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Denmark/Greenland Research Report for 2021

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This report presents information on catch statistics from the commercial Greenland fishery in 2021 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 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 Greenland halibut is also presented. Length distribution of the Greenland halibut samples from the catches offshore are in Tables 2. A total of 318 length samples were taken, and 59 358 individuals, including Greenland halibut, cod, roundnose grenadier, skate and shrimp, were measured, in NAFO Div. 1A to 1F. A total of 966 otoliths were collected from Greenland halibut and Atlantic cod Div. 1A to 1F and 551 DNA samples in 1B to 1F were collected from cod (Tables 3 and 4). Length distribution from Greenland halibut in 1AB and 1CD are presented in Table 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 2022, 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 2021, Greenlandic commercial vessels were not engaged in fishery in other NAFO subareas than Subarea 1.

Provisional statistics for the fisheries from 2018 to 2021 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 located 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 at 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 157000 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.

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 2021, total catches of Greenland halibut (*Reinhardtius hippoglossoides*) in NAFO Subarea 1 Increased to 46 999t, of which 17 990t were taken offshore by large vessels, and 29010 t were landed from small boats operating inshore in the fjords from South Greenland to Qaanaaq.
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 298t (8219 t in division 1AB + 5079 t in division 1CD) and other nations caught 4692 t (653 t in division 1AB + 4039 t in division 1CD). Inshore landings in Div. 1A were distributed from the Qaanaaq fjord (183t), the fjords near Upernavik (8480 t), the Uummannaq fjord (9609 t) and the Disko Bay (9028 t). In the fjords south of West Greenland (1B-F) catches increased 1 709t of which 891 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 (2022), and ACFM (2022) report.

West Greenland offshore div 1A-1E
Offshore catches in the fishery in 2021 amounted to a total of 96 tons. Main fishing grounds were Tovqussaq Bank, Dana Bank, Fyllas Bank, Fiskenæs Bank, and Narssalik Bank.

Inshore cod fishery
The coastal fishery took 13 580t in 2021. 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 2021, all countries fished their quota resulting in a total catch of 25 829 t of which 25 637 was taken in ICES 14 and the remaining 192 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 2,000t 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 2021, total catches of 41 t were reported (40 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 357t in 2021 and comprise a mixture of factory landed capelin (326 t) for bait, human and animal consumption landed from small open boats mostly, and logbook reported bycatch in other fisheries.

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*). 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 2021, logbook reported catch and bycatch of redfish in the Greenlandic fleet targeting shrimp increased to 236 t. which fits well with the increasing recruitment observed in surveys. Inshore reported factory landings of commercially sized redfish amounted to 177t. Golden redfish (REG) landed to factories amounted to 12 t and 3 tonnes were reported as bycatch offshore from Greenland vessels.

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 EEZ and 2J. In 2013, 3113 t were taken in the NAFO 1F, but since then no catches have been reported from 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 2021, 13 t of roundnose grenadier were reported from offshore vessels targeting Greenland halibut. Less than 1 t were reported as bycatch offshore or landed to factories inshore.

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 2,000 t. In the subsequent years total annual catches fluctuated at around this level, but increased again from 2017 and amounted approximately 3000 tons in 2021 (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 2021, 238 t of wolffish were caught in NAFO subarea 1. In the factory landings 20t were reported as Spotted wolffish and 3t as Atlantic wolffish and the rest as unspecified wolffish. Besides these 5t were registered as Northern Wolffish.

10. Scallops

Total catches of Icelandic scallops (*Chlamys islandica*) in NAFO Subarea 1 increased to 569 t in 2021. 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 (for roe) in 2021 was converted from roe to 4547 t whole weight.

12. Greenland cod

Greenland cod (*Gadus macrocephalus/ Gadus ogac*) is mostly bycatch in other fisheries or direct fishery in fjords where it is more abundant. Greenland cod is mostly used for human consumption as dried or frozen fish for the local Greenlandic market. Total reported landings in 2021 amounted to 59 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 2021, 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. With the implementation of sorting grids in the shrimp fishery, bycatch of Atlantic Halibut is rare offshore. In 2021, few hundred kg were reported in logbooks and 12 t were landed in

factories. There is no reporting required for Atlantic halibut landed and consumed locally.

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 2021, 87 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 bodysize). In total, 614 t of non-specified fish were reported.

17. Large sharks

Large sharks (FAO: SHX/GSK) are without doubt exclusively Greenland sharks *somniosus microcephalus*. In 2021, 48 t of large sharks were reported. 47 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.

18. Seacucumber

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 and no fishery occurred in 2021 due to lack of permits.

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. 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 RV Paamiut from 1988 to 2017 and with the chartered commercial vessel Sjurdarberg in 2018 and Helga Maria, in 2019 and 2020. No survey was performed in 2021.

Greenland halibut trawl survey in NAFO 1CD:
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 was conducted with RV Paamiut and 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). The survey was not conducted years 2020 and 2021.

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, rigged for deep-sea trawling down to 1400m depth. 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^{o}N in West Greenland to 67^{o}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 is conducted with the German vessel Walther Herwing III.

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 and has already been completed for 2022.

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 (previously NAFO subdivision 1F was also 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 2021 is given in fig 1.

e) GINR Research vessels

The Greenland institute of Natural Resources operates 2 larger multipurpose research vessels.

R/V Tarajoq - OYLD

RV Tarajoq is operational in 2022. Tarajoq was commissioned in 2021. The vessel is 61m long and 16m . BRT is 2 841t. Speed up to 14 knots and pull +50t. Tarajoq has room for 12 crew members and 20 scientists. Tarajoq is equipped for bottom trawling, pelagic trawling, with A-frame, scientific Simrad EK80 echosounders and a deep water multibeam and sub-bottom profiler and has various labs and a hydrographic hangar.

R/V Sanna - OZEK

RV Sanna was commissioned in 2012 and mainly operates inshore. Sanna is 32m long and 10 m wide. BRT is 458t. Speed is up to 11 knots. Sanna is capable of both bottom and pelagic trawling and is equipped with A-frame, scientific Simrad EK80 echosounders and hull-mounted multibeam echo sounder Reson SeaBat T50-R with extended range projector to achieve 1000 m water depth range.

Besides these larger vessels GINR operates various smaller vessels and boats.

f) 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	2015	2016	2017	2018	2019	2020	2021	2021	2021
American Plaice	PLA	1	0	0	0	0	0	0	0	0
Arctic char	ACH	17	11	18	12	10	10	10	0	10
Atlantic halibut	HAL	13	9	18	15	10	15	12	0	12
Atlantic salmon	SAL	61	25	28	40	29	32	40	0	40
Atlantic cod	COD	33981	40279	36805	28296	21568	18704	13868	161	13707
Capelin	CAP	338	377	389	265	760	596	357	3	354
Snow crab	CRQ	2088	2,126	2,501	2,862	3,015	2,660	3,056	0	3,056
Greenland cod	GRC	22	19	7	19	41	56	59	0	59
Greenland halibut	GHL	39,709	46,276	40,738	43,311	46,600	45,922	46,999	4,692	42,307
Roughhead Grenadier	RHG	7	0	0	6	2	3	0	0	0
Roundnose Grenadier	RNG	29	78	29	24	34	7	13	8	5
Haddoc	HAD	11	0	1	0	0	0	0	0	0
Herring	HER			1	0	0	0	0	0	0
Lumpfish	LUM	7,089	5,030	7,483	6,765	7,600	8,985	4,547	0	4,547
Polar cod	POC	114	37	22	27	19	49	87	0	87
Arctic cod	ATG	3	2	0	0	0	0	0	0	0
Redfish (unspecified - bycatch mainly)	RED	26	18	22	1	0	165	249	13	236
deep-sea redfish	REB	2	15	30	15	91	7	0	0	0
Redfish golden	REG	244	132	189	178	39	20	7	4	3
Saithe	POK	0	0	0	0	0	0	1	0	1
Scallops	ISC	799	735	526	707	470	541	569	0	569
Sea cucumber	CUX			0	0	106	2	0	0	0
Greenland Shark	GSK	63	16	65	100	28	4	48	1	46
Dogfish sharks	DGX			1	2	0	0	1	1	0
Shrimp (P.boreallis)	PRA	68875	80127	85829	93078	97733	109529	106476	2581	103,895
Shrimp (P.montagui)	AES	2024	3180	672	133	29	29	108	0	108
Skate	SKA	6	22	15	22	4	7	11	0	11
Wolffishes	CAT	400	188	240	261	195	246	238	8	230
Tusk	USK	6	17	32	56	18	0	0	0	0
Fish not specified	MZZ	610	555	839	608	745	448	614	14	600
Sum total		156,538	179,274	176,500	176,803	179,146	188,037	177,370	7,486	169,883

NOTE: Catch figures are provisional.

Table 2. Greenland Catches (tons) in NAFO Area in 2021 by species and Division, based on the STATLANT 21 A.

Code	Species	Common name	1A	1B	1C	1D	1E	1F	1NK	Total
CAP	*Mallotus villosus*	Capelin	185	114	0	7	6	15	-	327
CAT	*Anarhichas spp*	Wolffishes	45	70	103	11	6	18	-	253
COD	*Atlantic cod*	Cod	1041	2130	5200	3083	194	629	1771	14048
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	34770	431	2181	3737	254	329	-	41702
GRC	*Gadus ogac*	Greenland cod	-	59	-	-	-	-	-	59
GSK	*Somniosus microcephalus*	Greenland shark	42	679	15	36	-	-	-	772
HAL	*Hippoglossus hippoglossus*	Atlantic halibut	-	0	11	1	-	-	-	12
PRA	*Pandalus borealis*	Northern prawn	38421	51351	8025	6730	2799	16	-	107342
RED	*Sebastes spp*	Atlantic redfishes	35	195	19	64	18	26	-	357
SKA	*Raja spp*	Rays	13	0	2	1	-	-	-	16

Table 3. Samples and individuals sampled at the commercial fleet by species, gear, and NAFO Division in 2021.

Code	Species	Common name	Div.	Gear	Numb.ind	Sample Size
COD	*Atlantic cod*	Cod	1A	Gillnet	217	3
COD	*Atlantic cod*	Cod	1A	Longline	8	1
COD	*Atlantic cod*	Cod	1B	Pound nets	1746	8
COD	*Atlantic cod*	Cod	1C	Longline	141	1
COD	*Atlantic cod*	Cod	1C	Pound nets	1817	7
COD	*Atlantic cod*	Cod	1D	Fishing rods	930	5
COD	*Atlantic cod*	Cod	1D	Longline	2952	17
COD	*Atlantic cod*	Cod	1D	Pound nets	2709	14
COD	*Atlantic cod*	Cod	1E	Fishing rods	80	1
COD	*Atlantic cod*	Cod	1F	Fishing rods	313	2
COD	*Atlantic cod*	Cod	1F	Longline	20	2
COD	*Atlantic cod*	Cod	1F	Pound nets	375	3
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1A	Gillnet	5598	25
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1A	Longline	14261	79
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1A	Trawl	10598	68
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1B	Trawl	168	1
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1C	Trawl	2412	16
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1D	Longline	1929	9
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1D	Trawl	1658	11
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1E	Longline	441	3
GHL	*Reinhardtius hippoglossoides*	Greenland halibut	1F	Longline	804	4
RNG	*Coryphaenoides rupestris*	Roundnose grenadier	1A	Trawl	159	1
RNG	*Coryphaenoides rupestris*	Roundnose grenadier	1C	Trawl	160	1
SKA	*Raja spp.*	Skate	1A	Trawl	153	1
PRA	*Pandalus borealis*	Northern Shrimp	1A-D	Trawl	9709	35
TOTAL					59358	318

Table 4. Biological samples collected in NAFO by species and Division in 2021:

Code	Species	Division	Otolith	Maturity	DNA
COD	Gadus morhua	1B	203	17	202
COD	Gadus morhua	1C	151	-	151
COD	Gadus morhua	1D	55	-	55
COD	Gadus morhua	1F	133	-	133
GHL	Reinhardtius hippoglossoides	1A	68	-	-
GHL	Reinhardtius hippoglossoides	1B	30	-	-
GHL	Reinhardtius hippoglossoides	1C	199	-	-
GHL	Reinhardtius hippoglossoides	1D	66	-	-
GHL	Reinhardtius hippoglossoides	1F	61	-	-
TOTAL			966		541

Table 5. Length distribution of Greenland halibut samples in 1AB offshore:

Length	3rd Q.	4th Q.
16	1	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	2
22	0	2
23	0	7
24	2	6
25	1	9
26	7	10
27	8	8
28	8	10
29	9	10
30	17	12
31	12	17
32	17	14
33	15	24
34	22	28
35	26	31
36	31	38
37	34	48
38	42	48
39	53	71
40	58	83
41	88	131
42	98	164
43	154	204
44	156	233
45	186	272
46	227	265
47	232	251
48	228	286
49	244	300
50	239	277
51	252	297
52	229	302
53	225	266
54	227	278
55	195	249
56	189	206
57	171	181
58	179	175
59	144	161
60	140	169

Length	3rd Q.	4th Q.
61	123	120
62	102	115
63	85	85
64	82	76
65	56	63
66	61	57
67	38	32
68	34	27
69	24	26
70	15	20
71	9	21
72	13	15
73	5	9
74	3	8
75	6	9
76	4	10
77	7	4
78	9	6
79	4	5
80	4	5
81	7	4
82	7	3
83	2	5
84	6	4
85	5	2
86	3	3
87	0	1
88	0	0
89	1	0
90	1	0
91	0	0
92	1	1
93	0	0
94	0	1
95	0	0
96	0	0
97	0	0
98	0	0
99	0	0
100	0	0
101	0	1
Ind Samples	4883	5883
Samples	31	38
Mean L (cm)	51.8	51.1

Table 6. Length distribution of Greenland halibut samples in 1CD offshore:

Length	1rd Q.	2th Q.	3rd Q.	4th Q.
17	0	0	0	1
19	0	0	0	1
20	0	0	0	4
21	0	0	0	4
23	0	0	0	3
24	0	0	0	3
25	0	0	0	4
26	0	0	0	4
27	0	0	0	10
28	0	0	0	15
29	0	0	0	8
30	0	0	0	4
31	0	0	0	13
32	0	0	0	8
33	0	0	0	14
34	0	0	0	16
35	0	1	0	23
36	0	0	0	19
37	0	0	0	19
38	0	0	1	19
39	0	2	1	31
40	0	1	0	27
41	0	2	9	23
42	0	2	15	23
43	1	6	17	44
44	0	10	20	42
45	2	18	22	46
46	3	19	25	45
47	1	28	30	64
48	3	38	30	73
49	2	46	32	83
50	1	52	37	104
51	9	53	34	104
52	13	82	39	115
53	10	74	41	119
54	11	87	39	128
55	10	83	35	128
56	6	72	27	108
57	5	59	23	101
58	9	50	19	103
59	5	25	22	79
60	4	32	13	69

Length	1rd Q.	2th Q.	3rd Q.	4th Q.
61	6	20	10	68
62	3	24	6	50
63	7	24	5	43
64	4	25	7	35
65	5	14	6	30
66	1	11	5	29
67	1	6	3	24
68	5	12	5	20
69	2	8	3	21
70	0	5	0	14
71	1	4	0	16
72	1	0	0	11
73	2	6	0	7
74	0	8	0	3
75	1	3	0	9
76	0	5	0	2
77	0	2	0	6
78	1	2	3	3
79	0	0	5	3
80	0	3	6	1
81	0	3	0	6
82	0	1	2	3
83	0	1	1	1
84	1	2	0	3
85	1	0	0	0
87	1	1	0	0
88	1	6	0	1
89	0	2	0	0
90	2	1	1	1
91	1	0	1	1
92	0	3	1	0
93	0	1	0	1
94	1	2	0	1
95	1	0	0	0
96	1	0	0	0
97	1	0	0	0
98	1	3	0	0
99	0	1	0	0
100	0	1	0	1
101	0	1	0	0
102	0	1	0	0
103	2	0	0	0
106	1	0	0	0
Ind Samples	150	1054	601	2265
Samples	4	7	1	15
Mean L (cm)	60.9	56.3	53.1	52.9

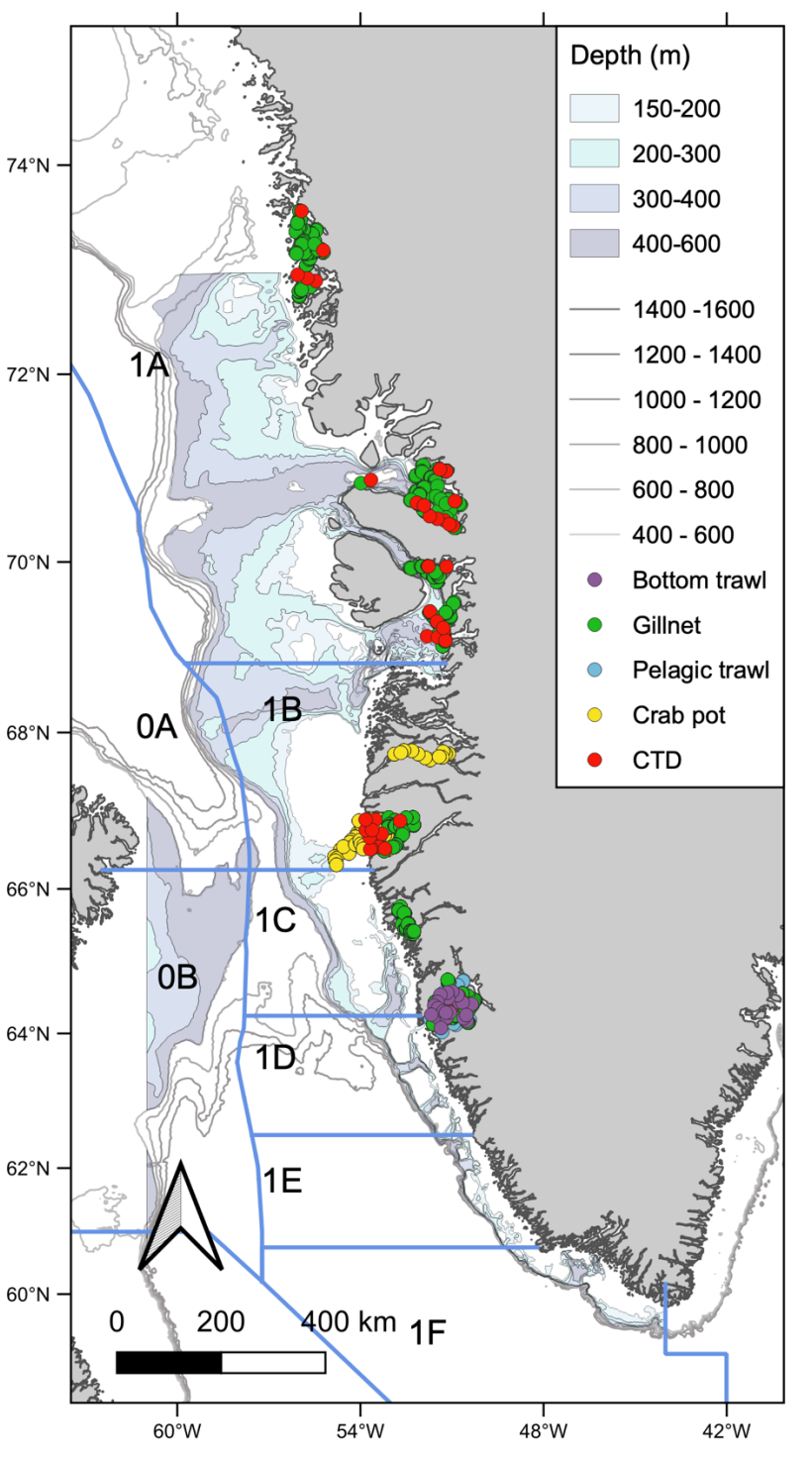

Figure 1. Distribution of GINR stations from GINR vessels and small boats operating out of Nuuk. Only RV Sanna was operational in 2021. Stations from hydrography samples taken onboard the Royal Danish Navy vessel Hdms Knud Rasmussen are not included. Stations from chartered research vessels surveying Capelin at east Greenland is also not available in the map.