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Denmark/Greenland Research Report for 2020

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This report presents information on catch statistics from the commercial Greenland fishery in 2020 at West Greenland. Catches are based on logbooks information haul by haul provided by the Greenland authorities (Greenland Office of Fisheries Licensed, GLFK) and factory landings (Table 1). Catches for main species by NAFO division based on preliminary STATLANT 21A are presented in Table 2. Information on length frequencies samples and biological samples taken by technicians from the Greenland Institute of Natural Resources (GINR) or by fishermen working onboard the commercial vessels, from different species is also presented. A total of 314 length samples were taken, and 52047 individuals, including Greenland halibut, cod and shrimp were measured, in NAFO Div. 1A-F. A total of 1612 otoliths in Div. 1A-F and 562 DNA samples in 1AF -D were collected from cod, and 506 DNA samples in 1 A-D and 1F from Greenland halibut (Tables 3 and 4). Length distribution of the Greenland halibut samples from the catches offshore are in Tables 5 and 6.

Furthermore, the report gives a brief overview of the research carried out by the GINR (Figure 1). For further information on GINR survey activities planned in 2021, visit www.natur.gl . For future research activities, education, collaboration opportunities, infrastructure, logistics, and much more, visit Isaaffik – the Arctic gateway www.isaaffik.org.

WEST GREENLAND (NAFO SUBAREA 1)

A. Status of the fisheries

In 2020, Greenlandic commercial vessels were not involved in other NAFO subareas than Subarea 1.

Provisional statistics for the fisheries from 2017 to 2020 are presented in Table 1.

1. Shrimp

The shrimp stock off West Greenland is distributed mainly in NAFO Subarea 1 (Greenland EEZ), but a small part of the habitat, and of the stock, intrudes into the eastern edge of Div. 0A (Canadian EEZ). Canada has defined 'Shrimp Fishing Area 1' (Canadian SFA1), to be the part of Div. 0A lying east of 60°30'W, i.e., east of the deepest water in this part of Davis Strait.

At the West coast of Greenland Northern shrimp is found mainly in depths between 150 and 600 m. The stock is assessed as a single population. The Greenland fishery exploits the stock in Subarea 1 (Div. 1A– 1F). The Canadian fishery has been limited to Div. 0A (SFA1)

Four fleets, one from Canada and three from Greenland (Kongelige Grønlandske Handel (KGH)) fleet fishing

from 1976 to 1990, the offshore fleet and coastal fleet) have participated in the fishery since the late 1970s. The Canadian fleet and the Greenland offshore fleet (> 75 GRT) have been restricted by areas and quotas since 1977. The fishery by the Greenland coastal fleet (< 75 GRT) was unrestricted until 1997 when quota regulation was imposed. Mesh size is at least 44 mm in Greenland, 40 mm in Canada. Sorting grids to reduce bycatch of fish are required in both of the Greenland fleets and in the Canadian fleet. Discarding of shrimps is prohibited.

Greenland requires that logbooks should record catch live weight. A former allowance for crushed and broken shrimps in reckoning quota draw-downs was abolished in 2011 to bring the total catch live weight into closer agreement with the enacted TAC.

Catches of shrimp gradually increased throughout the 1980s and 1990s and reached a level around 157 000 t by 2005-2008 but have since decreased to 72 256 t in 2015. Since 2016 the catches have been increasing in conjunction with increasing TACs, and was in 2019 104 440 t. The projected catch for 2020 is 117 000 tons for Greenland EEZ and in the region of 2000 tons in SFA1 (DIV 0A).

2. Greenland halibut

The stocks of Greenland halibut in the North West Atlantic are assessed in several management units. Greenland halibut in East Greenland (ICES 14) is considered to be a part of a stock also distributed in Icelandic and Faroese waters. Greenland halibut in the Baffin Bay and the Davis Strait, (NAFO SA 0 + 1 offshore) is assessed as one stock while the inshore stock in NAFO Div. 1A-F are considered isolated from the offshore stock and assessed by fjord area. In 1994 analysis of tagging and other biological information resulted in the creation of separate management areas for inshore Div. 1A (Disko bay, Uummannaq and Upernavik districts). In 2020 the inshore Div.1B-F were decided also to be separated in 3 other different management units 1BC, 1D and 1EF.

In 2020, total catches of Greenland halibut (*Reinhardtius hippoglossoides*) in NAFO Subarea 1 amounted to 45 922 t, of which 18 146 t were taken offshore by large vessels, and 27 776 t were landed from small boats operating inshore in the fjords. The offshore catches were mainly taken by trawlers at the traditional fishing grounds in Div.1CD and west of the Disko Island in division 1A, while the inshore catches are from sea-ice, small vessels, and open boats using gillnets and longlines. Greenland vessels operating offshore caught 13 039 t (7107 t in division 1AB + 7336 t in division 1CD) and other nations caught 5107 t (655 t in division 1AB + 3048 t in division 1CD). Inshore landings in Div. 1A were distributed from the Qaanaaq fjord (175 t), the fjords near Upernavik (7574 t), the Uummannaq fjord (10677 t) and the Disko Bay (7602 t). In the fjords south of West Greenland (1B-F) catches decreased from 1585 t (in 2019) to 1436 t (in 2020) of which 855 t were taken inshore in 1D. Trawl fishery is banned inshore, with the exception of shrimp trawl fishery in the Disko Bay and a small area inshore in division 1B. Sorting grids in the shrimp fishery have been mandatory offshore since 2002 with a sorting grid dispensation given to the smaller shrimp vessels operating inshore until 2011.

3. Cod

Cod (*Gadus morhua*) found in Greenland is a mixture of four separate “stocks” that are defined by their spawning areas: I) offshore West Greenland waters; II) West Greenland fjords cod III) offshore East Greenland and offshore Icelandic waters and IV) inshore Icelandic waters (Therkildsen et al. 2013). Therkildsen et al. (2013) showed a relatively stable spatial and temporal distribution of these spawning stocks during actual spawning events, but the proportional contribution of the different components to commercial and survey catches in different areas, seasons and years and the associated variation is unclear. However, Icelandic inputs

are believed to have been responsible for the previous large year classes in Greenland (i.e. 1984 and 2003). A proportion of these cod returns to Iceland when reaching maturity. Previously the stocks have been assessed together. From 2012 the inshore component (West Greenland, NAFO Subarea 1) was assessed separately from all offshore components (Therkildsen, 2013). From 2016 the offshore components have been assessed separately with the West Greenland offshore component being comprised in the offshore area corresponding to NAFO subdivisions 1A, 1B, 1C, 1D, and 1E. The East Greenland offshore component is comprised in the offshore area corresponding to NAFO subdivision 1F in South West Greenland and East Greenland (ICES subarea 14b). The stocks are assessed by the ICES North-Western Working Group (NWWG), see ICES (2020), and ACFM (2020) report.

West Greenland offshore div 1A-1E
Offshore catches in the fishery in 2020 amounted to a total of 103 tons. Main fishing grounds were Tovqussaq Bank, Dana Bank, Fyllas Bank, Fiskenæs Bank, and Narssalik Bank.

Inshore cod fishery
The coastal fishery took 17 926 t in 2020. The most important fishery is the pound net fishery that takes place during summer and autumn. Gillnets, jigs, and longlines constitute the rest of the total catch.

East Greenland ICES 14b + NAFO 1F
In 2019, all countries fished their quota resulting in a total catch of 15 933 t of which 15 258 was taken in ICES 14 and the remaining 675 t in NAFO 1F near Cape Farewell.

4. Salmon

The fishery for Atlantic salmon in Greenland waters started around 1960 and peaked in the early seventies at a catch of more than 2000 t a year. The fishery has been quota regulated from 1972 and the fishery has been limited to an internal use (export ban) since 1998 F In 2020, total reported catches of 32 t were reported (30 t in West Greenland).

5. Capelin

The capelin (*Mallotus villosus*) fishery in West Greenland is carried out inshore and in the spawning season only (May-July). Only part of the catches are reported, as capelin are used directly by fishermen for bait and dog food during the capelin season. Reported catches of capelin amounted to increase to 696 t in 2020 and comprise a mixture of factory landed capelin (587 t) for bait, human and animal consumption landed from small open boats mostly, and logbook reported bycatch in shrimp fisheries (9 t).

6. Redfish

Two species of redfish of commercial interest occur off West Greenland inshore and offshore, golden redfish (*Sebastes norvegicus*), and deep-sea redfish (*Sebastes mentella* Travin). Relationships to other North Atlantic redfish stocks are unclear, but the nearest stocks are the demersal and pelagic stocks in East Greenland and the Irminger Sea. Redfish catches in West Greenland are reported as redfish (unspecified, mainly bycatch), golden redfish and beaked redfish (deep-sea redfish).

Demersal redfish
In 2020, logbook reported catch and bycatch of redfish in the offshore Greenlandic fleet amounted to 165 t. Of these 67 t of unspecified redfish taken as bycatch offshore fleet (mainly shrimp trawlers) which fits well with the increasing recruitment observed in surveys.
Inshore reported factory landings of commercially sized redfish amounted to 98 t.

Pelagic redfish
The aggregations of pelagic redfish *S. mentella* found in the NAFO Convention Area likely belong to the same stock of pelagic redfish from the Irminger Sea. The stock is assessed by ICES (ICES-NWWG report 2019), and the assessment covers the pelagic redfish in ICES Divisions 5a, 5b, and 14 and in the NAFO Div. 1F, 2H and 2J. The pelagic fishery on *S. mentella* in NAFO Div. 1F started in 1999 and from 2000 - 2009, significant catches with up to 20% of total catches as in 2003 were taken in NAFO Divisions 1F outside Greenland's EEZ and 2J. In 2013, 3113 t were taken in the NAFO 1F, but since then no catches have been reported by the Greenlandic fleet in 1F.

7. Grenadiers

There are two species of grenadiers of commercial interest in Greenland, roundnose grenadier (*Coryphaenoides rupestris*) and roughead grenadier (*Macrourus berglax)*. Grenadiers are mainly taken as a bycatch in the Greenland halibut fishery inshore and offshore. In 2020, 3 t of roughhead grenadier were landed in factories in Uummannaq.

8. Snow Crab

Snow crab (*Chionoecetes opilio*) is distributed along the west coast of Greenland from division 1A to 1F. The fishery is conducted only by Greenland vessels. From 2005-2020, the crab resource has been managed in 6 areas (from North to South: Upernavik, Uummannaq-Disko Bay, Sisimiut, Maniitsoq-Kangaamiut, Nuuk-Paamiut, and Narsaq-Qaqortoq). From 2020, the management areas of Sisimiut and Nuuk – Paamiut were furthermore divided in inshore as well as an offshore part, separated by the 3-nautical mile line. The fishing fleet is dominated by small vessels (less than 75 GRT), which have exclusive rights for fishing inshore as well as offshore. No large vessels (greater than 75 GRT), which only was allowed to fish offshore, have been in the fishery since 2005. Total allowable catch (TAC) restrictions have been imposed since 1995 but have only limited the catch in some years and management areas since 2004.

The number of vessels with licenses to participate in the snow crab fishery increased from 1999 to 2002 from approximately 120 vessels to 392 vessels. Since then, the number of both of vessels have decreased substantially as the abundance of the resource has also declined. Since 2008, approximately less than 40 vessels have been active in the snow crab fishery.

The total catch in NAFO Subarea 1 peaked in 2001 with approximately 15.100 t. From 2001 to 2011 total landings decreased markedly to 2000 t. In the subsequent years total annual catches fluctuated at around this level but increased again from 2017 and amounted approximately 3000 tons in 2020 (table 1). Most of the landings are based on the fishery in the management areas of Nuuk-Paamiut, Disko Bay-Uummannaq, and Sisimiut.

9. Wolffish

There are three species of wolffish in subarea 1, Atlantic wolffish (*Anarhichas lupus*), spotted wolffish (*Anarhichas minor*), and Northern wolffish (*Anarhichas denticulatus*). Only the two first are of commercial interest. In the past, these stocks have mainly been taken as a bycatch in the offshore fisheries targeting Cod, Greenland halibut, and shrimp, but occasionally are directly targeted. In 2020, 246 t of wolffish were caught in NAFO subarea 1. Of these 22 t were reported as spotted wolffish and the remaining 212 t reported at wolffishes (CAT). 212 t (mainly spotted wolffish) were landed to factories by open boats and smaller vessels from the fjords and 20 t were reported in logbooks from the offshore fleet.

10. Scallops

Total catches of Icelandic scallops (*Chlamys islandica*) in NAFO Subarea 1 increased to 541 t in 2020. All catches are taken in inshore areas in Div. 1A, 1B, 1C, and 1D. New fishing grounds near Sisimiut (1B) were found in 2003, and quotas for two new areas were introduced in 2004. Only one vessel is currently involved in this fishery.

11. Lumpfish

Total landings of lumpfish (*Cycloperus lumpus*) in NAFO Subarea 1 increased from 1.200 t in 2000 to almost 9.000 t in 2003 and remained at a high level until 2011 where catches reached 11.443 t. Catches are taken in inshore areas in Div. 1A, 1B, 1C, 1D, 1E, and 1F, with the majority being caught in 1D. The fishery is conducted over a short time period of one to two months, and over a vast coastline from 59° N to 72° N. Total landings of lumpfish roe in 2020 was converted from roe to 8985 t whole weight.

12. Greenland cod

Greenland cod (*Gadus ogac*) is mostly bycatch in other fisheries. Greenland cod is mostly used for human consumption as dried or frozen fish for the local Greenlandic market. Total reported landings in 2020 amounted to 56 t of which the majority was landed to factories inshore in division 1B.

13. Arctic char

Arctic char (*Salvinus alpinus*) is taken in gillnets when returning to natal rivers during their annual feeding migrations in coastal areas. Factory landings were 10 t in 2020, and the production is mainly for the Greenlandic market. There is no reporting required for private fisheries, which presumably is considerably larger.

14. Atlantic halibut

Catches of Atlantic halibut (*Hippoglossus hippoglossus*) peaked at the beginning of the 1960s and the mid 1980s at a level of 600 to 1000 t per year. In 2020, 15 t were reported of which 13 t were landed in factories.

15. Polar cod / Arctic cod

Reported catches of polar cod (*Boreagadus saida*) is mainly taken as bycatch in the shrimp fishery and directed fishery from small boats near glaciers and used directly for bait in the longline fishery targeting Greenland halibut. In 2020, 49 t were reported of which 46 were landed to factories mainly from small boats.

16. Fish not specified

Fish not specified (FAO: MZZ, BYC) are logbook reported bycatch of mixed fish. The bycatch was mainly reported from shrimp trawlers indicating that it is mainly small fish of noncommercial interest that are not sorted by the shrimp trawl sorting grids (polar cod, capelin, and other species with small body size). In total, 448 t of non-specified fish were reported in 2020.

17. Large sharks

Large sharks (FAO: SHX/GSK) are without doubt exclusively Greenland sharks *somniosus microcephalus*. In 2019, 28 t of large sharks were reported. 28 t from offshore trawlers and 1 t taken as bycatch in the Uummannaq fjord, indicating that they were taken in fisheries targeting Greenland halibut and cod. Shrimp-trawls are equipped with sorting grids, and no sharks were reported via shrimp logbooks. From the East Greenland area, 44 t were reported by Greenland vessels and 3 t from forging vessels.

18. Sea cucumber

A trial fishery for orange-footed sea cucumber (*Cucumaria frondosa*) (FAO: CUX) was initiated in 2019, and total catches amounted to 106 t. In 2020, only 2 t were reported.

B. Special Research Studies

a. Hydrography Studies

Hydrographic conditions are yearly monitored at 10 hydrographic standard sections and stations in June/July across the continental shelf off West Greenland. In 2020, the 10 standard hydrographic sections were monitored. Data are uploaded to the ICES database (Mortensen, 2021).

b. Trawl Surveys in Greenland

<u>The Greenland shrimp and fish survey in NAFO SA 1 and ICES 14b:</u>

Since 1988, an annual buffered stratified random trawl survey SFW (Shrimp and Fish West Greenland) has been conducted by the GINR on the West Greenlandic shelf between 59º15'N and 72º30'N from the 3-mile limit down to the 600 m and the Disko Bay. The main purpose of the survey is to evaluate the biomass and abundance of the Northern shrimp (*Pandalus borealis*), but since 1992 data on fish species have been included. In 2007 this survey was expanded to include the East Greenland shelf to Dohrn Bank at 67ºN. The survey was conducted with the chartered commercial vessel Sjurdarberg in 2018 and Helga Maria, in 2019 and 2020.

<u>Greenland halibut trawl survey in NAFO 1CD:</u>

A Greenland offshore trawl survey for Greenland halibut was initiated in 1997. The survey is a continuing of the joint Japanese/Greenland survey carried out in the period 1987-95. From 1997 the survey has covered NAFO Div. 1C and 1D between the 3 nm line and the midline against Canada at depths between 400 and 1500 m. The survey was conducted with the chartered commercial vessel Helga Maria in 2019 (Nogueira and Barcia-Estévez, 2020). No survey was conducted in 2020 because no vessel was available.

Greenland halibut trawl survey in NAFO1AB offshore:
In 2001 the survey area was expanded to include NAFO Div. 1B-1A (to 74°N), and in 2004 a survey was conducted in the northern part of the Baffin Bay (73°N-77°N) (Div. 1A) at depths down to 1500 m. In 2010 was conducted a survey in Div. 1A to 75°30' where 93 successful hauls were made. There has been no deep-sea survey in the area since then.
Greenland halibut trawl survey in ICES 14b offshore:
In 1998, GINR initiated a bottom trawl survey in ICES 14b with R/V Paamiut, which has been rigged for deep-sea trawling. The survey is primarily aimed at Greenland halibut (*Reinhardtius hippoglossoides*) and redfish (*Sebastes spp.)* and covered various areas between Cape Farewell and 72N at depths down to 1500 m. No survey since 2017 has been carried out.

EU-Germany survey in ICES 14b and NAFO 1:
An annual stratified random trawl survey has been conducted by Germany since 1982 in West and East Greenland from 67°N in West Greenland to 67°N in East Greenland, covering the depth zone between 0-400 m. The main purpose of the survey is to evaluate the biomass and abundance of the Atlantic cod. The survey time series shows two abundance peaks in 1987-1989 caused by the 1984 and 1985 YC and from 2005 and onwards caused by the 2003 and younger Year classes. The survey was continued with the German vessel Walther Herwing III in 2020.

Nuuk Fjord trawl survey in NAFO 1D inshore:
In 2015, a trawl survey was initiated in the Nuuk fjord with the GINR research vessel RV Sanna. The purpose is to evaluate the local stock of Greenland halibut, shrimp and cod. The survey continued without interruption since 2017.

c) Gillnet surveys

Cod recruitment gillnet survey
A survey using gangs of gill nets with different mesh-sizes has been developed and used since 1985 with the objective of assessing the abundance of age 2 and age 3 cod in the inshore areas of NAFO subdivisions 1B and 1D (historically NAFO subdivision 1F has also been surveyed).

Greenland halibut gillnet surveys in NAFO 1A inshore:
In 2001, the longline survey in the Disko Bay was changed to a gillnet survey. The survey normally covers four transects, and each gillnet set is compiled of 4 different nets with different mesh size (46, 55, 60, 70, and 90 mm halfmesh). From 2013 to 2016, the surveys in Uummannaq and Upernavik gradually changed from longline surveys to gillnet surveys.

d) Snow crab surveys

The annual monitoring program (trap survey) was initiated in 1997 in Disko Bay (Div. 1A) and Sisimiut (Div. 1B). Since 2001, the offshore trap survey has been conducted, yearly, in more southern areas in West Greenland (Div. 1C and 1D) but has been canceled since 2010. The trap survey in Disko Bay has been canceled since 2018 and only the management area of Sisimiut is monitored on an annually basis. Large and small meshed conical traps are used. Snow crab are enumerated by sex, carapace width and carapace condition. The chelae height is measured in males and the abdomen width in females, respectively for maturity determination. Ovary contents, clutch weight, sperm load, and egg development stage in females are determined, and females were sampled in relation fecundity studies. The objective of both monitoring programs is to assess the abundance of snow crab in inshore and offshore waters of Greenland. Results from this survey are presented in the advising

documents of the GINR.

A map of GINR research vessel stations for 2020 is given in fig 1.

e) Marine mammals

For yearly summaries of studies of marine mammals in Greenland, see the annual reports of the North Atlantic Marine Mammal Commission (NAMMCO).

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Table 1. Estimated catches (t) at West Greenland (NAFO Subarea 1). Information based on logbooks information haul by haul provided by the Greenland authorities (Greenland Office of Fisheries Licensed, GLFK) and factory landings.

NAFO SUBAREA		**Div. 1ABCDEF**							**Other nations**	**Greenland**
Species	Code	2014	2015	2016	2017	2018	2019	2020	2020	2020
American Plaice	PLA	nd	1	0	0	0	0	0	0	0
Arctic char	ACH	21	17	11	18	12	10	10	0	10
Atlantic halibut	HAL	14	13	9	18	15	10	15	0	15
Atlantic salmon	SAL	58	61	25	28	40	29	30	0	30
Atlantic cod	COD	20280	33981	40279	36805	28296	21568	18704	0	18704
Capelin	CAP	346	338	377	389	265	760	596	0	596
Snow crab	CRQ	2157	2021	2190	2434	2857	2967	2,660	0	2,660
Greenland cod	GRC	35	22	19	7	19	41	56	0	56
Greenland halibut	GHL	31513	39709	46276	40738	43311	46600	45,922	5,107	40,815
Roughhead Grenadier	RHG	9	7	0	0	6	2	3	0	3
Roundnose Grenadier	RNG	6	29	78	29	24	34	7	6	1
Haddoc	HAD	1	11	0	1	0	0	0	0	0
Herring	HER				1	0	0	0	0	0
Lumpfish	LUM	8127	7089	5030	7483	6765	7600	8,985	0	8,985
Polar cod	POC	158	114	37	22	27	19	49	0	46
Arctic cod	ATG	146	3	2	0	0	0	0	0	0
Redfish (unspecified - bycatch mainly)	RED	16	26	18	22	1	0	165	0	165
deep-sea redfish	REB	0	2	15	30	15	91	7	7	0
Redfish golden	REG	156	244	132	189	178	39	20	20	0
Saithe	POK	0	0	0	0	0	0	0	0	0
Scallops	ISC	633	799	735	526	707	470	541	0	541
Sea cucumber	CUX						106	2	0	2
Greenland Shark	GSK	nd	63	16	65	100	28	4	3	1
Dogfish sharks	DGX				1	2	0	0	0	0
Shrimp (P.boreallis)	PRA	88765	72254	84356	89369	93189	101977	109529	2774	106,775
Shrimp (P.montagui)	AES	1357	2027	3176	664	133	29	29	0	29
Skate	SKA	1	6	22	15	22	4	7	1	6
Wolffishes	CAT	897	400	188	240	261	195	246	20	226
Tusk	USK	-	6	17	32	56	18	0	0	0
Fish not specified	MZZ	758	610	555	839	608	745	448	2	448
Sum total		149.936	156.538	179.274	176.500	176.803	179.146	169,333	7,940	161,412

NOTE: Catch figures are provisional.

Table 2. Greenland Catches (tons) in NAFO Area in 2020 by species and Division, based on the provisional STATLANT 21 A.

Code	Scientific name	Common name	1A	1B	1C	1D	1E	1F	1(NK)	Total 1
CAB	*Anarhichas denticulatus*	Northern wolffish	-	-	-	-	-	1.6	-	2
CAP	*Mallotus villosus*	Capelin	391.5	154.3	25.9	11.7	6.3	9.4	-	599
CAS	*Anarhichas minor*	Spotted wolffish	-	-	-	-	-	8.4	-	8
CAT	*Anarhichas spp*	Wolffishes	30.1	79.6	82.8	18.5	2.9	14.8	-	229
COD	*Gadus morhua*	Atlantic cod	1206.9	2326.7	6590.5	5394.1	434.9	2792.3	2.6	18 748
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	31669.1	781.8	2296.2	4542.0	152.8	240.3	694.6	40 377
GSK	*Somniosus microcephalus*	Greenland shark	29.0	1.1	10.2	14.9	-	-	-	55
HAL	*Hippoglossus hippoglossus*	Atlantic halibut	-	0.2	9.0	1.4	-	0.8	-	11
PRA	*Pandalus borealis*	Northern prawn	32058.3	60019.1	9231.0	7334.8	1264.5	188.4	9.4	110 105
RED	*Sebastes spp*	Atlantic redfishes nei	29.4	71.4	40.4	44.3	22.6	0.8	-	209
RJR	*Raja radiata*	Starry ray	1.2	-	-	-	-	-	-	1
RNG	*Coryphaenoides rupestris*	Roundnose grenadier	3.3	0.3	1.7	4.8	-	-	-	10
SKA	*Raja spp*	Raja rays nei	35.4	6.6	-	1.2	-	-	-	43

Table 3. Samples and individuals sampled at the commercial fleet by species, gear, and NAFO Division in 2020.

Code	Species	Common name	Div.	Gear	Sample Size	Numb.ind
COD	*Gadus morhua*	*Atlantic cod*	1A	Gillnet	2	202
COD	*Gadus morhua*	*Atlantic cod*	1A	Longline	1	45
COD	*Gadus morhua*	*Atlantic cod*	1C	rods	5	663
COD	*Gadus morhua*	*Atlantic cod*	1C	Pound nets	15	3842
COD	*Gadus morhua*	*Atlantic cod*	1D	rods	2	458
COD	*Gadus morhua*	*Atlantic cod*	1D	Longline	9	1797
COD	*Gadus morhua*	*Atlantic cod*	1D	Pound nets	8	2237
COD	*Gadus morhua*	*Atlantic cod*	1F	Pound nets	8	948
COD	*Gadus morhua*	*Atlantic cod*	1F	Trawl	10	980
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1A	Gillnet	51	7420
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1A	Longline	97	11611
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1A	Trawl	40	8551
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1B	Trawl	2	234
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1C	Longline	1	293
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1C	Trawl	7	1088
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1D	Longline	3	379
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1D	Trawl	23	2957
PRA	*Pandalus borealis*	Northern Shrimp	1A -	Trawl	30	8342

Table 4. Biological samples collected in NAFO by species and Division in 2020.

Code	Species	NAFOICES	Otolith	Maturity	DNA	Stomack
COD	*Gadus morhua*	1C	262	-	-	-
COD	*Gadus morhua*	1D	213	-	-	-
COD	*Gadus morhua*	1F	315	-	56	-
GHL	*Reinhardtius hippoglossoides*	1A	277	169	171	-
GHL	*Reinhardtius hippoglossoides*	1C	113	113	113	-
GHL	*Reinhardtius hippoglossoides*	1D	197	145	146	-
GHL	*Reinhardtius hippoglossoides*	1E	50	-	-	-
GHL	*Reinhardtius hippoglossoides*	1F	51	76	76	-
HER	*Clupea harengus*	1D	30	58	-	31
HER	*Clupea harengus*	1F	104	-	-	-

Table 5. Length distribution of Greenland halibut samples, from the 1AB offshore catches.

Length (cm)	3rd Q.	4th Q.
24		2
25		3
26		3
27		5
28	1	6
29	1	6
30	1	12
31	5	11
32	2	18
33	3	28
34	2	22
35	5	35
36	13	41
37	10	31
38	17	61
39	25	77
40	27	118
41	26	109
42	28	145
43	48	203
44	50	268
45	61	246
46	62	293
47	75	333
48	82	343
49	67	373
50	82	405
51	63	390
52	67	392
53	63	375
54	50	405
55	55	434
56	49	391
57	42	318
58	43	285
59	35	247
60	23	198

Length (cm)	3rd Q.	4th Q.
61	23	116
62	23	116
63	25	105
64	19	83
65	18	54
66	9	41
67	15	45
68	12	26
69	5	27
70	8	27
71	8	23
72	6	13
73	2	8
74	2	12
75	2	6
76	2	9
77	1	18
78	3	6
79	1	4
80		6
81		4
82		3
83		1
84		9
85	1	4
86		3
87		2
88	1	
89	1	
90	0	2
91	1	2
92		2
93		3
94		1
95	1	
Ind Samples	1372	7413
Samples	10	32
Mean L (cm)	51.4	51.9

Table 6. Length distribution of Greenland halibut samples, from the 1CD offshore catches.

Length (cm)	1stQ.	2nd Q.
30		
34		1
35		
36		1
37		2
38		4
39		2
40		8
41		8
42	1	14
43	2	22
44	2	20
45	1	47
46	8	63
47	3	64
48	15	90
49	5	126
50	8	147
51	15	184
52	16	168
53	21	179
54	12	124
55	10	137
56	11	107
57	4	83
58	2	81
59	5	61
60		58
61	1	67
62	1	54
63	1	54
64		35
65		43
66		31
67		33

Length (cm)	1stQ.	2nd Q.	3rd Q.	4th Q.
68	1	17	9	5
69		17	2	7
70		17	5	7
71		10	1	1
72		7		6
73		5		1
74		5	1	7
75		10	2	5
76		7	3	3
77		8		2
78		4	1	5
79		4	1	4
80		5		2
81		4	1	2
82	1	4		5
83		3	1	2
84		3	1	1
85				2
86		5	5	
87				1
88		5	2	
89		2	4	
90		3		
91		2	1	2
92	1	1	1	
93		1		
95		2		
97			2	
98			1	
104		1		
Ind Samples	147	2270	481	1147
Samples	1	15	3	11
Mean L (cm)	52.6	55.2	56.7	52.9

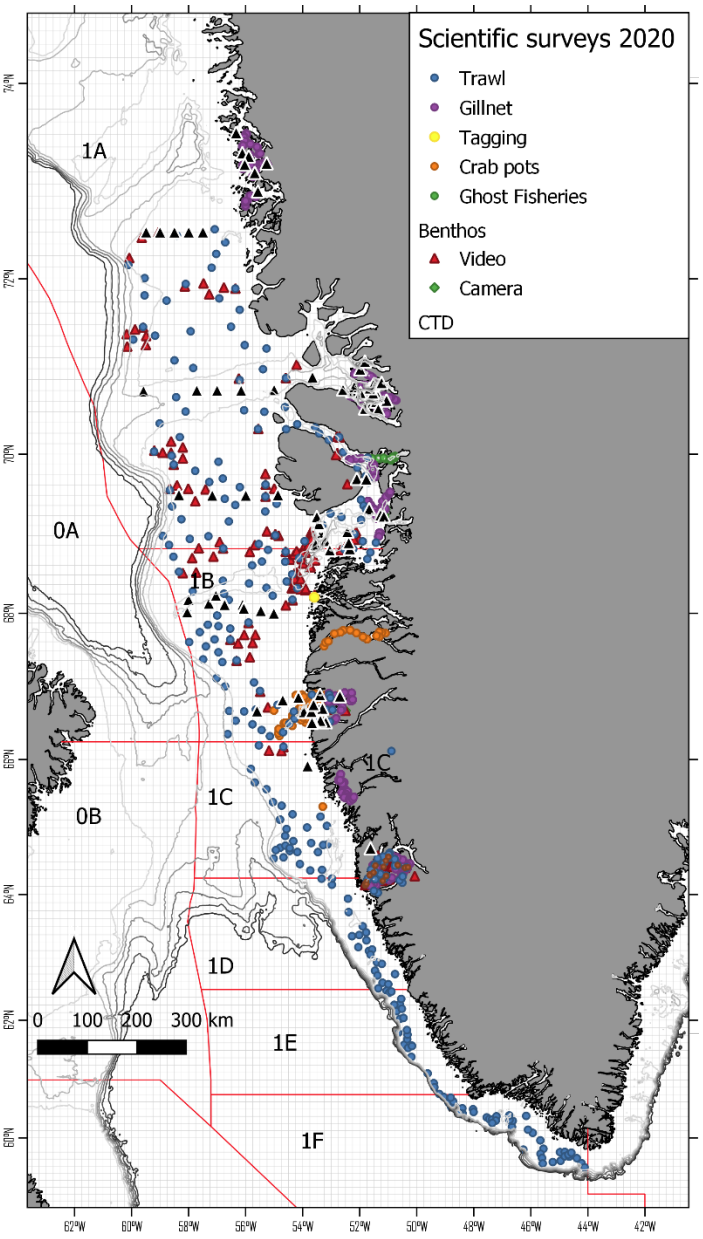

Figure 1. Distribution of GINR stations from the chartered CV Helga Maria, RV Sanna, and small boats operating out of Nuuk carried out in 2019. Stations from hydrography samples taken onboard the Royal Danish Navy vessel Hdms Knud Rasmussen are not included.