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Denmark/Greenland Research Report for 2019

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This report presents information on catch statistics from the commercial Greenland fishery in 2019 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 different species is also presented. A total of 11 621 length samples were taken, and 73 396 individuals, including Greenland halibut, cod lumpfish, and redfish were measured, in NAFO Div. 1-F. A total of 1578 otoliths in Div. 1A-F and 518 DNA samples in 1A -D and F were collected from cod (Tables 3 and 4).

Furthermore, the report gives a brief overview of the research carried out by the GINR. For further information on GINR survey activities planned in 2020, 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 2019, Greenlandic commercial vessels were not involved in other NAFO subareas than Subarea 1.

Provisional statistics for the fisheries from 2016 to 2019 are presented in Table 1.

1. Shrimp

The shrimp stock off West Greenland is distributed in NAFO SA 1 (Div. 1A-1F), but a small part of the habitat, and the stock, intrudes into the eastern edge of Div. 0A (east of 60°30' W). 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 Greenlandic waters in, SA 1, and in Canadian waters in Div. 0A.

Three fleets, one from Canada and two from Greenland (vessels above and below 75 GRT) 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. To reduce the bycatch, sorting grids have been mandatory for Greenlandic vessels since 2002, but an exemption was given for all vessels under 75 GRT until 2011. Discarding of shrimps is prohibited.

Greenland requires that logbooks should record catch live weight, but for shrimps sold to on-shore processing plants, an allowance was made for crushed and broken shrimps in reckoning quota draw-downs, which were based on weight sold, not on weight caught. From 1st of January 2011, the quotas are required to be drawn down by the amount caught without allowances for shrimps landed in poor condition.

Catches of shrimp gradually increased throughout the 1980s and 1990s and reached a level around 157000 t by 2005-2006. In 2019, the total catches in Subarea 1 were 97733 t of shrimp (*P. borealis*), of which 94931 t were taken by Greenlandic trawlers.

The early fishery was concentrated in NAFO Division 1B, but from the late 1980s, the fishery spread southwards, - and by 1996-98 Divisions 1C-1F were producing nearly 70% of the catches. Since then, the range of the fishery has contracted northwards, and since 2007 Divisions 1C-1F have yielded only about 10-20% of the catch. In recent years up to 40% of the catch has been taken in Division 1A alone. This is mainly due to increased fishing in the Disko Bay. This is consistent with results from the survey, in which the proportion of survey biomass in Disko Bay has been high since 2005, and the proportion of survey biomass in the northern Areas has been high since 2003.

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 and 1A-F 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.

The total catches of Greenland halibut (*Reinhardtius hippoglossoides*) in NAFO Subarea 1 amounted to 46600 t in 2019, of which 16690 t were taken offshore by large vessels, and 28376 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 13021 t (8821 t in division 1AB + 3995 t in division 1CD) and other nations caught 5204 t (652 t in division 1AB + 4552 t in division 1CD). Inshore landings in Div. 1A were distributed from the Qaanaaq fjord (221 t), the fjords near Upernavik (7668 t), the Uummannaq fjord (10143 t) and the Disko Bay (8759 t). In the fjords south of the Disko bay catches decreased by 23% to 1585 t of which 80 t was taken in Div. 1B inshore and 834 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 (2019), and ACFM (2019) report.

West Greenland offshore div 1A-1E

Offshore catches in the fishery in 2019 amounted to a total of 899 tons. Main fishing grounds were Tovqussaq Bank, Dana Bank, Fyllas Bank, Fiskenæs Bank, and Narssalik Bank.

Inshore cod fishery

The coastal fishery took 19753 t in 2019. 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 18174 t of which 17158 was taken in ICES 14 and the remaining 916 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 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 internal consumption. Since then export of salmon from Greenland has been banned by law, and the fishery has been reduced to an internal subsistence fishery within Greenland. After 1997, it has been mandatory to report private catches of salmon. From 2002 licensed fishermen were allowed to sell salmon to institutions, local markets, and restaurants only, but in 2012 pressure by fishermen, led to the opening of factory landings for the Greenlandic home market at a selected few factories. However, factory landings were not allowed after 2015. In 2019, total reported catches of 30 t were reported (28.3 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 increased to 760 t in 2019 and

comprise a mixture of factory landed capelin for bait, human and animal consumption landed from small open boats mostly, and logbook reported bycatch in shrimp fisheries. The majority of the catches were taken the Disko bay (418 t) and in the Maniitsoq area (269 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 2019, logbook reported catch and bycatch of redfish in the offshore fleet amounted to 18 t. of these 3 t (2 deep-sea and 1 t Golden) were reported by other nations and 12 t from Greenland (12 t deep-sea redfish and 3 t Golden) were reported by Greenlandic vessels. Less than 1 t of unspecified redfish taken as bycatch offshore by shrimp trawlers which fits well with the poor recruitment observed in surveys and the use of sorting grids limiting bycatches to juveniles.

Inshore reported factory landings of commercially sized redfish amounted to 111 t of which 35 t was Golden redfish from the Disko Bay and 1F, and 77 t was deep-sea redfish (reported as RED) mainly from divisions 1C and 1D. Reported catches by species fits well with survey observations of the distribution as Golden redfish are mostly found in the Disko Bay and in South Greenland, whereas most of the biomass in the Nuuk fjord trawl survey was deep-sea redfish in 2019.

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 Greenlands 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. In 2019, 2 t of roughead 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 mainly by Greenland vessels. Since 2004, 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). The fishing fleet is dominated by small vessels (less than 75 GRT), which have exclusive rights for fishing inshore within the basis-line as well as offshore. Large vessels (greater than 75 GRT) may only fish in all offshore areas (outside the basis-line). 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 large and small vessels have decreased substantially as the abundance of the resource has also declined.

The total catch in NAFO Subarea 1 peaked in 2001 with approximately 15,100 t. From 2001 to 2006 total landings decreased markedly to 2,200 t, and remained at this level until 2016. Since then landings have increased, reaching 3015 t in 2019 (table 1). Most of the landings are based on the fishery in the management areas of Nuuk-Paamiut, Disko Bay-Uummannaq, and Sisimiut. Total fishing effort (trap hauls) has declined by more than 90% since 2001 (from 3,416 to about 319 thousand trap hauls during 2001-2014).

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. A directed small-boat fishery still exists in the West Greenlandic fjords mostly targeting spotted wolffish and when quotas for other more valuable species have been fished. In 2019, 195 t of wolffish were caught in NAFO subarea 1. 183 t (mainly spotted wolffish), were landed to factories by open boats and smaller vessels from the fjords and 6 t were taken as bycatch offshore.

10. Scallops

Total catches of Icelandic scallops (*Chlamys islandica*) in NAFO Subarea 1 decreased to 470 t in 2019. 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 2018 amounted to 1004 t, which was converted to 6765 t whole weight. The historically used conversion factor is however under evaluation. Carcasses and males are increasingly being used instead of being discarded and in 2018, 33t were landed as instead of being discarded. Carcasses are however included in the estimate of total landings via the roe to the whole weight conversion factor.

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 2018 amounted to 19 t.

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 2019, 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 2019, 10 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. In recent years part of the bycatch has been landed and used internally in Greenland, for bait in other fisheries. In 2019, catches were just 10 t (potentially incomplete).

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, 608 t of non-specified fish were reported in 2018, and of this 593 t was reported by Greenland's vessels.

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 Uummanaq 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. Seacucumber

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

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 2019, 8 out of 10 the sections were monitored. The northernmost section was not occupied due to technical problems. Data are uploaded to the ICES database (Mortensen, 2020).

b. Trawl Surveys in Greenland

The Greenland shrimp and fish survey in NAFO SA 1 and ICES 14b:

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 59°15'N and 72°30'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 67°N. The survey was conducted with the chartered commercial vessel Helga Maria, in 2019, and only the West Greenland shelf (NAFO 1A-F) was covered.

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 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).

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 2019.

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 in 2017, 2018, 2019 and 2020.

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. 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 Technical Report Series of the GINR.

A map of GINR research vessel stations for 2019 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	2019	2019
American Plaice	PLA	nd	1	0	0	0	0	0	0
Arctic char	ACH	21	17	11	18	12	10	0	10
Atlantic halibut	HAL	14	13	9	18	15	10	0	10
Atlantic salmon	SAL	58	61	25	28	40	29	0	29
Atlantic cod	COD	20280	33981	40279	36805	28296	21568	0	21568
Capelin	CAP	346	338	377	389	265	760	0	760
Snow crab	CRQ	2157	2088	2126	2501	2862	3015	0	3.015
Greenland cod	GRC	35	22	19	7	19	41	0	41
Greenland halibut	GHL	31513	39709	46276	40738	43311	46600	5203	41397
Roughhead Grenadier	RHG	9	7	0	0	6	2	0	2
Roundnose Grenadier	RNG	6	29	78	29	24	34	18	15
Haddock	HAD	1	11	0	1	0	0	0	0
Herring	HER				1	0	0	0	0
Lumpfish	LUM	8127	7089	5030	7483	6765	7600	0	7600
Polar cod	POC	158	114	37	22	27	19	0	19
Arctic cod	ATG	146	3	2	0	0	0	0	0
Redfish (unspecified - bycatch mainly)	RED	16	26	18	22	1	0	0	0
deep-sea redfish	REB	0	2	15	30	15	91	2	89
Redfish golden	REG	156	244	132	189	178	39	1	38
Saithe	POK	0	0	0	0	0	0	0	0
Scallops	ISC	633	799	735	526	707	470	0	470
Sea cucumber	CUX						106	0	106
Greenland Shark	GSK	nd	63	16	65	100	28	0	28
Dogfish sharks	DGX				1	2	0	0	0
Shrimp (<i>P.boreallis</i>)	PRA	83224	68875	80127	85829	93078	97733	2802	94931
Shrimp (<i>P.montagui</i>)	AES	1380	2024	3180	672	133	29	0	29
Skate	SKA	1	6	22	15	22	4	0	4
Wolffishes	CAT	897	400	188	240	261	195	6	189
Tusk	USK	-	6	17	32	56	18	0	18
Fish not specified	MZZ	758	610	555	839	608	745	69	676
Sum total		149.936	156.538	179.274	176.500	176.803	179.146	8.101	171.044

NOTE: Catch figures are provisional.

Table 2. Greenland Catches (tons) in NAFO Area in 2019 by species and Division, based on the STATLANT 21 A.

Code	Species	Name	1A	1B	1C	1D	1E	1F	1NK	Total
CAB	Anarhichas denticulatus	Northern wolffish	-	-	4	-	-	-	-	4
CAP	Mallotus villosus	Capelin	432	67	269	0	0	6	-	774
CAS	Anarhichas minor	Spotted wolffish	11	-	0	0	0	18	-	29
CAT	Anarhichas spp	Wolffishes(=Catfishes)	13	35	79	18	3	8	-	156
COD	Atlantic cod	Cod	1902	2716	4989	8567	621	2720	3	21518
GHL	Reinhardtius hippoglossoides	Greenland halibut	35239	679	2447	2610	304	145	-	41424
GRC	Gadus ogac	Greenland cod	-	40	-	-	-	-	-	40
GSK	Somniosus microcephalus	Greenland shark	25	0	4	-	-	-	-	29
HAL	Hippoglossus hippoglossus	Atlantic halibut	-	-	1	-	0	-	-	1
PRA	Pandalus borealis	Northern prawn	26543	53735	9508	6958	1469	0	-	98213
RED	Sebastes spp	Redfish	20	6	14	24	2	29	-	95
RNG	Coryphaenoides rupestris	Roundnose grenadier	-	-	-	0	-	-	-	0
SKA	Raja spp	Raja rays	17	1	4	2	-	-	-	24
USK	Brosme brosme	Tusk(=Cusk)	-	-	0	-	1	17	-	18

Table 3. Samples and individuals sampled at the commercial fleet by species, gear, and NAFO Division in 2019.

Code	Species	Common name	Div.	Gear	Sample size	Numb.ind
COD	<i>Gadus morhua</i>	Atlantic cod	1A	Fishing rods	1	123
COD	<i>Gadus morhua</i>	Atlantic cod	1A	Gillnet	5	438
COD	<i>Gadus morhua</i>	Atlantic cod	1A	Longline	6	237
COD	<i>Gadus morhua</i>	Atlantic cod	1A	Pound nets	2	451
COD	<i>Gadus morhua</i>	Atlantic cod	1B	Longline	3	444
COD	<i>Gadus morhua</i>	Atlantic cod	1B	Pound nets	12	2333
COD	<i>Gadus morhua</i>	Atlantic cod	1C	Fishing rods	16	2501
COD	<i>Gadus morhua</i>	Atlantic cod	1C	Longline	2	372
COD	<i>Gadus morhua</i>	Atlantic cod	1C	Pound nets	3	697
COD	<i>Gadus morhua</i>	Atlantic cod	1C	Trawl	5	713
COD	<i>Gadus morhua</i>	Atlantic cod	1D	Fishing rods	10	2314
COD	<i>Gadus morhua</i>	Atlantic cod	1D	Longline	10	2480
COD	<i>Gadus morhua</i>	Atlantic cod	1D	Pound nets	21	4939
COD	<i>Gadus morhua</i>	Atlantic cod	1E	Longline	10	1599
COD	<i>Gadus morhua</i>	Atlantic cod	1E	Trawl	2	302
COD	<i>Gadus morhua</i>	Atlantic cod	1F	Fishing rods	3	363
COD	<i>Gadus morhua</i>	Atlantic cod	1F	Longline	29	4209
COD	<i>Gadus morhua</i>	Atlantic cod	1F	Pound nets	9	1015
COD	<i>Gadus morhua</i>	Atlantic cod	1F	Trawl	17	1699
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	1A	Gillnet	40	5688
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	1A	Longline	130	19199
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	1A	Trawl	19	2555
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	1B	Trawl	1	83
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	1C	Longline	1	131
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	1C	Trawl	2	172
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	1D	Longline	10	1747
LUM	<i>Cyclopterus lumpus</i>	Lumpfish	1D	Gillnet	10	758
RED	<i>Sebastes spp</i>	Redfish	1A	Gillnet	1	1

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

Code	Species	Division	Otolith	DNA
COD	Atlantic cod	1A	20	10
COD	Atlantic cod	1B	126	126
COD	Atlantic cod	1C	190	110
COD	Atlantic cod	1D	255	152
COD	Atlantic cod	1E	110	NA
COD	Atlantic cod	1F	877	120

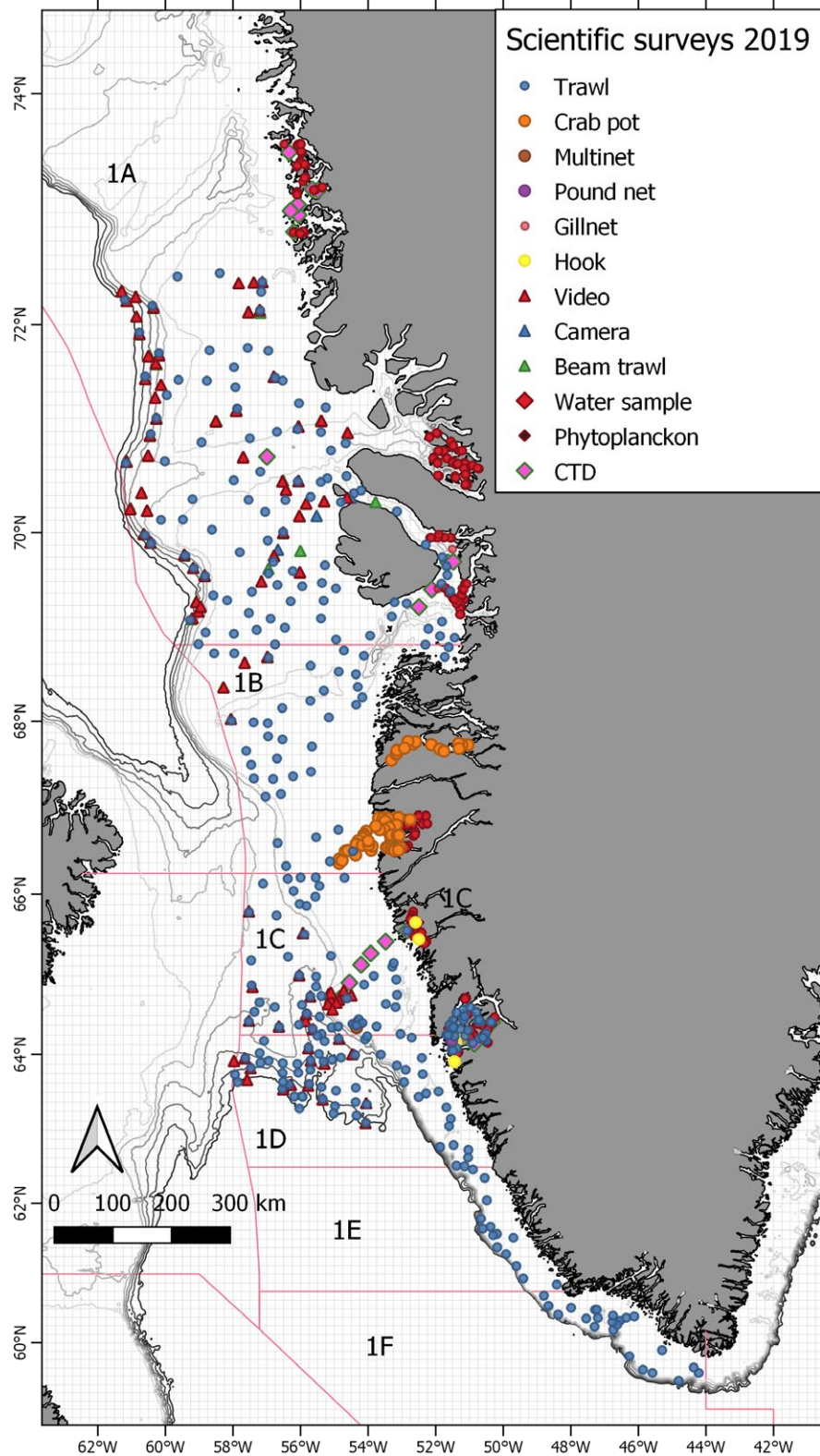


Figure 1. Distribution of GINR stations from the chartered CV Helga Maria, RV Sanna, and small boats operating out of Nuuk carried out in 2019. Stations from hydrography samples taken onboard the Royal Danish Navy vessel Hdms Knud Rasmussen are not included.