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Some information on the Japanese billfish catches in the north Pacific[1]

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Introduction

This document briefly reports the existing Japanese marlins catch statistics other than striped marlin, as well as available information of recent size data of swordfish caught by Japanese fisheries. The information reported in this document could be used for producing management recommendation of swordfish and future work plan of ISC marlin working group, with some adequate discussions and evaluations by the working group members.

Method (Data source)

Catch data of blue marlin, black marlin, sailfish and spearfish caught by Japanese offshore and distant-water longliners in the north Pacific was obtained from the Japanese longline fishery statistics compiled at the National Research Institute of Far Seas Fisheries for 1971-2005.

Annual catch of four marlin species for the fisheries other than offshore and distant-water longliners were obtained from annual report of catch statistics on fishery and aquiculture published by statistics and survey division, ministry of agriculture, forestry and fishery (Year Book), in the period between 1951 and 2004.

Recent size data of swordfish caught by Japanese longline, drift net and harpoon fisheries were collected at the Kessennuma fishing port (northeastern part of Honshu) where more than half of the swordfishes caught by Japanese fisheries were unloaded.

Results and Discussions

(1) Outline of existing statistics of blue marlin, black marlin, sailfish and spearfish

In the Japanese year book, blue marlin and black marlin are treated together as “blue marlins”, and sailfish and spearfish are also treated together as “other marlins (other means other than striped, blue and black marlins)” (Tables 1 and 2). The log-book of offshore and distant-water longliners had also treated sailfish and spearfish together as “other marlins”, but not the case for blue and black marlins (Table 3). Since 1994, new log-book system was introduced into offshore and distant-water longliners and it demands fisherman to report all billfish catch independently (Table 4).

The collection of log-book was initiated for the coastal longliners using the same format as the one for the offshore and distant-water longliners. Because the exact coverage of the log-book for the coastal longliners is unknown, annual catch values of the coastal longliners appeared in the year books were used for creating the Category I data. The operational area of the Japanese coastal longliners is limited to the northwestern Pacific (north of equator and west of date line).

In the offshore and distant-water longline database, only catch number aggregated by 5 degree x 5 degree x month were available in the period before 1971. In the period between 1971 and 1993, catch weight of billfishes were estimated for each 5 degree x 5 degree x month block based on size data collected by both commercial and training longline vessels. Since 1994, a new log-book system introduced which contain the average weight of tunas and billfish for each set, which were used for creating weight base Category II type data sets.

The year book data started in 1951, but the values in the period between 1951 and 1970 were not shown in Table 1 and 2. This is mainly due to the fact that not annual catch estimates were available for the offshore and distant-water longliners. Their log-book are only contains information of catch in number. The year books have their catch weight information but they contains catches from all oceans (there are no their catch estimates by area).

As mentioned above, Japanese statistics for blue marlin, black marlin, sailfish and spearfish have somewhat inconvenient for the stock assessment use. The quality and reliability of values appeared in the official

statistics are good, but their reporting styles is incomplete for the use of the stock assessment, and it is necessary to conduct some additional calculations and estimations to obtain values inputted to the stock assessment models.

(2) Recent size information of swordfish caught by Japanese fisheries

Figures 1 – 3 shows the available length frequency of size sample of swordfish caught by coastal longline, offshore surface longline (night sets, targeting swordfish and blue shark), offshore tuna longline (day sets), drift net and harpoon in recent years (2004 – 2006), which are mainly operated in the northwestern Pacific.. All these data are collected at Kessennuma fishing port, where more than half of total swordfish catches are unloaded. There are some luck of information, such as frequencies of offshore longline in 2006 and the one of harpoon in 2005 and 2004. Compilations of these data are not finished yet.

Length frequencies shown in Figs. 1 – 3 are the one created using raw data, and not converted into catch at size. This means the shape of frequency should contain some biases caused by size measurement activity, seasonal and yearly change of operational pattern of fisheries, change of yearly migration pattern of swordfish, and so on.

Size measurement in the Kessennuma port are conducted everyday, and it measures more than 60 – 70% of swordfish unloaded to the port, and this indicates that the general shape of the length frequency shown in Figs. 1 – 3 contains rough information about annual change of the catch at size of swordfish by fishery. In general, no significant changes of length frequency between years are observed for all fisheries. This would suggest that there would no serious change of the status of swordfish in the northwest Pacific in most recent years.

The coastal longliners seemed to catch somewhat larger fishes than offshore longliners. This would mainly due to the fact that the coastal longline in Kessennuma port mainly catch swordfish in autumn and early winter season in the area north of Kuroshio – Oyashio front, to obtain higher quality swordfish.

The drift net and harpoon fishers apparently catch larger fishes than longline. This is because their fishing ground is limited to the area north of Kuroshio – Oyashio front where only large sized swordfish can migrate.

Table 1. Japanese sailfish and spearfish combined catch (ton) in the north Pacific (north of equator) by fishery for 1971 - 2004.

	offshore & distant-water longline	Coastal longline	Drift net	Other bait fishing	Harpoon	Trap net	Others	Total
1971	4986	170	54	6	5	197	29	5447
1972	4613	153	55	24	6	247	22	5120
1973	5253	89	98	26	4	268	23	5761
1974	5207	49	83	28	0	147	7	5521
1975	3339	29	149	34	11	209	3	3774
1976	2329	137	117	5	10	133	8	2739
1977	1937	217	398	52	15	354	6	2979
1978	1750	160	343	30	13	372	26	2694
1979	1002	113	347	34	14	237	19	1766
1980	532	196	137	232	33	247	74	1451
1981	539	80	362	68	27	315	8	1399
1982	891	60	333	143	31	146	0	1604
1983	591	101	276	113	45	332	6	1464
1984	337	83	110	113	21	187	81	932
1985	161	176	0	50	21	335	169	912
1986	211	191	233	61	8	275	19	998
1987	221	393	99	52	7	275	5	1052
1988	293	106	138	88	11	230	16	882
1989	377	52	90	43	10	178	15	765
1990	117	186	125	50	13	304	4	799
1991	161	305	200	23	1	129	3	822
1992	128	216	189	22	1	267	6	829
1993	118	189	62	42	1	74	8	494
1994	214	177	182	32	1	197	45	848
1995	243	344	164	35	1	160	8	955
1996	103	327	149	46	1	248	3	877
1997	98	209	57	61	1	151	5	582
1998	119	270	431	60	1	271	11	1163
1999	182	172	368	43	2	177	6	950
2000	153	93	234	50	2	163	16	711
2001	75	74	62	38	3	192	16	460
2002	60	78	164	27	2	367	6	704
2003	116	60	398	49	1	204	6	834
2004	72	93	84	32	1	117	4	404

Table 2. Japanese blue and black marlins combined catch (ton) in the north Pacific (north of equator) by fishery for 1971 - 2004.

	offshore & distant-water longline	Coastal longline1	Drift net1	Other bait fishing1	Harpoon1	Trap net1	Others1	Total
1971	5952	116	0	4	49	1	2	6124
1972	7361	217	8	5	50	2	3	7646
1973	6965	217	268	10	88	2	59	7609
1974	6948	186	230	54	46	4	11	7479
1975	4723	477	795	146	77	3	5	6226
1976	5346	436	580	193	315	3	21	6894
1977	5143	531	998	188	130	2	31	7023
1978	6261	849	884	182	393	3	22	8594
1979	6397	768	513	162	261	3	12	8116
1980	6001	702	868	138	115	2	5	7831
1981	5790	820	1165	182	124	4	25	8110
1982	6257	722	954	165	218	4	37	8357
1983	4995	1058	931	226	280	12	160	7662
1984	6474	1306	240	176	219	3	226	8644
1985	5390	1037	0	247	206	14	606	7500
1986	6046	898	176	360	89	12	67	7648
1987	5517	1526	256	279	71	6	60	7715
1988	5200	1454	363	224	101	9	52	7403
1989	5203	1261	293	387	74	8	61	7287
1990	4191	1204	252	219	135	10	70	6081
1991	4179	1342	178	165	14	15	46	5939
1992	3832	1657	161	131	13	15	52	5861
1993	4669	2092	146	181	37	11	50	7186
1994	4814	1833	157	134	14	40	25	7017
1995	4482	1687	142	147	10	23	62	6553
1996	2411	1332	107	173	14	6	30	4073
1997	3031	1023	76	235	5	12	20	4402
1998	2508	1147	55	242	15	10	49	4026
1999	2800	1063	77	173	5	5	2	4125
2000	2613	1226	21	197	12	10	11	4090
2001	2591	1215	162	138	7	6	9	4128
2002	2301	983	106	150	4	14	11	3569
2003	1988	1139	37	177	4	13	5	3363
2004	1952	1225	20	185	17	10	17	3426

Table 3. Japanese blue marlin and black marlin catches (ton) by offshore and distant-water longliners in the north Pacific (north of equator) in the period between 1971 and 1993.

Year	Blue marlin	Black marlin
1971	5461	491
1972	6772	589
1973	6453	512
1974	6545	403
1975	4373	349
1976	5018	328
1977	4780	363
1978	5900	362
1979	5949	447
1980	5613	388
1981	5518	272
1982	6051	206
1983	4796	199
1984	6248	226
1985	5164	226
1986	5922	124
1987	5370	147
1988	5054	146
1989	5117	86
1990	4116	75
1991	4094	85
1992	3720	111
1993	4600	69

Table 4. Japanese blue marlin, black marlin, sailfish and spearfish catches (ton) by offshore and distant-water longliners in the north Pacific (north of equator) in the period between 1993 and 2005.

	Blue marlin	Black marlin	Sailfish	Spearfish
1994	4715	99	39	175
1995	4423	60	30	212
1996	2357	54	16	87
1997	2975	56	24	73
1998	2448	60	24	95
1999	2751	50	22	160
2000	2552	61	42	111
2001	2554	37	22	54
2002	2242	59	13	46
2003	1961	27	22	94
2004	1929	23	9	63
2005	1869	34	8	93

Fig. 1. Length frequency of size sample of swordfish caught by Japanese coastal longliners (left column) and drift nets (right column) landed in the Kesennuma fishing port for 2004 – 2006.

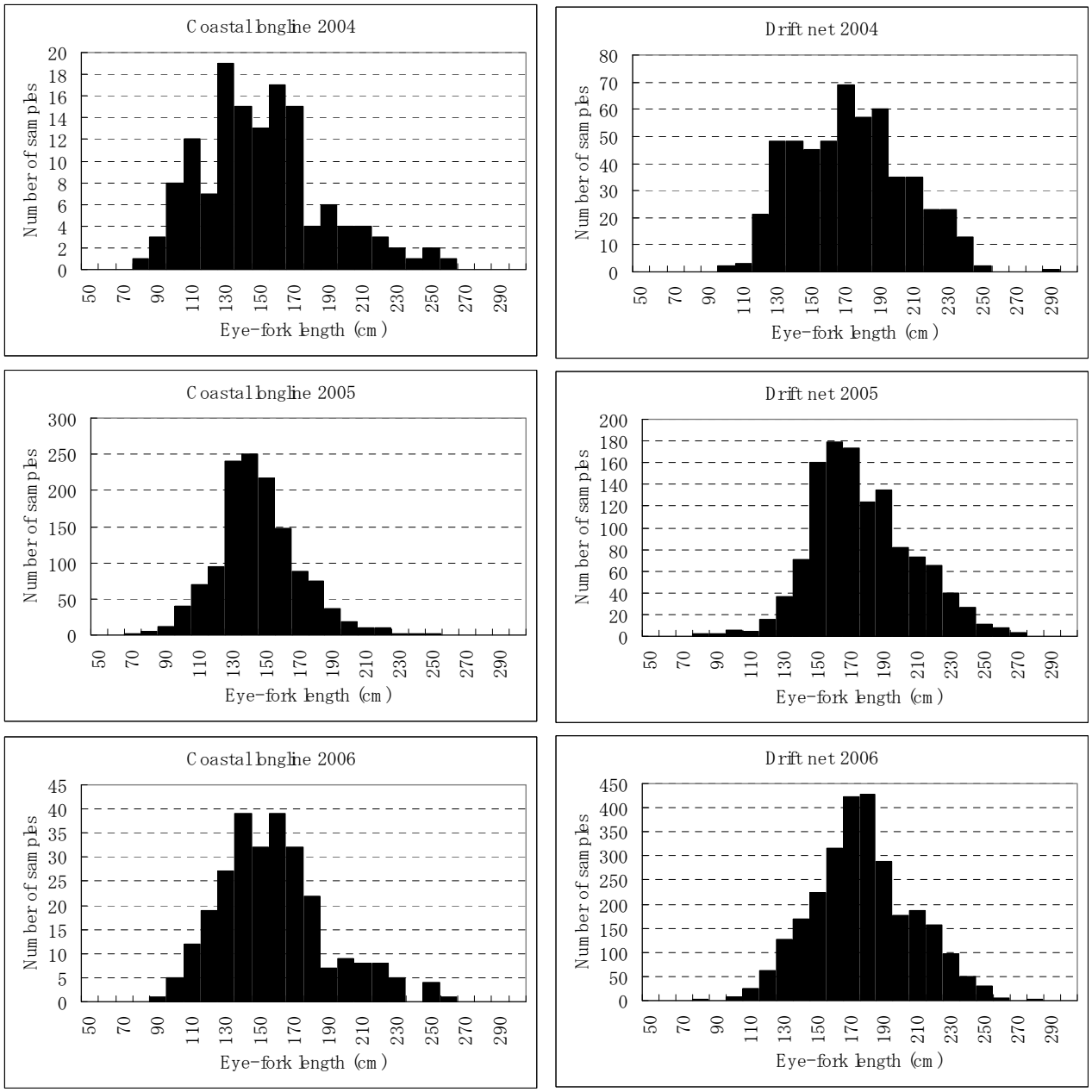

Fig. 2. Length frequency of size sample of swordfish caught by Japanese offshore tuna longliners (left column) and offshore surface longliners (right column) landed in the Kesennuma fishing port for 2004 – 2005.

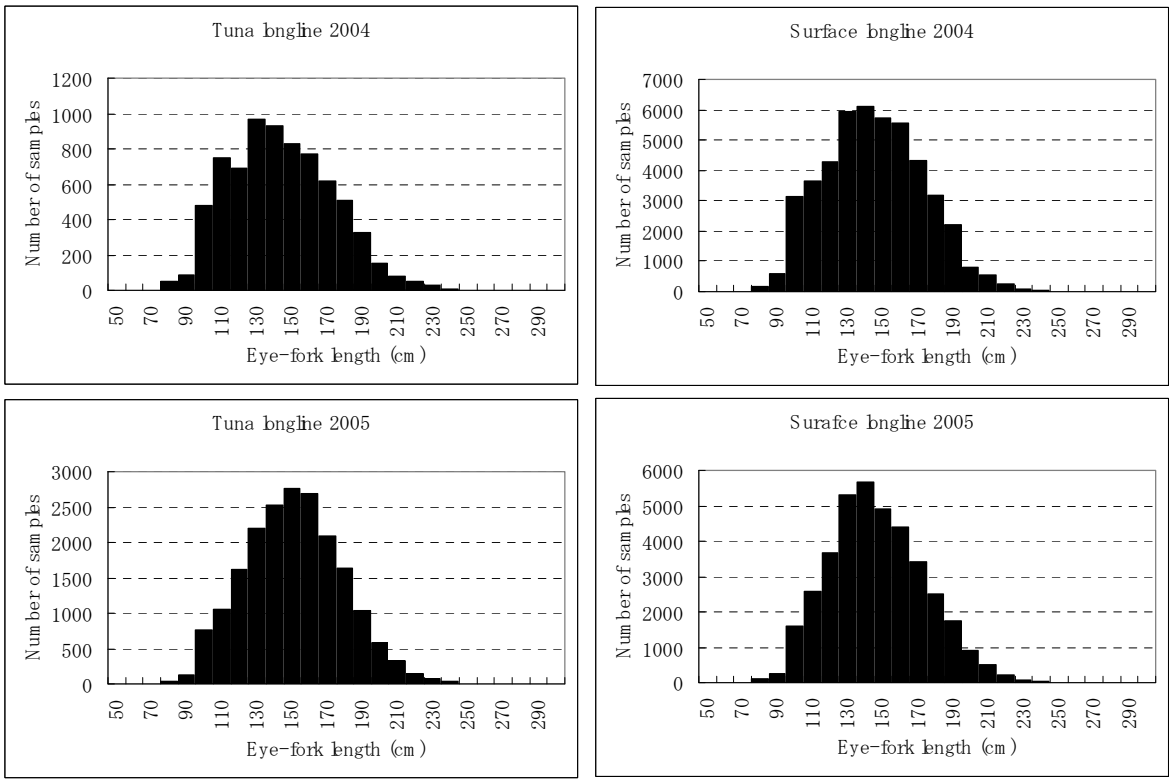

Fig. 3. Length frequency of size sample of swordfish caught by Japanese harpoon fishery landed in the Kesennuma fishing port in 2006.