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SCIENTIFIC COUNCIL MEETING - JUNE 2018**JAPAN RESEARCH REPORT FOR JUNE 2017****Abstract**

Japan joined NAFO in 1980 and had been conducting fishing operations continuously for 29 years (1980-2008). After 2009, fishing operations stopped for 7 years (2009-2015) due to various reasons. Fishing operations resumed 2 years ago in 2016 with one otter trawl fishing vessel and continued to now (2018). In this opportunity for SC40 (2018), we produced this National Report (2016-2017) using the observer data after many years of its absence. In this occasion, we also reviewed historical activities of Japanese fishing operations (1962-2018).



Contents

1.	Introduction-----	03
2.	Response to the requests by SC and the Secretariat-----	03
3.	Summary of information collected by an observer (sub-area 3) (2016-2017)	
3.1	Fishing vessel-----	04
3.2	Summary of fishing activities-----	04-06
3.3	Catch and fishing effort data by Division	
	(1) Summary-----	07-08
	(2) Distribution of catch (species compositions) -----	09
	(3) Distribution of fishing efforts-----	10
3.4	Size data	
	(1) Summary-----	11
	(2) Size frequency distribution-----	12-14
Annex A Review of Japanese fisheries (1962-2018)		
A1	Number of vessels operated-----	15
A2	Catch by species-----	15-18
A3	Summary of historical TAC by species (Japan vs. Total) -----	19-20

1. Introduction

Japan joined NAFO in 1980 and had been conducting fishing operations continuously for 29 years (1980-2008). After 2009, fishing operations stopped for 7 years (2009-2015) due to various reasons such as management issues of fishing companies, tsunami disasters (2011) and socio economics problems. Fishing operations resumed in 2016 with one otter trawl fishing vessel and continued to now (2018).

As the fishing operations resumed in 2016, for this opportunity, we freshly produced this National Report using 2016-2017 observer data. There were quota transfers (Greenland halibut, red fish and yellowtail flounders) between Japan and Canada in 2016-2017, thus catch were not reflected to quota.

In addition, taking this opportunity, we reviewed historical activities of Japanese fishing operations in the NAFO CA (Annex A).

2. Response to the requests by SC and the Secretariat

There have been various annual routine information requests by SC and the Secretariat in this time-period. Table 1 shows the summary of our responses.

Table 1 Summary of data requests by SC and the Secretariat and responses by Japan
(as of May 11, 2018)

Information requested	NAFO circulation No.	Deadline	Response
● Environmental data	NAFO/18-039	June 1, 2018	No data available
● STATLANT 21A	NAFO/18-040	May 1, 2018	Submitted by Fisheries Agency of JAPAN
● National Report	NAFO/18-099	May 12 2018	This document
● Planned Surveys for 2018 and Early 2019			No surveys planned
● Lists of Biological Sampling Data for 2017			See Tables 6-7, page 10 (this document)
● List of Tag Releases in 2017 and early 2018			None
● Information on research vessel surveys on a stock-by-stock basis			No research vessel surveys
● STATLANT 21B	NAFO/18-099		Aug 31, 2018

3. Summary of information collected by observer (2016-2017)

3.1 Fishing vessel

FV No 68 Fukuyoshi maru (stern trawler) (Gross Tonnage:401 t) (home port: Shiogama, Miyagi, Japan) (Photo 1) started her first fishing operation in the NAFO CA from April 8, 2016 (Division 3L) targeting Greenland halibut after 7 years absence of operations by other Japanese vessels. There is one scientific observer on-board.



Photo 1. FV No 68 Fukuyoshi maru (St. John's, New Newfoundland and Labrador, Canada)

3.2 Summaries of fishing activities

Table 1 and 2 shows summaries of fishing activities by an on-board scientific observer for 2016 and 2017 respectively in sub area 3. Japanese fishing operation took place in Division 3LMNO. In 2016, there were 313 hauls (9trips in 8 months: April-November), while in 2017, 306 hauls (10 trips in 10 months: February-

November). Target species were Greenland halibut, red fish and yellowtail flounder. In 2017, cod was as one of other species in the TAC transfer scheme from Canada and it was targeted in trip 2.

Table 2. Summary of fishing operations (FV No 68 Fukuyoshi Maru) based on the on-board observer reports (2016)

Number of hauls by trip, month and Division

	Month	Trip 1	Trip 2	Trip 3	Trip 4	Trip 5	Trip 6	Trip 7	Trip 8	Trip 9	Total # of hauls
Note	4	45									45
		3L									
Upper row (# of hauls)	5		40								40
			3LMO								
Lower row (Division operated)	6		2	1							3
			3O	3O							
7	7			7	9	18	8				42
				3M	3M	3LO	3O				
8	8						4	34			38
							3O	3NO			
9	9							43	5		48
								3NO	3N		
10	10								28	27	55
									3N	3N	
11	11									42	42
										3N	
Total # of hauls		45	42	8	9	18	12	77	33	69	313

Target species by trip and Division

Common name	Trip 1	Trip 2	Trip 3	Trip 4	Trip 5	Trip 6	Trip 7	Trip 8	Trip 9	Total # of trips
Greenland halibut	3L	3LMO								2
Redfish		3O +	3O+3M	3M	3LO	3O				6
Yellowtail flounder							3NO	3N	3N	3

Table 3. Summary of fishing operations (FV No 68 Fukuyoshi Maru). Based on the on-board observer reports (2017)

Number of hauls by trip, month and Division													
Note <i>Upper row # of hauls</i> <i>Lower row Division operated</i>	Month	Trip 1	Trip 2	Trip 3	Trip 4	Trip 5	Trip 6	Trip 7	Trip 8	Trip 9	Trip 10	Total	
	2	7	18										25
		3LMNO	3LM										
	3		12	2								14	
			3LM	3L									
	4			1	48								49
				3L	3L								
	5				16	32							48
					3L	3L							
	6					23							23
						3LO							
	7						21						21
							3MO						
8							20					20	
							3LMO						
9							3	49				52	
							3N	3N					
10								5	13	11		29	
								3N	3N	3N			
11										25		25	
										3N			
Total # of hauls		7	30	3	64	55	21	23	54	13	36	306	

Target species by trip and Division												
	Trip 1	Trip 2	Trip 3	Trip 4	Trip 5	Trip 6	Trip 7	Trip 8	Trip 9	Trip 10	Total trips	
Greenland halibut		3LM	3L	3L	3L						5	
Redfish	3LMNO				3L + 3LO	3MO					4	
Yellowtail flounder							3LMO	3LMO			4	
Cod (*)		3LM									5	

(*) One of other species in TAC transfer scheme from Canada

3.3 Catch and fishing efforts by Division

(1) Summary (2016-2017) (Tables 4 and 5)

Main fishing grounds were 3N and 3L and target species (2016-2017) were yellowtail flounder (1,400 t and 1,000 t respectively) and Greenland halibut (500 t and 1,000t). Red fish was target species, but catch was not large (around 300 t each year). Cod was the target species in 2017 and its catch was 72t. There were 11 and 8 bycatch species including others and catch are in 2016 and 2017 respectively. Total catch of all bycatch species was 267t and 177t, respectively.

Table 4. Catch and fishing efforts by Division in Sub area 3 (NAFO CA) (2016)

2016												
Division (sub area 3)		3L		3M		3N		3O		Total		
(effort units)		Fishing efforts										
number of hauls		82		22		173		36		313		
fishing hours		633		171		840		142		1,786		
Species code and name		Catch (tons)										
code	common name	Retain	Discard	Retain	Discard	Retain	Discard	Retain	Discard	Retain	Discard	Total
GHL	Greenland halibut	474		35						509		509
RED	Atlantic redfishes	125		128				29	0.1	283	0.1	283
YEL	Yellowtail flounder					1,337	18	3.6		1,340	18	1,359
PLA	American plaice	3.5				144	0.5	1.2		149	0.5	149
COD	Atlantic Cod					38		1.0		39		39
SKA	Skates (NS)		0.5				22		1.0		24	24
RNG	Roundnose grenadier	6.5	11		1.1					6.5	12	18
HAL	Atlantic halibut	2.1		3.3		6.3		3.2		15		15
WIT	Witch flounder	4.9				7.4		0.7		13		13
CAT	Wolffishes (NS)	0.6			0.7					0.6	2.7	3.3
ANG	American angler (Goosefish)					0.1		1.8		1.8		1.8
HKW	White hake							1.4	0.0	1.4	0.0	1.4
MZZ	Marine fishes nei		0.9		0.2						1.1	1.1
OTH	Others	0.4	0.4							0.4	0.4	0.8

(note) Blank: no catch and NS: Not Specified (species group level)

Table 5. Catch and fishing efforts by Division in Sub area 3 (NAFO CA) (2017)

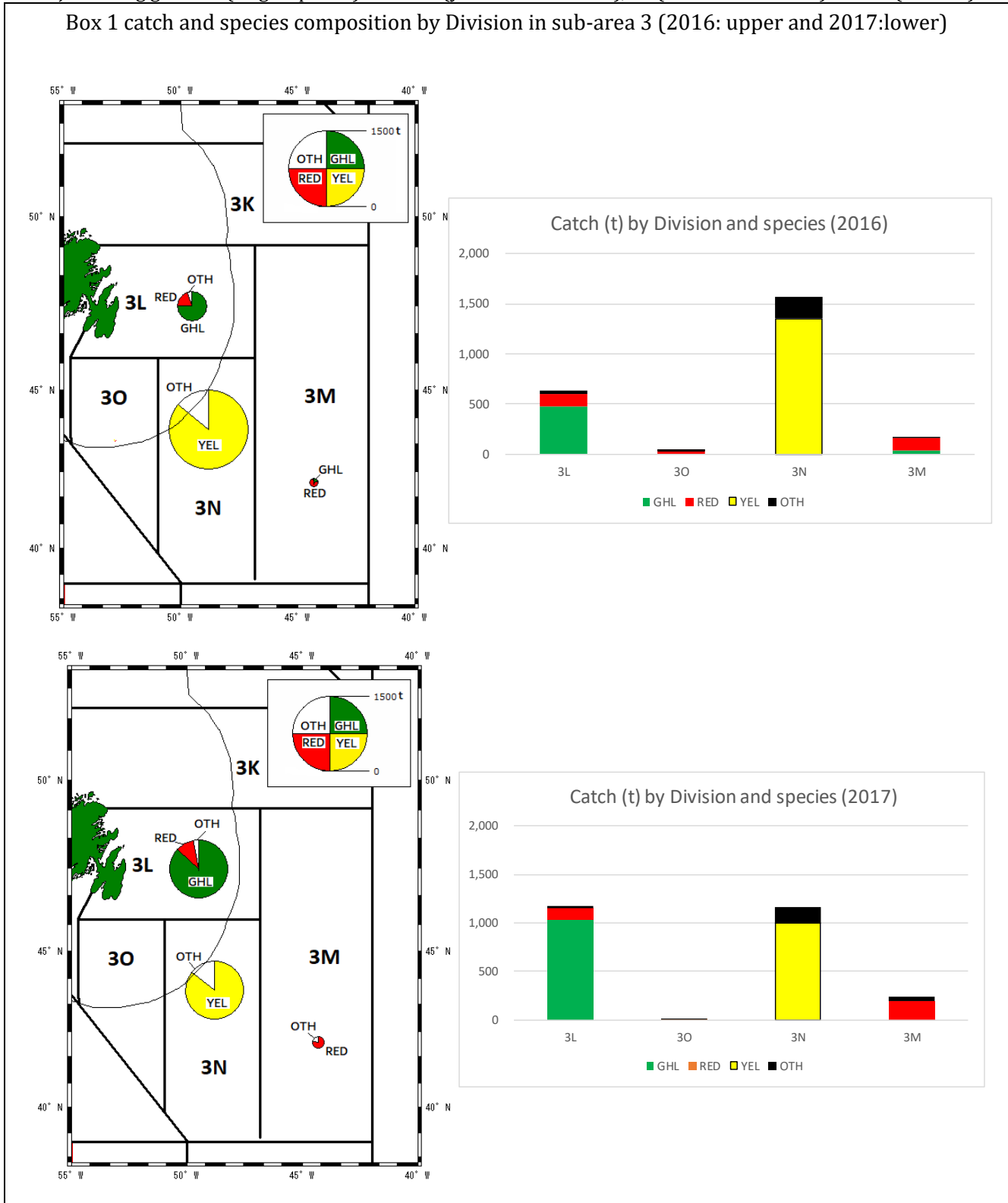
2017												
Division (sub area 3)		3L		3M		3N		3O		Total		
(effort units)		Fishing efforts										
number of hauls		159		28		111		8		306		
fishing hours		1,302		185		665		41		2,193		
Species code and name		Catch (tons)										
code	common name	Retain	Discard	Retain	Discard	Retain	Discard	Retain	Discard	Retain	Discard	Total
GHL	Greenland halibut	1,024								1,024		1,024
RED	Atlantic redfishes	125	0.1	190				6.1		321	0.1	321
YEL	Yellowtail flounder					989	11			989	11	1,000
PLA	American plaice	2.9				110	5.2			113	5.2	118
COD	Atlantic Cod	0.8		49		22				72		72
SKA	Skates (NS)		0.6	0.7	0.1		23		0.1	0.7	23	24
RNG	Roundnose grenadier		13								13	13
WIT	Witch flounder	5.1				3.8				8.9		8.9
CAT	Wolffishes (NS)		5.0		1.3						6.3	6.3
HAL	Atlantic halibut	1.0		1.3		3.2		0.7		6.2		6.2
MZZ	Marine fishes nei		0.3								0.3	0.3
HKW	White hake								0.1		0.1	0.1

(note) Blank: no catch and NS: Not Specified (species group level)

(2) Distribution of catch and species compositions in sub area 3 (Box 1)

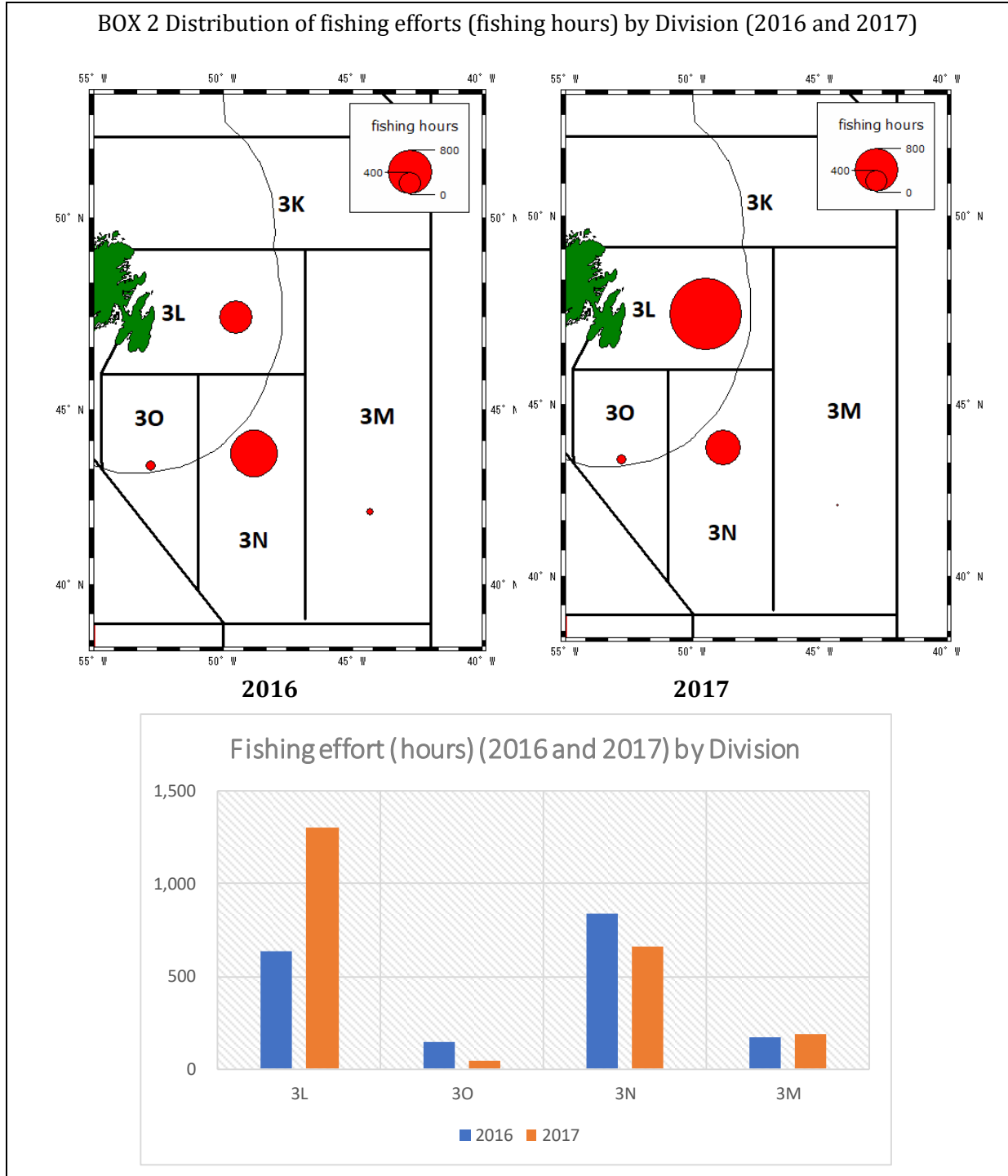
Major fishing grounds (target species) were 3N (yellowtail flounder), 3L (Greenland halibut) and 3L (red fish).

Box 1 catch and species composition by Division in sub-area 3 (2016: upper and 2017:lower)



(3) Distribution of fishing efforts by Division (sub area 3)

Box 2 shows distribution of fishing efforts (fishing hours) by Division (sub area 3) in 2016 and 2017. Major efforts took place in 3L and 3N. More efforts (2017) (2,200 hours) applied than in 2016 (1,800).



3.4 Size information

(1) Summary (Table 6-7)

During 2016-2017, one on-board scientific observer measured sizes for 50 individuals for Greenland halibut (total length), 100 for Redfish (fork length) and 50 for yellowtail flounder (total length) every operation. Number of fish measured ranged from 1,000-3,000 varying by species and year. Please note that from 2018, measurements frequencies were reduced to every 3 operations (from every operation) and same amounts have been measured as before.

Table 6. No. of fish measured and no. of measurement by species, trip and Division (2016)

Trip #		Trip 1	Trip 2	Trip 3	Trip 4	Trip 5	Trip 6	Trip 7	Trip 8	Trip 9	Total
Division		3L	3LMO	3O+3M	3M	3LO	3O	3NO	3N	3N	
<i>Note</i>	Greenland	1,100	800								1,900
	halibut	(22)	(16)								(38)
<i>Upper row</i> <i>Number of fish measured</i>	Redfish	702	700	301	402	902	700	100			3,807
		(7)	(7)	(3)	(4)	(9)	(7)	(1)			(38)
<i>Lower row</i> <i>(number of measurement)</i>	Yellowtail							1,654	699	1,350	3,703
	flounder							(33)	(14)	(27)	(74)

Table 7. No. of fish measured and no. of measurements by species, trip and Division (2017)

Trip #		Trip 1	Trip 2	Trip 3	Trip 4	Trip 5	Trip 6	Trip 7	Trip 8	Trip 9	Trip 10	Total
Division		3LMNO	3LM	3L	3L	3LO	3MO	3LMO	3N	3N	3N	
<i>Note</i>	Greenland	200	700	150	1,550	400						3,000
	Halibut	(4)	(14)	(3)	(31)	(8)						(60)
<i>Upper row</i> <i>Number of fish measured</i>	Redfish					100	400	800				1,300
						(1)	(4)	(8)				(13)
<i>Lower row</i> <i>(number of measurement)</i>	Yellowtail							200	1100	300	750	2,350
	flounder							(4)	(22)	(6)	(15)	(47)

(2) Size frequency distribution by species (2016 and 2017)

Figs 1-3 shows annual size frequency distribution collected by one on-board observer in sub-area 3 for Greenland halibut, redfish and yellowtail flounder respectively. See Boxes 1-2 (page 8-9) on areas (Divisions) where measurements took place.

Greenland halibut

Average sizes were 49.4 cm (2016) and 48.0 cm (2017). Size frequency distributions formed the uni-modals (peak 48 cm in 2016 and 46 cm in 2017).

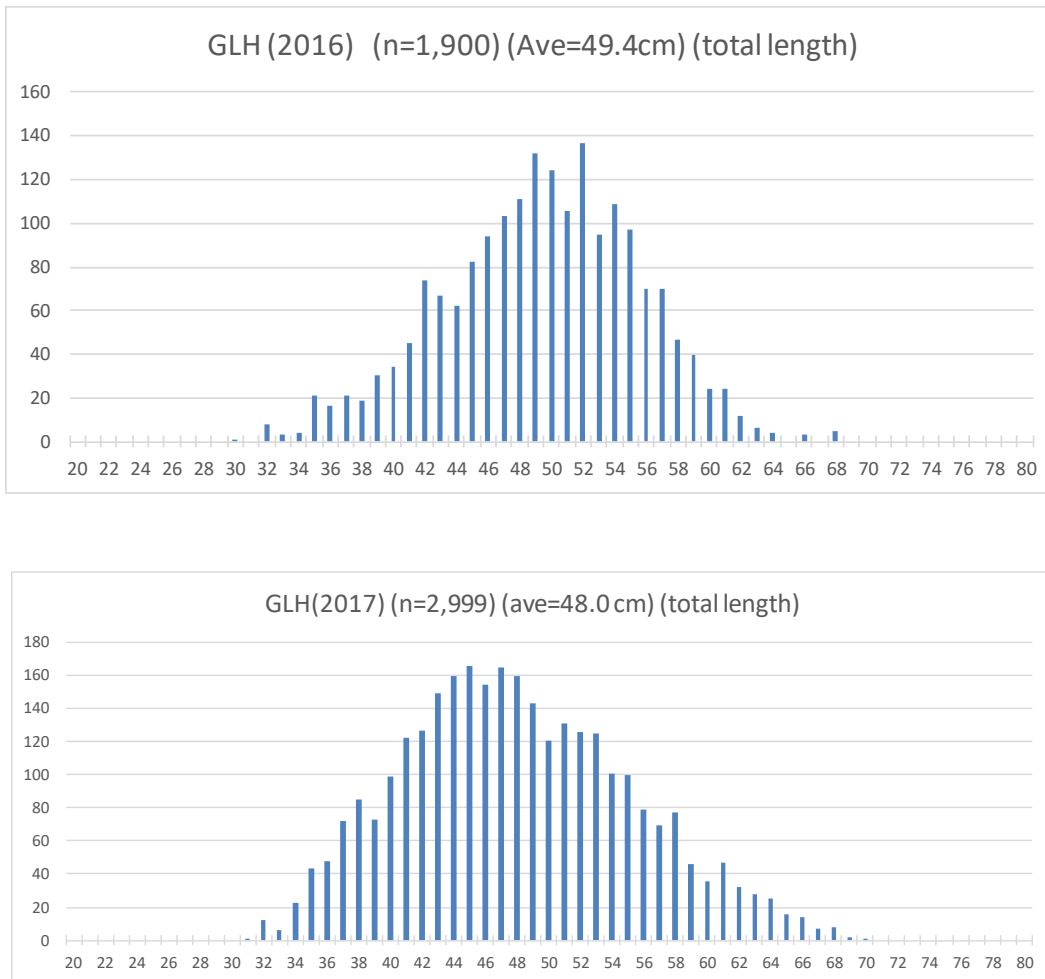


Fig. 1. Size frequency distribution based on the total length data measured by one on-board observer for Greenland halibut (2016: above and 2017: below)

Red fish

Average sizes were 28.0 cm (2016) and 27.8 cm (2017). Size frequency distributions formed the bi-modal (peaks in 23cm and 32 cm) in 2016 and the uni-modal (peak in 26cm) in 2017.

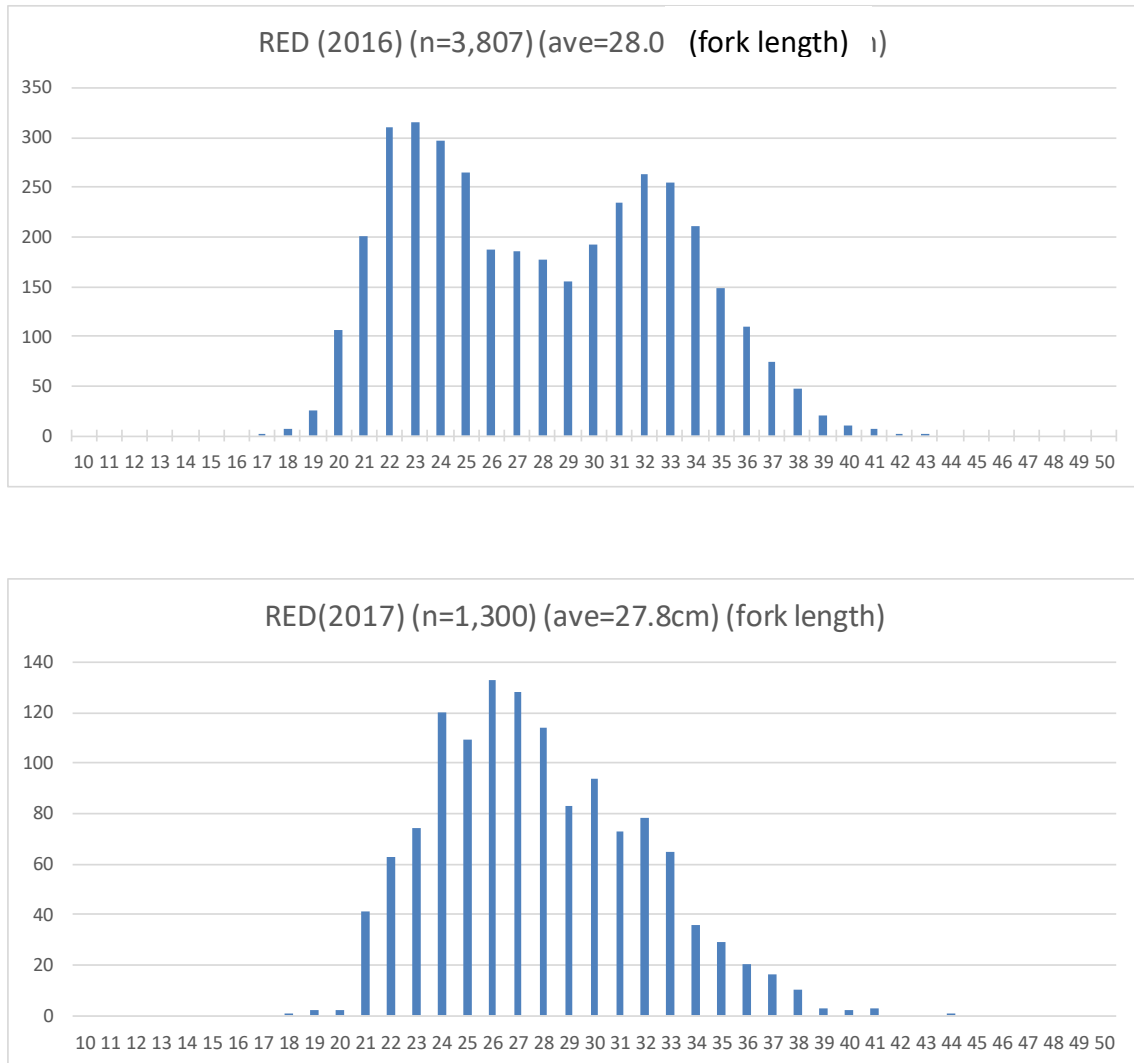


Fig. 2. Size frequency distribution based on the fork length data measured by one on-board observer for redfish (2016: above and 2017: below)

Yellowtail flounder

Average sizes were 33.5 cm (2016) and 32.9 cm (2017). Size frequency distributions formed the uni-modals (peak 33 cm in 2016 and 32 cm in 2017).

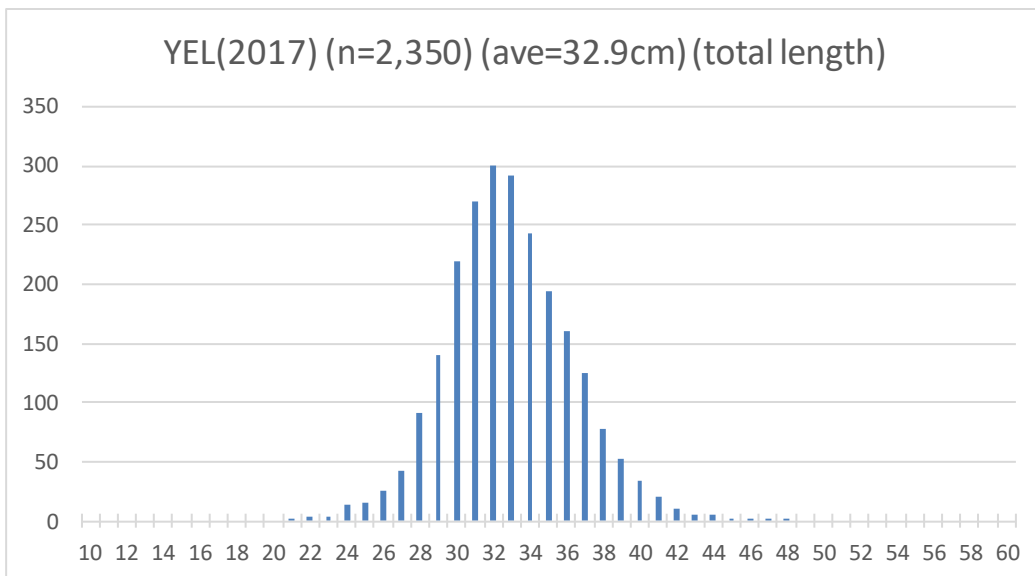
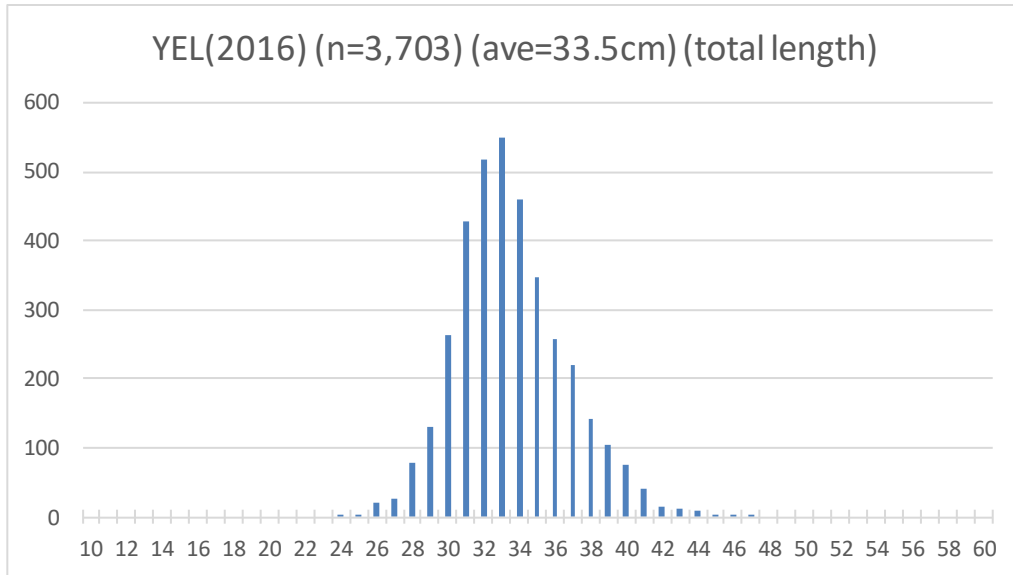


Fig. 3. Size frequency distributions based on the total length data collected by one on-board observer for yellowtail flounder (2016: above and 2017: below)

ANNEX A: REVIEW OF JAPANESE FISHERIES IN THE NAFO CA (1962-2018)

A1. Number of boats operated (Source: Fisheries Agency of Japan)

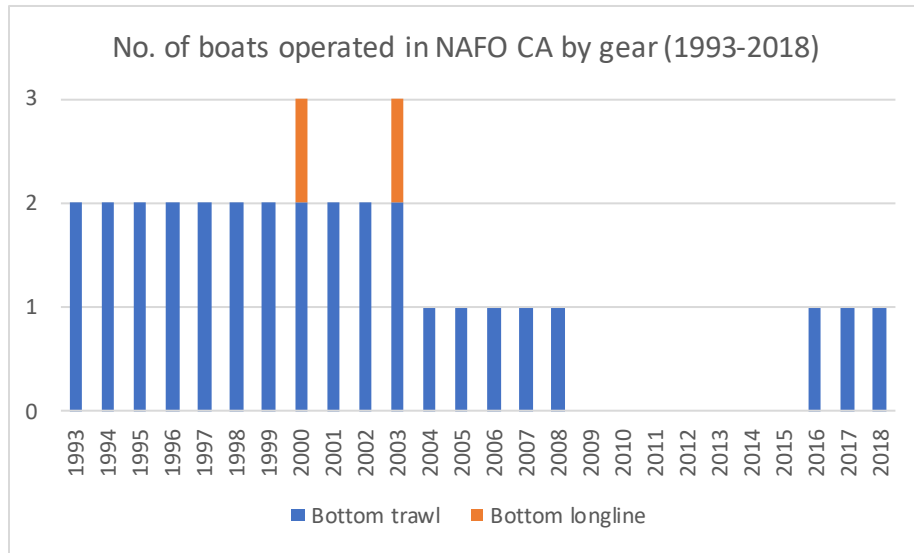


Fig. 4. Number of Japanese fishing vessels by gear type operated in the NAFO CA 1993-2018)
(No operations: 2009-2015)

A2. Catch by species

(1) Total catch (peak: > 40,000 t)

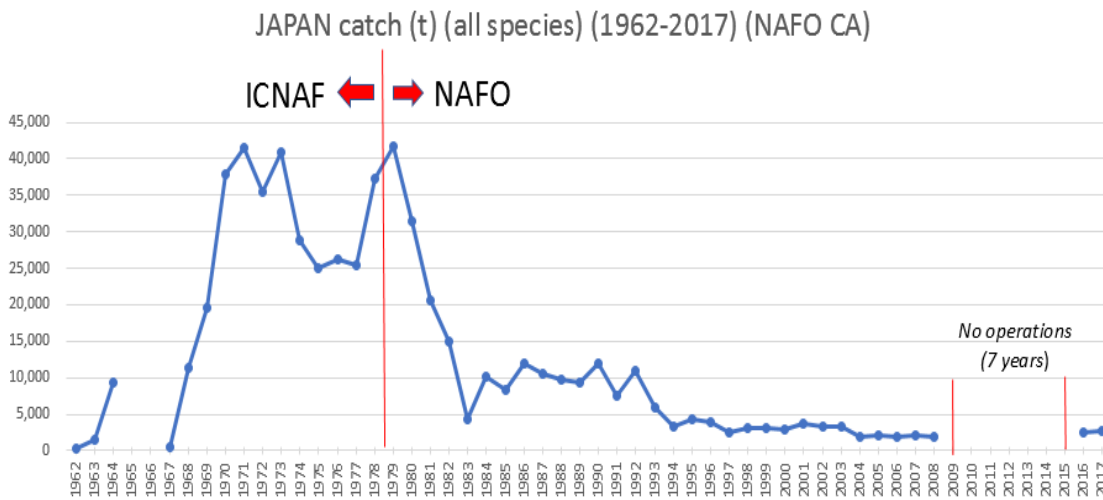


Fig.5. Total catch (all species combined) by Japanese fishing vessels (1962-2017)
(note: probably no operations for 1965-1966)



(2) Greenland halibut (peak: 8,000 t)

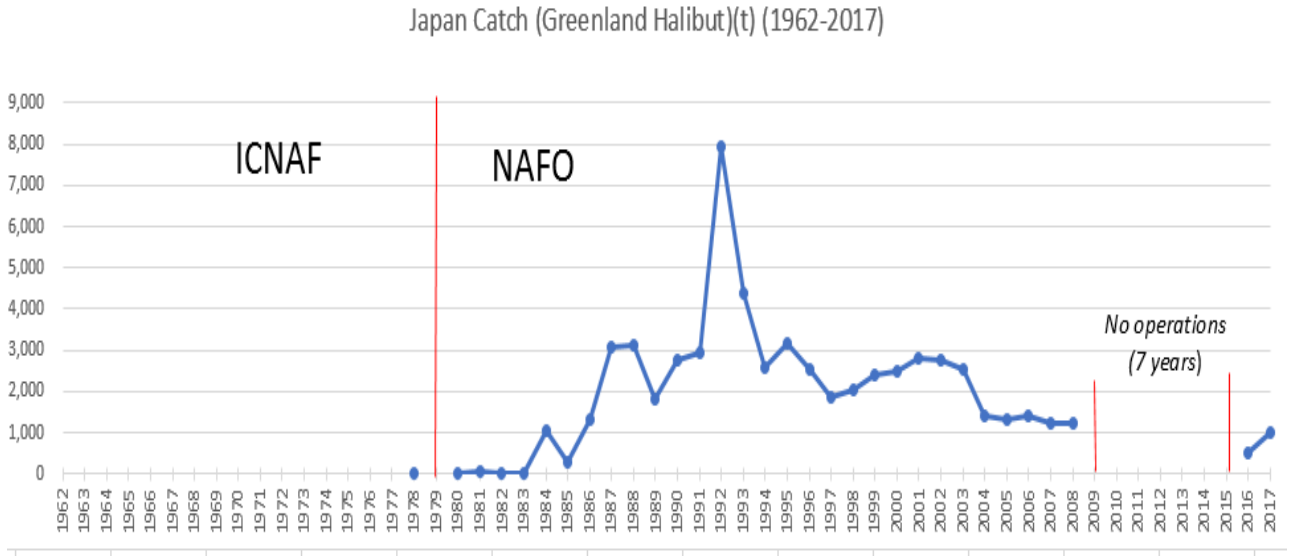


Fig. 6. Greenland halibut catch (1978-2017) by Japan

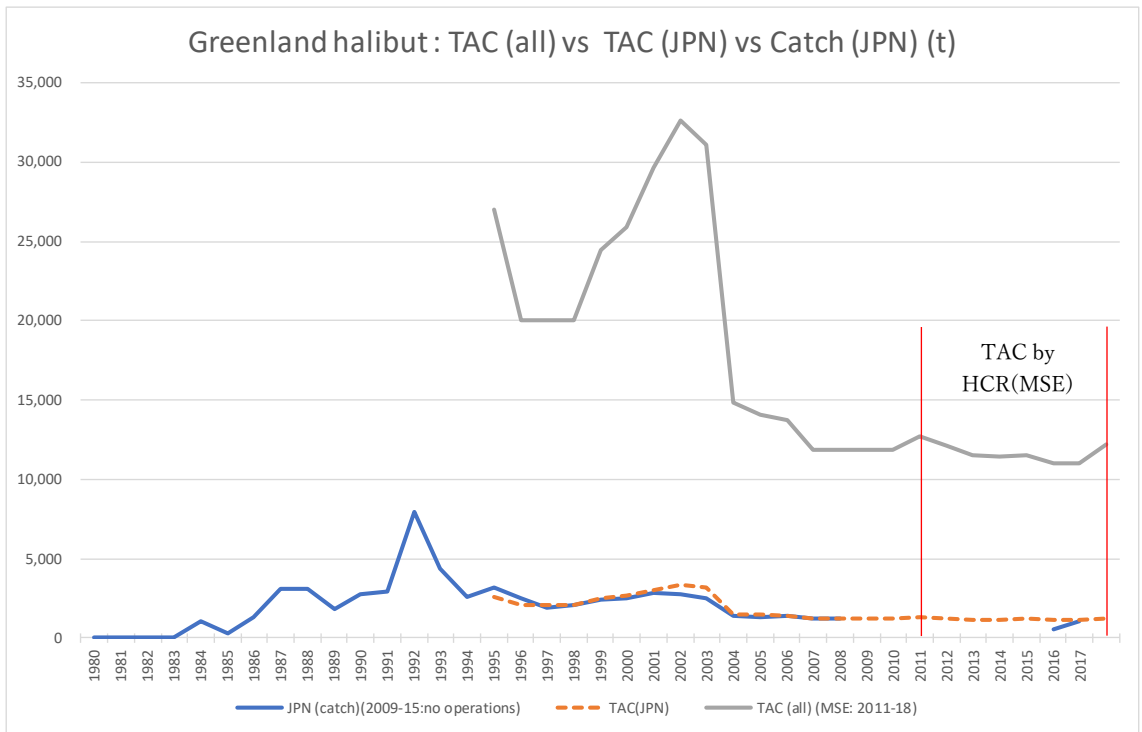


Fig. 7. Greenland halibut catch (1980-2017) (NAFO CA)
 TAC (all) vs TAC (JPN) vs Catch by Japan after Japan joined NAFO (1980)
 TAC (2011-18) are based on the harvest control rule under the MSE scheme.



(3) Red fish

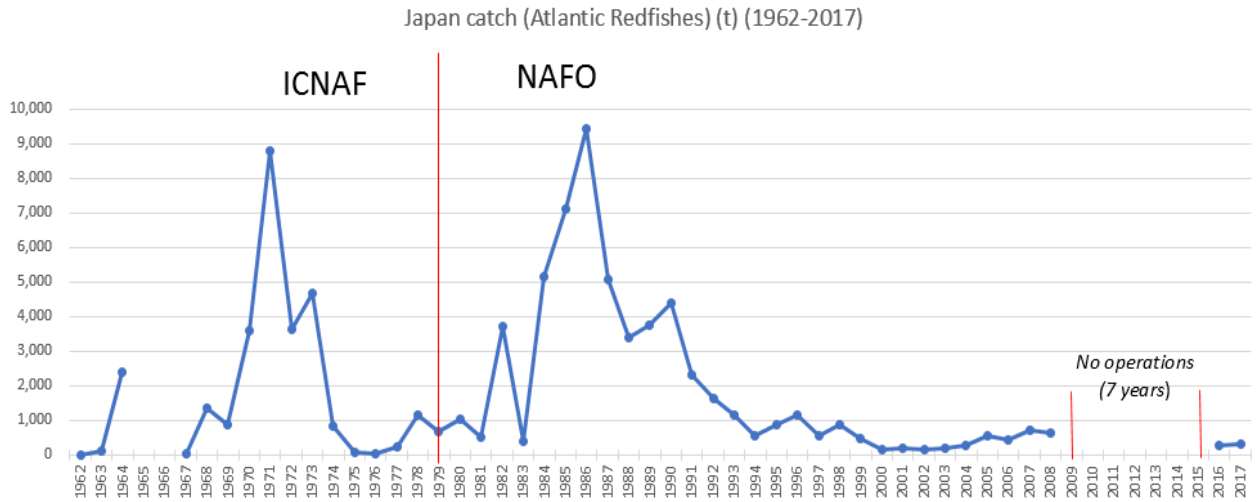


Fig 8. Redfish catch by Japan (1962-2017)
(note: probably no operations for 1965-1966)

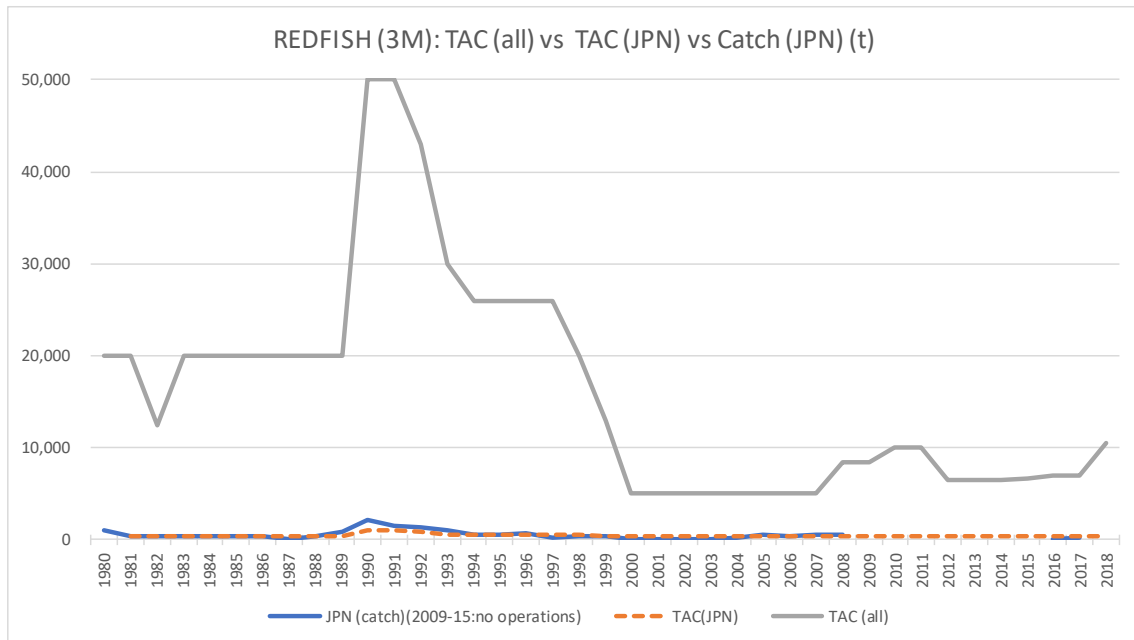


Fig. 9. Redfish catch (3M) (1980-2017) (NAFO CA)
 TAC (all) vs TAC (JPN) vs Catch (JPN) after Japan joined NAFO (1980)



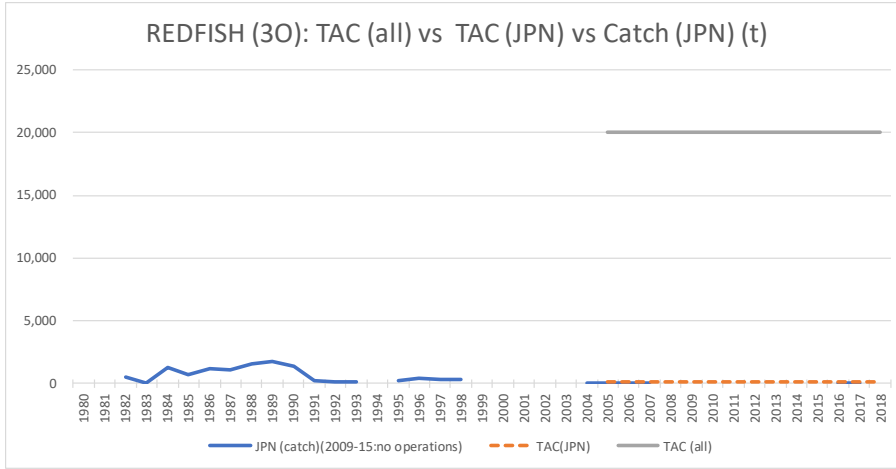


Fig. 10. Redfish catch (30) (1980-2017) (NAFO CA)
TAC (all) vs TAC (JPN) vs Catch (JPN) after Japan joined NAFO (1980)

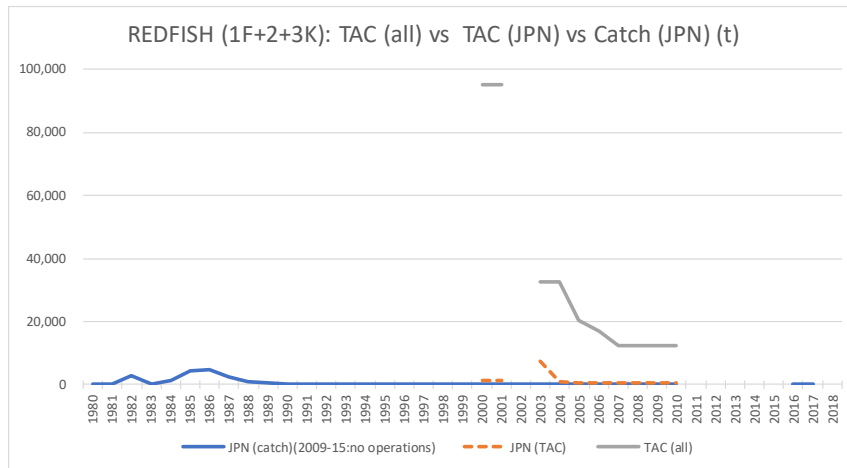


Fig. 11. Redfish catch (1F+2+3K) (1980-2017) (NAFO CA)
TAC (all) vs TAC (JPN) vs Catch (JPN) after Japan joined NAFO (1980)

(4) Shortfin squid

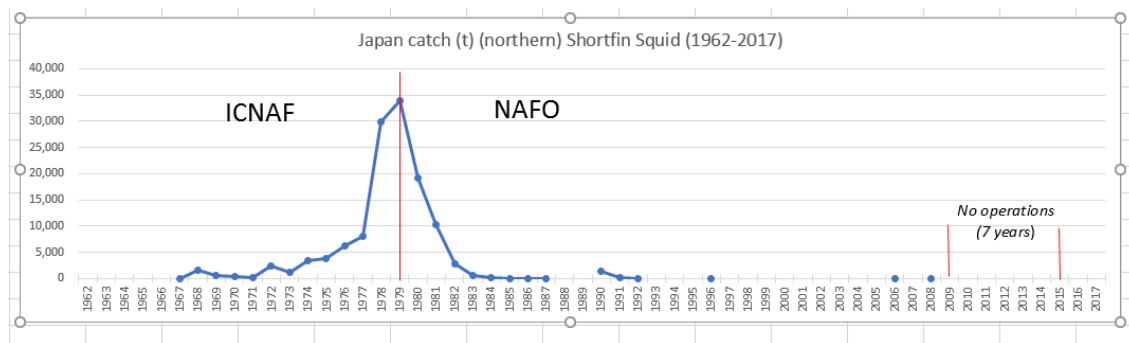


Fig 12. Shortfin squid catch by Japan (1962-2017)



A3. Summary of historical TAC (Japan and Total) (NAFO home page)

Table 8. Summary of historical TAC (Japan and Total) (Greenland halibut, Squid, Shrimp and Capelin)

Species	Greenland halibut		Squid (Illex)		Shrimp		Capelin	
Area	2+3		3+4		3L		3LNO	
TAC	Japan	All	Japan	All	Japan	All	Japan	All
1979				120,000				10,000
1980			2,250	142,500				16,000
1981			2,250	150,000				30,000
1982			2,250	150,000				30,000
1983			2,250	150,000				
1984			2,250	150,000				
1985			2,250	150,000				
1986			2,250	150,000				
1987			2,250	150,000			800	10,000
1988			2,250	150,000			1,400	15,000
1989			2,250	150,000			2,612	28,000
1990			2,250	150,000			2,800	30,000
1991			2,250	150,000			2,800	30,000
1992			2,250	150,000			2,800	30,000
1993			2,250	150,000				
1994			2,250	150,000				
1995	2,600	27,000	2,250	150,000				
1996	2,050	20,000	2,250	150,000				
1997	2,050	20,000	2,250	150,000				
1998	2,050	20,000	2,250	150,000				
1999	2,506	24,444	1,125	75,000				
2000	2,658	25,935	510	34,000	67	6,000		
2001	3,038	29,640	510	34,000	67	6,000		
2002	3,341	32,604	510	34,000	67	6,000		
2003	3,189	31,122	510	34,000	144	13,000		
2004	1,519	14,820	510	34,000	145	13,000		
2005	1,443	14,079	510	34,000	144	13,000		
2006	1,405	13,709	510	34,000	245	22,000		
2007	1,215	11,856	510	34,000	245	22,000		
2008	1,215	11,856	510	34,000	278	25,000		
2009	1,215	11,856	510	34,000	334	30,000		
2010	1,215	11,856	510	34,000	334	30,000		
2011	1,305	12,734	510	34,000	214	19,200		
2012	1,240	12,098	510	34,000	133	12,000		
2013	1,178	11,493	510	34,000	96	8,600		
2014	1,173	11,442	510	34,000	48	43,000		
2015	1,183	11,543	510	34,000				
2016	1,124	10,966	510	34,000				
2017	1,124	10,966	510	34,000				
2018	1,253	12,227	510	34,000				

Note: Footnotes in the original TAC tables are omitted.

Table 9. Summary of historical TAC (Japan and Total) (redfish)

Species	Redfish							
	3M		3O		1F		2+1F+3K	
	Japan	All	Japan	All	Japan	All	Japan	All
1979								
1980		20,000						
1981	400	20,000						
1982	400	12,405						
1983	400	20,000						
1984	400	20,000						
1985	400	20,000						
1986	400	20,000						
1987	400	20,000						
1988	400	20,000						
1989	400	20,000						
1990	1,000	50,000						
1991	1,000	50,000						
1992	860	43,000						
1993	600	30,000						
1994	520	26,000						
1995	520	26,000						
1996	520	26,000						
1997	520	26,000						
1998	520	20,000						
1999	400	13,000						
2000	400	5,000						
2001	400	5,000			1,175	95,000		
2002	400	5,000			1,175	95,000		
2003	400	5,000						
2004	400	5,000					7,500	32,500
2005	400	5,000	150	20,000			1,000	32,500
2006	400	5,000	150	20,000			627	20,378
2007	400	5,000	150	20,000			520	16,914
2008	400	8,500	150	20,000			385	12,516
2009	400	8,500	150	20,000			385	12,516
2010	400	10,000	150	20,000			385	12,516
2011	400	10,000	150	20,000			385	12,516
2012	400	6,500	150	20,000				
2013	400	6,500	150	20,000				
2014	400	6,500	150	20,000				
2015	400	6,700	150	20,000				
2016	400	7,000	150	20,000				
2017	400	7,000	150	20,000				
2018	400	10,500	150	20,000				

Note: Footnotes in the original TAC tables are omitted.