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Japanese Research Report for 1981

by

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The nominal total catch by Japanese vessels from the NAFO waters (Subareas 3, 4, 5 and Statistical Area 6) showed a substantial decrease from 29,700 tons in 1980 to 17,800 tons in 1981 (Table 1). This is due to the decline of Illex catch in Canadian waters. The allowable Japanese catch of Illex in Subareas 3 and 4 including the Canadian quota partially transferred to Japan was 17,000 tons for 1981, the same quota as 1980, but the Illex catch in these subareas was remained at only 6,100 tons.

A total of 17 medium and large trawlers (1,000 - 3,000 tonnage class) operated in the fishing grounds from Subarea 3 to Statistical Area 6, and engaged in the squid (Illex and/or Loligo), redfish and/or argentine fisheries using either the bottom or off-bottom trawl gear.

The provisional Japanese catch and effort statistics by divisions for 1981 are shown in Table 2. About two thirds of Japanese catch were taken from U.S.A. waters, though two thirds of the catch were caught from Canadian waters in 1980. In regard to catch by species in 1981, the Illex squid was the largest, followed by Loligo squid, accounting for 58 % and 24 % of Japanese total catch from the NAFO waters, respectively.

I. SUBAREA 3

A. Status of the Fisheries

The small-scale redfish fishery was carried out in Div. 3M. Some trawlers operated on Flemish Cap from March to May and caught 442 tons of fish, mostly composed of redfish (387 tons). The catch rates in the last four years are shown in Table 3. The catch rates of redfish were fairly high in 1980 but the values in the other three years were rather stable.

II. SUBAREA 4

A. Status of the Fisheries

The trawl fisheries for Illex squid and occasionally for argentine were carried out in 1981 on and along the southern edge of the Scotian Shelf.

The Illex fishery started in August. However, most of the vessels moved to Subareas 5 and 6 at the end of September when the abundance of squid noticeably declined. Japanese fishing activity ceased at the end of October in this sub-area, while the squid fisheries had continued until the middle of November in the previous three years. Totally, 11 vessels fished for 501 days mainly in Divs. 4W and 4X and caught 5,992 tons of Illex (excluding 63 tons of incidental catch by argentine fishery), accounting for around 90 % of Japanese total catch from this subarea. The trawlers used the bottom or off-bottom gear with the cod-end of 60 - 65 mm mesh. A more detailed discription on the status of Japanese squid fishery is given in a separate paper (NAFO SCR Doc. 82/VI/23).

The argentine fishery was carried out from August to October on and along the southern edge of the Scotian Shelf. The direct fishery for argentine was made by the vessels which switched occasionally from the squid fishery. The fishing gears were almost the same as those for squid fishery. A total of 295 tons of argentine including the 34 tons of incidental catch by squid fishery was taken from this sub-area in 1981, and 96 % of the fish were caught from Divs. 4W and 4X.

B. Special Research Studies

1. Estimation of Illex squid abundance during 1981 fishing season on the southern edge of the Scotian Shelf

This study was made to get some information available for the abundance estimation of Illex squid in the most important fishing grounds for Japanese trawlers. The abundance index was estimated from the haul-by haul catch and effort data in September reported from all of the Japanese trawlers engaging in squid fishery. The calculation was made on the basis of the standardized values of catch rate by half-a-degree square blocks and by depth zones composed of seven depth strata within a depth range of 70 - 200 fathoms. The abundance index in 1981 was the lowest of the latest four years, and it was 71 % of the value of the previous year and 7 % of that in 1979 when the abundance was the highest. The full description of this study and the results obtained are shown in a separate paper (NAFO SCR Doc. 82/VI/22).

III. SUBAREA 5

A. Status of the Fisheries

Both of the Loligo and Illex squids fisheries were carried out by Japanese trawlers in 1981. The vessels operated using either bottom or off-bottom gear with the 42 - 65 mm mesh cod-end. Japanese fishing effort decreased from 720 days in 1980 to 463 days in 1981, and the total catch showed a decrease from 4,651 tons to 3,035 tons.

The Loligo fishery was made from January to March and also from November to December along the southern edge of Georges Bank in Divs. 5Ze and 5Zw. The catch dropped to about a half of that in the previous year, while the corresponding fishing effort was reduced to two thirds, i.e. from 629 days in 1980 to 435 days in 1981. A total of 1,834 tons of Loligo including the by-catch of Illex fishery was caught mainly in the earlier season from January to March, and accounted for 60 % of the total species catch from this subarea.

A small-scale Illex fishery was carried out in September, October and December, and merely 105 tons of Illex including the incidental catch by Loligo fishery was reported from this subarea in 1981.

IV. STATISTICAL AREA 6

A. Status of the Fisheries

Both of Loligo and Illex squid fisheries were performed from January to March, July to August and October to December. The vessels used the bottom or off-bottom gear with the cod-end of 42 - 65 mm mesh as well as in Subarea 5. The total catch increased substantially from 5,851 tons in 1980 to 7,795 tons in 1981, though the fishing effort deploid was nearly the same as that in 1980, i.e. 984 days in 1981 and 938 days in 1980.

The Loligo fishery was carried out mainly in winter (January to March and October to December). A total of 2,519 tons of Loligo (including the by-catch of Illex fishery) was caught, and it occupied 32 % of the total species catch taken in 1981 from this subarea. The Loligo catch and fishing effort by the directed fishery were of nearly the same levels as those in the previous year.

The Illex fishery was made in January, July to August and October to December mainly in Divs. 6B and 6C. The Illex catch including the by-catch of Loligo fishery increased greatly from 2,297 tons in 1980 to 4,198 tons in 1981 with the increase of the direct fishing effort from 307 days to 376 days, and accounted for 54 % of the total species catch from this subarea in 1981.

Table 1. Historical series data on catch (1,000 tons) and fishing effort by Japanese fisheries in the NAFO waters, 1968 - 1981.

Year	Type of fishery	Days fished	Silver hake	Argentine	Red-fish	Butterfish	Loligo	Illex	Total
1968	Trawl	537	0.2	1.3	1.4	3.5	0.2	1.7	11.3
1969	Trawl	1356	0.5	2.3	0.9	3.9	7.1	0.6	19.7
1970	Trawl	2150	0.5	4.1	3.6	8.6	13.2	0.5	37.9
1971	Trawl	2227	0.3	9.1	8.8	5.8	11.4	0.2	43.3
1972	Trawl	1901	0.5	0.7	3.7	3.8	15.9	2.4	33.7
1973	Trawl	2804	0.5	0.4	4.7	12.2	14.5	1.1	40.9
1974	Trawl	2731	0.2	0.6	0.8	4.6	13.4	3.6	28.8
1975	Trawl	2293	0.1	0.2	0.1	4.2	11.2	3.4	24.9
1976	Trawl	3209	0.1	0.4	0.1	7.9	5.2	6.2	26.1
1977	Trawl	2741	0.1	2.1	0.2	1.7	7.8	7.8	25.3
1978	Trawl	2160	0.3	1.5	0.4	0.7	2.9	7.9	14.7
1979*	Trawl	2852	0.9	2.4	0.7	0.3	3.2	26.8	34.6
	Jigging	583	-	-	-	-	-	7.0	7.0
	Total	3435	0.9	2.4	0.7	0.3	3.2	33.8	41.6
1980**	Trawl	3390	0.9	1.5	1.0	0.7	6.0	18.6	29.7
1981**	Trawl	2074	0.8	0.3	0.4	0.6	4.4	10.4	17.8

* including the Co-operative Fishery with Canada

** including the Canadian quota transferred to Japan

Table 2. Japanese catch (tons) and fishing effort (days fished) statistics for 1981 in NAFO waters.

Division	Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	1980 Total
3M	Effort	-	-	37	42	3	-	-	-	-	-	-	-	82	133
	Cod	-	-	3	6	1	-	-	-	-	-	-	-	9	36
	Redfish	-	-	192	170	24	-	-	-	-	-	-	-	387	976
	Others	-	-	1	46	-	-	-	-	-	-	-	-	47	17
	Total	-	-	196	222	25	-	-	-	-	-	-	-	442	1029
3N	Effort	-	-	-	-	-	-	-	-	1	-	-	-	1	-
	Illex	-	-	-	-	-	-	-	-	0	-	-	-	0	-
	Total	-	-	-	-	-	-	-	-	0	-	-	-	0	-
3O	Effort	-	-	-	-	-	-	-	-	2	-	-	-	2	3
	Redfish	-	-	-	-	-	-	-	-	0	-	-	-	0	0
	Illex	-	-	-	-	-	-	-	-	0	-	-	-	0	0
	Others	-	-	-	-	-	-	-	-	1	-	-	-	1	3
	Total	-	-	-	-	-	-	-	-	1	-	-	-	1	3
4Vs	Effort	-	-	-	-	-	-	-	1	1	-	-	-	2	7
	Argentine	-	-	-	-	-	-	-	-	12	-	-	-	12	7
	Illex	-	-	-	-	-	-	-	1	3	-	-	-	4	6
	Others	-	-	-	-	-	-	-	2	0	-	-	-	2	4
	Total	-	-	-	-	-	-	-	2	15	-	-	-	17	17
4W	Effort	-	-	-	-	-	-	-	125	32	4	-	-	161	411
	Silver h.	-	-	-	-	-	-	-	33	5	1	-	-	39	76
	Argentine	-	-	-	-	-	-	-	17	49	0	-	-	66	149
	Illex	-	-	-	-	-	-	-	1844	109	7	-	-	1959	3695
	Others	-	-	-	-	-	-	-	7	3	3	-	-	13	31
	Total	-	-	-	-	-	-	-	1900	166	11	-	-	2077	3951
4X	Effort	-	-	-	-	-	-	-	68	255	56	-	-	379	1178
	Silver h.	-	-	-	-	-	-	-	42	33	5	-	-	80	163
	Argentine	-	-	-	-	-	-	-	44	156	17	-	-	217	1366
	Illex	-	-	-	-	-	-	-	1029	2796	267	-	-	4091	12478
	Others	-	-	-	-	-	-	-	39	22	10	-	-	71	206
	Total	-	-	-	-	-	-	-	1154	3007	299	-	-	4460	14212
Subarea 3 + 4	Effort	-	-	37	42	3	-	-	194	291	60	-	-	627	1732
	Cod	-	-	3	6	1	-	-	1	2	2	-	-	14	51
	Silver h.	-	-	-	-	-	-	-	76	39	5	-	-	120	239
	Redfish	-	-	192	170	24	-	-	0	1	3	-	-	390	999
	Argentine	-	-	-	-	-	-	-	61	217	17	-	-	295	1521
	Illex	-	-	-	-	-	-	-	2873	2908	273	-	-	6055	16179
	Others	-	-	-	46	-	-	-	45	22	10	-	-	122	223
	Total	-	-	196	222	25	-	-	3056	3189	310	-	-	6997	19212
5Ze	Effort	113	30	5	-	-	-	-	-	5	6	1	13	173	373
	Silver h.	37	58	5	-	-	-	-	-	-	0	8	3	111	278
	Butterf.	28	18	-	-	-	-	-	-	-	-	-	0	45	34
	Illex	46	5	1	-	-	-	-	-	4	6	-	4	67	86
	Loligo	739	55	-	-	-	-	-	-	-	-	2	42	837	2263
	Others	113	36	7	-	-	-	-	-	0	0	1	32	189	250
	Total	962	172	13	-	-	-	-	-	4	6	10	81	1248	2911
5Zw	Effort	144	54	59	-	-	-	-	-	-	1	-	32	290	347
	Silver h.	28	38	133	-	-	-	-	-	-	-	-	1	200	97
	Butterf.	53	127	109	-	-	-	-	-	-	0	-	8	297	239
	Illex	25	2	1	-	-	-	-	-	-	-	-	9	38	27
	Loligo	555	203	104	-	-	-	-	-	-	1	-	135	997	1277
	Others	52	45	131	-	-	-	-	-	-	-	-	27	255	99
	Total	714	415	478	-	-	-	-	-	-	1	-	180	1787	1740
6A	Effort	181	110	36	-	-	-	-	-	-	31	5	22	385	316
	Silver h.	17	58	106	-	-	-	-	-	-	0	2	1	183	84
	Butterf.	35	66	39	-	-	-	-	-	-	0	-	2	142	341
	Illex	69	16	6	-	-	-	-	-	-	508	17	5	620	188
	Loligo	1062	309	72	-	-	-	-	-	-	-	1	59	1503	1138
	Others	25	41	72	-	-	-	-	-	-	3	0	4	146	136
	Total	1207	490	294	-	-	-	-	-	-	512	20	70	2593	1886

Table 2. Continued.

Division	Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	1980 Total
6B	Effort	2	103	69	-	-	-	20	12	-	110	30	63	409	598
	Silver h.	0	6	18	-	-	-	-	-	-	7	6	19	56	103
	Butterf.	-	34	13	-	-	-	-	0	-	19	2	4	73	45
	Illex	0	15	21	-	-	-	386	191	-	1444	61	95	2214	1909
	Loligo	3	361	312	-	-	-	-	-	-	7	32	136	851	1347
	Others	1	56	73	-	-	-	0	0	-	4	4	70	207	266
	Total	4	472	438	-	-	-	386	192	-	1480	105	324	3401	3670
6C	Effort	-	-	-	-	-	-	-	-	-	35	72	83	190	24
	Silver h.	-	-	-	-	-	-	-	-	-	2	45	45	93	54
	Butterf.	-	-	-	-	-	-	-	-	-	1	14	2	16	1
	Illex	-	-	-	-	-	-	-	-	-	426	434	505	1365	200
	Loligo	-	-	-	-	-	-	-	-	-	15	75	75	165	9
	Others	-	-	-	-	-	-	-	-	-	18	48	95	162	30
	Total	-	-	-	-	-	-	-	-	-	462	615	724	1800	295
Subarea	Effort	440	297	169	-	-	-	20	12	5	183	108	213	1447	1658
5 + 6	Silver h.	82	159	262	-	-	-	-	-	-	9	61	69	643	616
	Butterf.	116	245	161	-	-	-	-	0	-	20	16	16	573	660
	Illex	141	38	29	-	-	-	386	191	4	2384	512	618	4302	2410
	Loligo	2359	928	488	-	-	-	-	-	-	23	109	447	4353	6034
	Others	189	178	284	-	-	-	0	1	0	24	52	228	959	781
	Total	2887	1548	1223	-	-	-	386	192	4	2460	750	1378	10830	10502
Grand Total	Effort	440	297	206	42	3	-	20	206	296	243	108	213	2074	3390
	Cod	0	-	3	6	1	-	-	1	2	2	-	-	14	51
	Silver h.	82	159	262	-	-	-	-	76	39	14	61	69	763	855
	Redfish	-	-	192	170	24	-	-	0	1	3	-	-	390	999
	Butterf.	116	245	161	-	-	-	-	0	-	20	16	16	573	660
	Argentine	-	-	-	-	-	-	-	61	217	17	-	-	295	1521
	Illex	141	38	29	-	-	-	386	3064	2913	2657	512	618	10357	18589
	Loligo	2359	928	488	-	-	-	-	-	-	23	109	447	4353	6033
	Others	189	178	284	46	0	-	0	46	22	34	52	228	1081	1005
	Total	2887	1548	1419	222	25	-	386	3248	3194	2770	750	1378	17827	29713

Table 3. The catch rate of redfish by Japanese trawlers in Div. 3M.

Vessel size	Items	1978	1979	1980	1981
1000-1999 tons	Month	Mar	Mar-Apr	Apr-May	Mar
	Effort hours	3	401	458	147
	days	1	35	48	13
	Catch (tons)	1	100	367	57
	Catch rate (tons)				
	/hour	0.33	0.25	0.80	0.39
	/day	1.00	2.86	7.65	4.38
Over 2000 tons	Month	Mar-May	Mar-May	Mar-May	Mar-May
	Effort hours	636	1052	498	619
	days	74	99	53	69
	Catch (tons)	286	423	388	329
	Catch rate (tons)				
	/hour	0.45	0.40	0.78	0.53
	/day	3.86	4.27	7.32	4.77