impression of a unified homogeneous group, individual comments given by fishermen reveal a more shaded picture of their opinions and observations. For instance, whereas some demand higher quotas and factory landings others are content with current regulations and management. Also, normal catch statistics can only reveal differences in the catches, but not give the explanations for the differences. Studying the interviews and comments however reveal the reasons why the statistics looks as it does. Normal statistics would for instance only reveal that the fishery was low in an area (1A in 2015), but the comments reveals that most fishermen did not report, simply because they did not fish at all (due to poor fishery and ice conditions), and therefore exclude the possibility that people simply did not report their catches.

Table 1.

Area	Not reporting	Interviewed	%	Interveiw sum of kg	Avg Kg	Std kg	Non interviewed estimate	Total estimate
1A Uummannaq	1	0	0,0					
1A Upernavik	10	2	20,0	0	0	0	0	0
1A Disko Bay	62	32	51,6	43	1	4	40	83
1B	27	11	40,7	249	23	48	362	611
1C	48	36	75,0	380	11	33	134	514
1D	16	13	81,3	430	33	111	99	529
1E	3	2	66,7	45	23	32	23	68
1F	28	8	28,6	913	114	258	2283	3196
XIV	2	1	50,0	0	0		0	0
Grand Total	197	105		2060			2941	5001

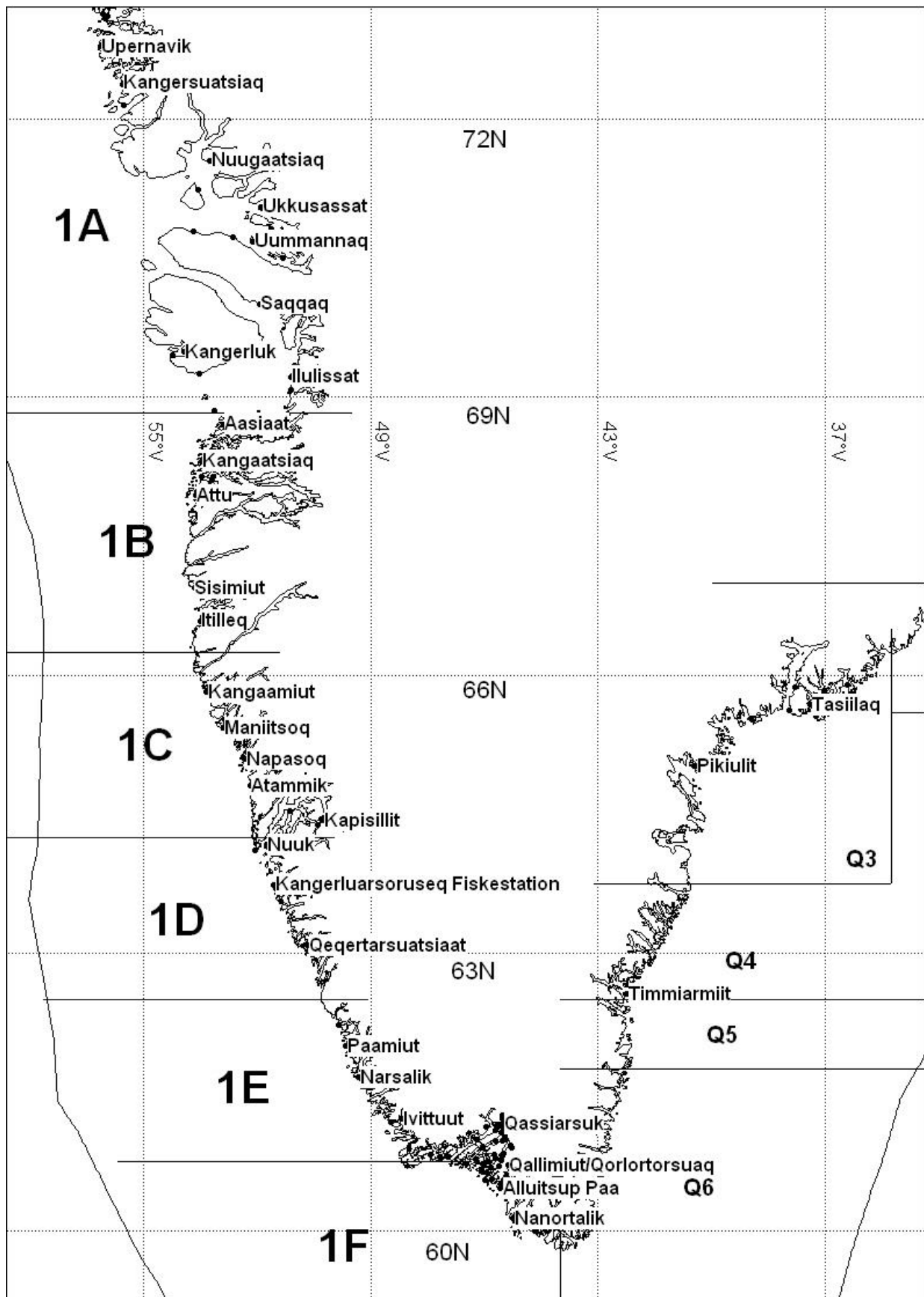


Fig 1. Map of Greenland including cities/settlements and NAFO/ICES area.

Appendix I.

1AUP is the Upernavik district, 1AUM is the Uummannaq fjord district, 1AX is the Disko Bay, 1B-F is the rest of the Greenlandic West coast and ICES XIV is E-Greenland. Interviewer is the person interviewing, N is interview number, Nets is number of gillnets used. Comment is fisherman's comments translated from Greenlandic to Danish to English. Sorted North to south.

Interviewer	NrPri ntervi ewer	City	Area	Kg	Antal	Antal Garn	comment
	2	43	Kangersuatsiaq	1AUP	0	0	No catch. There was no salmon in the north in 2015, which is very rare. Normally they do not arrive until the end of september and they only have one month to fish them, so it would be better if the season lasted until November 15 in North Greenland. Occasionally one can catch salmon in nets when fishing for Greenland halibut (Editor: Deepwater sinking gillnets 300-1000m).
	2	44	Kangersuatsiaq	1AUP	0	0	No catch. Did try but didnt catch any in 2015
	1	1	Akunnaaq	1AX	9	3	1 Caught 3 salmon. There was almost no salmon in 2015, the season should be extended
	1	6	Ikamiut	1AX	0	0	No catch. The season closed just as salmon arrived in the north.
	1	7	Ikamiut	1AX	10	2	3 2 big salmon. The fishery was better than in 2014. Salmon arrives when the season ends.
	1	9	Ikamiut	1AX	0	0	0 No catch. The season should be extended
	1	25	Ilulissat	1AX	0	0	0 No catch. Thinks that the season ends too soon.
	1	26	Ilulissat	1AX	0	0	No catch. Did not fish.
	1	29	Ilulissat	1AX	0	0	3 No catch. Did have gillnets have gillnets hanging. The season should be extended.
	1	30	Ilulissat	1AX	0	0	No catch
	1	31	Ilulissat	1AX	0	0	No catch. His gillnets was taken (editor; stolen or removed)
	1	10	Kitsissuarsuit	1AX	0	0	No catch. Is no longer interested in catching salmon.
	1	21	Qasigiannugit	1AX	0	0	No catch. did fish in the season but didn't catch any. The season should be extended.
	1	22	Qasigiannugit	1AX	3	1	6 Caught 1 salmon. had 6 fixed gillnets hanging in the season but only caught one salmon. The salmon season is too early in the north.
	1	23	Qasigiannugit	1AX	15	5	10 Caught 4 to 5 salmon. Not better than 2014. The season should be extended 2 weeks
	1	35	Qeqertarsuaq	1AX	0	0	No catch. Couldn't fish because there were so many little icebergs in the area.
	1	39	Qeqertarsuaq	1AX	0	0	No Catch. Season worse than 2014. could not fish due to icebergs
	1	40	Qeqertarsuaq	1AX	0	0	No catch. No comments
	1	41	Qeqertarsuaq	1AX	0	0	No catch. Did not fish because of icebergs.
	1	42	Qeqertarsuaq	1AX	0	0	No catch. Has stopped catching since he is too old.
	1	43	Qeqertarsuaq	1AX	0	0	No catch.
	1	45	Qeqertarsuaq	1AX	0	0	No catch. There is no salmon and only a few in the fjords.
	1	46	Qeqertarsuaq	1AX	0	0	No catch. Did not fish due to icebergs.
	1	48	Qeqertarsuaq	1AX	0	0	No catch. The fishery was better than in 2013-2014

Interviewer	NrPrInterviewer	City	Area	Kg	Antal	Antal Garn	comment
1	49	Qeqertarsuaq	1AX	0	0		No catch.
1	50	Qeqertarsuaq	1AX	0	0		No catch. No time to chat.
1	52	Qeqertarsuaq	1AX	6	2	20	Caught 2 salmon. The fishery was the same as in 2014
1	33	Saqqaq	1AX	0	0		No Catch. Did not have a boat. Received a new boat but late in the season
1	13	Aasiaat	1AX	0	0		No catch. Mostly fishes for cod.
1	14	Aasiaat	1AX	0	0		No catch
1	16	Aasiaat	1AX	0	0		No catch. Salmon equipment (editor:New salmon nets) arrived just as the season ended.
1	17	Aasiaat	1AX	0	0		No catch. Did not get a licens although he applied (Editor; apparently unaware that he has a license). Needs a new license this year since he has 3 children to support and usually has 4 employees.
1	18	Aasiaat	1AX	0	0		No catch. Did not fish due to illness.
1	19	Aasiaat	1AX	0	0		No catch. There were almost no salmon this year
1	3	Attu	1B	24	8	2	caught 8 salmon in one hour, and thought that was enough for he family. Did send his salmon report. Would like improved salmon fishery, factory landings and extended season.
1	4	Attu	1B	0	0		No catch
1	5	Iginniarfik	1B	150	50	4	Caught about 50 salmon. Is content with the fishery in 2014 and 2015. did not catch small salmon.
1	53	Kangaatsiaq	1B	0	0		No catch. Wants to reapply for a salmon license.
2	38	Kangaatsiaq	1B	0	0		No catch. In the last 5 years salmon has arrived much later in North Greenland and the season ends just as salmon arrives.
2	39	Kangaatsiaq	1B	0	0		No catch.
2	31	Sisimiut	1B	0	0		No catch. In the most recent years salmon has arrived later than in the south. Did not fish in 2015. was abroad on seal fur campaing during the season last year
2	33	Sisimiut	1B	75	25	4	Caught 20 to 30 for own use. The fishery is the same as in 2014
2	34	Sisimiut	1B	0	0		No catch.
2	36	Sisimiut	1B	0	0	0	Did not catch salmon in 2015, just cod, but heard that there were lots of salmon.
2	37	Sisimiut	1B	0	0		No catch. was seriously ill. Thinks that the quota should increase since there are so many salmon, and that factory landings should be reintroduced so fishermen can earn more.
3	14	Atammik	1C	0	0		No catch
3	17	Atammik	1C	0	0		No catch
3	18	Atammik	1C	30		2	30 kg. Fishery better than 2014. management ok.
3	19	Atammik	1C	0	0		No catch
3	20	Atammik	1C	0	0		Damaged engine (no catch)
3	21	Atammik	1C	0	0		No catch
3	22	Atammik	1C	0	0		No catch
3	23	Kangaamiut	1C	0	0		No catch
3	24	Kangaamiut	1C	0	0		No catch
3	25	Kangaamiut	1C	70		1	Caught 70 kg. Better than 2014, content with management.
3	26	Kangaamiut	1C	0	0		No catch
3	27	Kangaamiut	1C	0	0		No catch

Intervi ewer	NrPri ntervi ewer	City	Area	Kg	Antal	Antal Garn	comment
3	28	Kangaamiut	1C	0	0		No catch
3	29	Kangaamiut	1C	150		2	150 kg. The fishery was like 2014.
3	30	Maniitsoq	1C	0	0		No catch
3	31	Maniitsoq	1C	0	0		No catch.
3	32	Maniitsoq	1C	0	0		No catch.
3	38	Maniitsoq	1C	0	0		No catch.
3	39	Maniitsoq	1C	0	0		No catch.
3	40	Maniitsoq	1C	0	0		No catch.
3	41	Maniitsoq	1C	0	0		No catch.
3	42	Maniitsoq	1C	0	0		No catch.
3	43	Maniitsoq	1C	0	0		No catch.
3	44	Maniitsoq	1C	0	0		No catch.
3	45	Maniitsoq	1C	0	0		No catch.
3	46	Maniitsoq	1C	30		1	Caught 30 kg. The season was better than 2014. Management is ok.
3	47	Maniitsoq	1C	0	0		No catch.
3	48	Maniitsoq	1C	0	0		No catch.
3	49	Maniitsoq	1C	0	0		No catch.
3	50	Maniitsoq	1C	0	0		No catch.
3	51	Maniitsoq	1C	0	0		No catch.
3	52	Maniitsoq	1C	0	0		No catch.
3	53	Maniitsoq	1C	0	0		No catch.
2	28	Napasoq	1C				Catch ? (reported catch could not be found by editor) Claims to have reported catches already the season was much better in 2015 than in 2014 and there is a lot of salmon. a factory is missing.
2	29	Napasoq	1C	100	23	1	Caught 23/about 100 kg. Did not fish in 2014 (editor cant compare to 2015). There is salmon in the fjords near Napasoq year around. Factory is missing but there is too many salmon.
2	30	Napasoq	1C			2	No catch. Only fish for own consumption since factory landing oppertunities is not available but has heard that there are lots of salmon. likes the higher quotas as the numbers of salmon are increasing.
3	1	Nuuk	1D	400		4	Caught about 400 kg. Fishery same as 2014. Management is ok
3	2	Nuuk	1D	0	0		No catch.
3	3	Nuuk	1D	0	0		No catch.
3	4	Nuuk	1D	0	0		No catch.
3	8	Nuussuaq, Nuuk	1D	0	0		No catch.
3	9	Nuussuaq, Nuuk	1D	0	0		No catch.
3	10	Nuussuaq, Nuuk	1D	0	0		No catch.
3	11	Nuussuaq, Nuuk	1D	0	0		No catch.
3	12	Nuussuaq, Nuuk	1D	0	0		No catch.
3	13	Nuussuaq, Nuuk	1D	0	0		No catch.
3	5	Qeqertarsuat siaat	1D	30		1	Caught 30 kg. The fishery was better than 2014, the management is fine
3	6	Qeqertarsuat siaat	1D	0	0		No catch.

Interviewer	NrPrInterviewer	City	Area	Kg	Antal	Antal Garn	comment
3	7	Qeqertarsuaat	1D	0	0		No catch.
2	20	Paamiut	1E	45	15	1	Caught 15 for own use. No change in 2015, there are still lots of salmon. Factory landings should reopen like in the old days since there is too many salmon.
2	21	Paamiut	1E	0	0		No catch. There is too little control by the hunting officers, especially when there is quota on all species, because there is lots of illegalities and too many sparetime fishermen during the salmon season. The licensed fishermen has a hard time selling their catch since there are no factory landings.
2	2	Alluitsup Paa	1F	75	25	1	Caught 20-30 for own consumption. There was a lot of salmon in 2015, and more and more the last couple of years. Especially in august and September.
2	13	Nanortalik	1F	0	0		No catch. There was lots of salmon in 2015. Although there is lots of salmon the fishermen had to stop early, since the factory landings opened very late.
2	14	Nanortalik	1F	46			Caught about 46 kg for his own consumption. In July, lots of small salmon are caught near the river mouth in Unartoq fjord, and year after year there are more and more. Missing af factory.
2	15	Nanortalik	1F	0	0		No catch. The hunting officers should be more visible during the season. Between nanortalik and Qaqortoq there are many nets without name info.
2	17	Nanortalik	1F	0	0		No catch.
2	18	Nanortalik	1F	36	12	1	Caught 11 or 12 for his own use. There is no hunting officer in Nanortalik but one is needed. Hopes for salmon landings.
2	11	Narsaq	1F	6	2		Caught 1 or 2 for own consumption. needs a factory
2	6	Qaqortoq	1F	750		10	Caught 700-800 kg. Has seen small salmon less than 1 kg and there are lots of them. In 2015 there were lots of salmon just as in 2014 but no factory landing oportunities. Caught 2 salmon with black spots that looked like a char with big head near Qaqortoq.
2	1	Tasiilaq	XIV	0	0	0	No catch. Did not have a boat for many years but sails with his brothers.

**Results of the phone interview survey of licensed Greenlandic salmon fishermen for the
2016 season.**

by

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Summary

In the 2016 season 263 fishermen had received a license to fish and sell salmon, but by February 2016 only 75 licensed fishermen had reported their catches. To find out whether the licensed fishermen not reporting had actually been fishing and identify the extent of unreported catches in this segment, GFLK (Greenland Fisheries Control Authority) and GINR (Greenland Institute of Natural Resources) conducted a phone interview survey among licensed fishermen. The survey was conducted in March 2017, and managed to get in touch with 49 random licensed fishermen of which 30 had not reported catches during or after the 2016 season. A weighted average by area indicated an estimated unreported catch of 4249 kg of Salmon in the 2016 season. It not possible to do a similar survey among non-licensed people. The phone survey confirmed that the small catches reported from areas North of Sisimiut, was indeed because of poor fishery for those who tried and lagging fishery from the rest, within the season. Apparently it is normal that salmon has arrived late in the season in the North, but in 2015 and 2016 it seems they hardly arrived at all.

Introduction

In Greenland people have been allowed to catch salmon for personal use (food for the family) for decades, but only licensed professional fishermen are allowed to sell their catch. Both licensed and non-licensed people are obligated to report their catch. However in spite of ads in TV, Radio and newspapers and general information folders only about 1/3 of all salmon-license holders normally report their catches during the season. This leaves the administration with the question of how much salmon was caught by the 2/3 of license holders who failed to report their salmon catches. In order to gain more knowledge about this segment a phone survey among licensed fishermen has been initiated in the most recent 3 years.

Materials and methods

All catch reports received by GFLK were screened for data errors and the list of licenseholders was merged on. For each area random licensed fishermen were phoned and interviewed about the 2016 season. Total reported salmon catch for each licenseholder was calculated and compared to the interviews.

Results

Question 1. *How much salmon did you catch last year?*

To account for the regional differences in the distribution of fishermen and salmon the analysis was stratified by NAFO areas. Only interviewed fishermen who had not previously reported catch was used in the analysis of non-reported catch. For each area, non-reported catch was calculated by multiplying the number of fishermen failing to report, with the average admitted catch from the phonesurvey (table 1). A similar analysis was performed in 2016 for the 2015 season (Table 2). The total estimate of non-reported catch from the licensed fishermen was 4249 kg and thus slightly lower than the estimate for the 2015 season and much lower than the 2014 estimate of 20-25 mt.

Question 2. *Do you plan to catch salmon this year?*

46 of 49 fishermen confirmed that they would try to catch salmon again this year and 3 did not answer the question.

Question 3. *Was your salmon fishery better last year than the year before?*

11 replied that there were more and 19 replied that there were less in 2016. However, in the southern region (1DEF) 8 replied that there were more salmon in 2016 and 6 replied less. In the northern regions 1ABC just 3 replied more and 13 replied less.

Question 4. *Were there more or fewer salmon last year than 10 years ago?*

In south Greenland (1DEF) all fishermen agree that there were either the same level (5) or more (10) salmon than 10 years ago. In contrast the agreement further north was that there were less (13) salmon than 10 years ago rather than more (3).

Question 5. *How many gillnets did you use last year?*

Fishermen are allowed to use up to 20 gillnets (sections of 60m) but the majority of fishermen use far less. It is obvious that some fishermen mistake the meaning of the question and replies just one gillnet rather than the number of sections. However, most fishermen seem to use 1-4 gillnets and can still catch significant amounts of salmon.

Question 6. *Comments for the management.*

The comments made by fishermen supports some general observations made from other datasets. In general there seems to be a strong wish to reopen factory landings of salmon and a perception amongst fishermen that there are lots of salmon, particularly in South Greenland. In Northern Greenland there is a perception that salmon arrives after the season has ended and in the previous years there has been a great wish to move the season to later in the year (including November). See appendix II for full list of comments.

Discussion

Since the phone interview involved several levels of translation from Danish to Greenlandic and back, some meaning of the answer may be lost in translation. Likewise it seems likely that some of the phone interviews were performed over a poor phone connection and while the fisherman being interviewed was engaged with other businesses while being interviewed. At least one person being interviewed had mistakenly stated number as catch in kg when comparing to what he actually reported. Another fisherman had clearly misunderstood the season since he stated no catch although he had reported salmon during the season. Whereas fishermen's organizations and spokesmen often give the impression of a unified homogeneous group, individual comments given by fishermen reveal a more unique picture of their opinions and observations. Whereas some demand higher quotas and factory landings others are content with current regulations and management. Normal catch statistics can only reveal differences in the catches, but not give the explanations for the differences. Studying the interviews and comments, reveal the reasons why the statistics looks as it does. Normal statistics would for instance only reveal that the fishery was low in an area (1A in 2015 and 2016), but the comments reveals that most fishermen did not report, simply because they did not fish for various reasons. The survey on the 2015 season confirms that there was little salmon available in North Greenland (1A) during the 2015 season and that most fishermen did not fish salmon

for various reasons (Ice conditions, poor fishery of colleagues). The same situation seems evident in 2016.

Table 1. 2017 interview estimate of non-reported catch from licensed fishermen for the 2016 season.

Area	Licensed fishermen	Licensed Reporting	Licensed Not Rep	Not rep Interview	%	Sum Kg	Avg Kg	std Kg	Total in Kg
1AUum	2	0	2	1	50	0	0		0
1AUpv	7	2	5	1	20	0	0		0
1ADis	52	7	45	9	20	53	6	17	265
1B	35	9	26	4	15	15	4	8	98
1C	71	25	46	3	7	75	25	43	1150
1D	26	8	18	8	44	360	45	70	810
1E	20	10	10	2	20	130	65	49	650
1F	41	13	28	2	7	45	23	32	630
XIV	9	1	8	-	-	-	-	-	-
Total	263	75	188	30	16	678	23	44	4249

Table 2. 2016 interview estimate of non-reported catch from licensed fishermen for the 2016 season.

Area	Not reporting	Interviewed	%	Interview sum of kg	Avg Kg	Std kg	Non interviewed estimate	Total estimate
1A Uummanaq	1	0	0,0					
1A Upernavik	10	2	20,0	0	0	0	0	0
1A Disko Bay	62	32	51,6	43	1	4	40	83
1B	27	11	40,7	249	23	48	362	611
1C	48	36	75,0	380	11	33	134	514
1D	16	13	81,3	430	33	111	99	529
1E	3	2	66,7	45	23	32	23	68
1F	28	8	28,6	913	114	258	2283	3196
XIV	2	1	50,0	0	0		0	0
Grand Total	197	105		2060			2941	5001

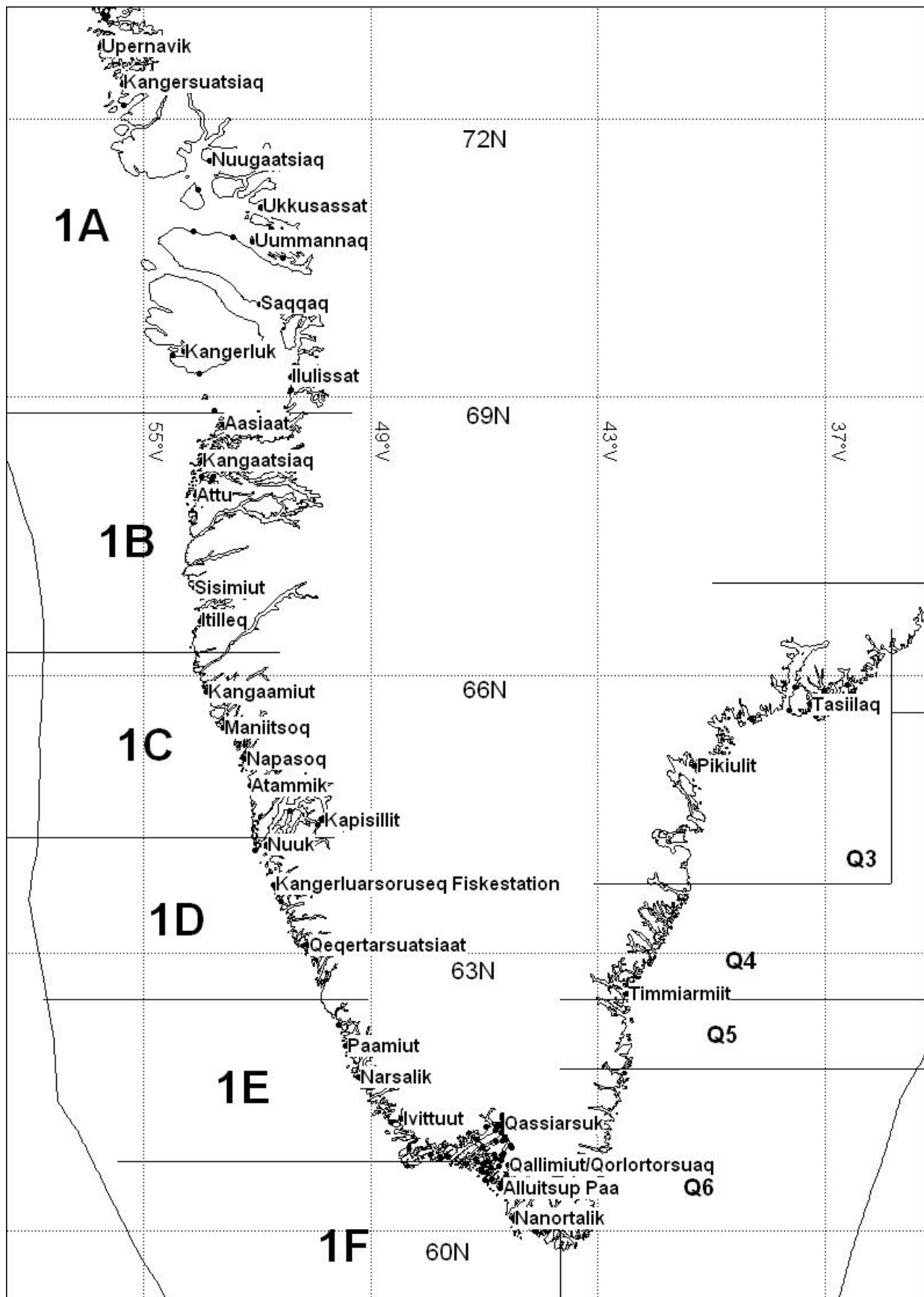


Fig 1. Map of Greenland including cities/settlements and NAFO/ICES area.

Appendix I.

1AUP is the Upernavik district, 1AUM is the Uummannaq fjord district, 1AX is the Disko Bay, 1B-F is the rest of the Greenlandic West coast and ICES XIV is E-Greenland. Red indicates that KG catch was estimated from either number or reported catch.

N	Area	City/settlement	Reported # salmon	Reported catch Kg	Question 1 weight	Question 1 Num	Question 2	Question 3	Question 4	Question 5
4	1AUM	Niaqornat	0	0	0					
5	1AUP	Upernavik	3	20	15		Yes	No	fewer	2
14	1AUP	Kangersuatsiaq	0	0	0		Yes	No	fewer	2
1	1AX	Ilulissat	16	75	16		Yes	Same	fewer	6
2	1AX	Ilulissat	0	0	0					
6	1AX	Qeqertarsuaq	0	0	50		Yes	Yes	more	4
7	1AX	Akunnaaq	0	0	3	1	Yes	No	fewer	6
8	1AX	Kitsissuarsuit	0	0	0		Yes	No	fewer	2
9	1AX	Qasigiannuit	0	0	0		Yes	No	fewer	10
10	1AX	Qeqertarsuaq	0	0	0		Yes			
11	1AX	Qasigiannuit	0	0	0		Yes	No	fewer	0
15	1AX	Ikamiut	0	0	0		Yes	No	fewer	
16	1AX	Aasiaat	0	0	0		Yes	No	fewer	
33	1B	Kangaatsiaq	0	0	0					
12	1B	Kangaatsiaq	0	0	0		Yes			
13	1B	Attu	0	0	0		Yes	No	fewer	2
37	1B	Itilleq	0	0	15	5	Yes		fewer	
38	1B	Sisimiut	35	105	105	30	Yes		fewer	
39	1B	Sisimiut	20	60	60		Yes	Yes	more	4
40	1C	Napasog	184	550	2700		Yes	No	same	4
41	1C	Napasog	0	0	0		Yes			
42	1C	Atammik	14	42	0		Yes	Yes	fewer	1
43	1C	Kangaamiut	0	0	0		Yes			
44	1C	Kangaamiut	114	237	237		Yes	No		1
45	1C	Maniitsoq	334	1047	1047	300	Yes	No	more	3
46	1C	Maniitsoq	0	0	75	25	Yes	No	same	4
52	1D	Qeqertarsuatsiaat	0	0	50		Yes		same	2
54	1D	Nuuk	0	0	0		Yes			
55	1D	Nuuk	486	1194	1194		Yes			
56	1D	Nuuk	0	0	0		Yes			
57	1D	Nuuk	0	0	0					

2	1D	Nuuk	0	0	0		Yes			
8										
2	1D	Nuuk	0	0	0		Yes			
9										
4	1D	Nuuk	114	266,5	200	60	Yes	Yes	same	1
0										
4	1D	Nuuk	0	0	150	40	Yes	Yes	more	1
1										
4	1D	Nuuk	0	0	160	45	Yes	Yes	same	2
2										
4	1D	Nuuk	19	49	130	40	Yes	No	same	2
3										
4	1D	Nuuk	155	423	469		Yes	Yes	more	2
9										
2	1E	Paamiut	0	0	100		Yes	No		
1										
2	1E	Paamiut	67	145	145		Yes		same	1
2										
4	1E	Paamiut	53	131	200	60	Yes	Yes	more	3
6										
4	1E	Paamiut	0	0	30	10	Yes	Yes	more	1
7										
1	1F	Qaqortoq	155	300	300		Yes	No	more	2
7										
1	1F	Qassimiut	0	0	0		Yes	No	more	
8										
1	1F	Narsaq	458	1042	1042		Yes	No	more	1
9										
2	1F	Narsaq	74	182	182		Yes	No	same	11
0										
4	1F	Qaqortoq	0	0	45	14	Yes		more	2
4										
4	1F	Qassimiut	10	30	30	10	Yes	Yes	more	1
5										
4	1F	Narsaq	191	435	1500		Yes	Yes	more	12
8										

Appendix II Comments made by fishermen for the 2016 season.

N	Area	City/settlement	Comment
4	1AUM	Niaqornat	Did not catch salmon in 2016.
5	1AUP	Upernavik	
14	1AUP	Kangersuatsiaq	It is rare that there is salmon in the area. Salmon only arrives every second year on average to Upernavik
1	1AX	Ilulissat	Because of Ice at Ilulissat it wasn't really possible to catch salmon.
2	1AX	Ilulissat	Did not catch salmon in 2016.
6	1AX	Qeqertarsuaq	Hopes the salmon season can be open to the end of October (Editor comm, It normally is)
7	1AX	Akunnaaq	
8	1AX	Kitsissuarsuit	
9	1AX	Qasigiannuit	Wish the season could be later in the year.
10	1AX	Qeqertarsuaq	
11	1AX	Qasigiannuit	There was a short time to catch salmon due to bad weather.
15	1AX	Ikamiut	Last year there was not so much salmon. We rarely caught any but there was a lot of bad weather.
16	1AX	Aasiaat	There were no salmon at Aasiaat last season.

3	1B	Kangaatsiaq	Did not catch salmon in 2016.
12	1B	Kangaatsiaq	
13	1B	Attu	
37	1B	Itilleq	Only caught as a bycatch in cod gillnets but will send a catch report.
38	1B	Sisimiut	Only caught for personal use as there is no factory landing. Sometimes sells to institutions if he can.
39	1B	Sisimiut	Catch reported. Only caught a few for personal use. The salmon were very fine, but they arrived much later.
30	1C	Napasog	The salmon arrived later in the season. There was however lots of salmon. He sold them at the local market and reported them as one should.
31	1C	Napasog	Was ill so he did not fish for salmon. If he had he would have reported his catch.
32	1C	Atammik	Did fish at the beach, but did not catch anything. He will send his 0 catch report.
33	1C	Kangaamiut	The engine was broken so no catch.
34	1C	Kangaamiut	Catch reported. He only caught for personal use since it is not possible to land to factories. He reported his catch but doesn't remember how much it was.
35	1C	Maniitsoq	Send in his catch report. Is not content that there is no factory landing and only fishes for personal use. Usually there is a bycatch of salmon in the poundnet.
36	1C	Maniitsoq	He only fishes for personal use because there is no factory landing. There is however plenty of salmon but last year they arrived much later in the season.
23	1D	Qeqertarsuaat	Catch reported. Only caught for himself as there were no factory landing. If there had been factory landing it would have been better. So please open the factory landings again.
24	1D	Nuuk	I didn't catch any salmon.
25	1D	Nuuk	Catch reported. There are lots of salmon but no factory landing so he sells at the local market. The hunting officer usually weighs and reports them for him.
26	1D	Nuuk	Did not fish for salmon.
27	1D	Nuuk	Has been away in the season.
28	1D	Nuuk	Did not catch salmon in 2016.
29	1D	Nuuk	The children played with the salmon gillnets and burned them (editor; maybe NASF will reward the kids ;-) so he could not fish for salmon.
40	1D	Nuuk	
41	1D	Nuuk	
42	1D	Nuuk	
43	1D	Nuuk	
49	1D	Nuuk	
21	1E	Paamiut	In the future we wish there would be factory landings again, because there is a lot of salmon.
22	1E	Paamiut	Catch reported. Would wish that one could land to factories because the apartments are so expensive. He only caught for his own use since it was not possible to land to the factory. Not even the Royals Greenland factory. Life is tough and it is a problem even paying your bills.
46	1E	Paamiut	
47	1E	Paamiut	
17	1F	Qaqortoq	Catch reported. The last couple of years there has been lots of salmon, but one should be lucky to land to factories. Therefore a lot of the catch is just for personal consumption but one can also sell to nursery homes and institutions or at the local market. However it is not easy to sell at other people also catch for their households.
18	1F	Qassimiut	There were no factory at Narsaq, so you spend 1½ hrs (editor on the fishing/transportation). There has been a factory that closed and reopened but it doesn't accept salmon. It would be great if they did because there are so many salmon.

19	1F	Narsaq	Catch reported. The season starts too late. It doesn't start until august 15, but it would be better august 1 because they are way to fat later in the season. It would be great if there was factory landing.
20	1F	Narsaq	Catch reported. If there were factory landing we could catch much more salmon.
44	1F	Qaqortoq	
45	1F	Qassimiut	
48	1F	Narsaq	

Comments for interviews 41-49 were assembled by the interviewer but not kept separate on individual fishermen. The assembled comments were: In 2016 there were more salmon than in 2015 and there were more in South Greenland than in the North. Although there is lots of salmon, the fishery has been limited due to missing factory landings and people has been limited to fish for their own personal use. Furthermore some Name and position a location in South Greenland with small salmon in a river.