Brief summary of fishery data of major shark species caught by Japanese offshore and distant-water longline in the north Pacific in 1994 - 2010

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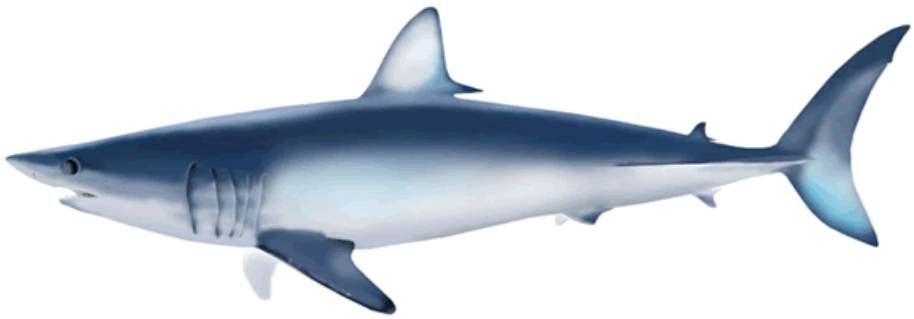

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Introduction

The log-book reporting system of Japanese longliners changed in 1994, and one of the major revisions was to demand fishers to demand fishers to report species specific data of major shark species. This includes the catch number of blue shark, mako sharks and salmon shark, and their average weight at single shot base. In the present study, the outlines of these shark statistics were briefly described, in addition to some information about size sampling program of blue shark.

Materials and Methods

The catch and effort were obtained from Japanese longline fishery statistics compiled by National Research Institute of Far Seas Fisheries for 1994 – 2010. The coverage of log-book varied by year but they are above 95 %. Non-reported parts of log-book were extrapolated using data of other longliners operated in the same area and season whose log-books were available. Size sampling of blue sharks initiated in the end of 2009, and collected data is also error checked and compiled by National Research Institute of Far Seas Fisheries.

Results and Discussions

Reported catch of blue shark caught by Japanese offshore and distant-water longliners is increased from 1994 and peaked in 2001 with 16,400 tons and showed continuous decreasing trend to 2010 (Table 1). This is mainly due to the decrease of the amount of effort of Japanese offshore surface longliners based on Kesennnuma fishing port (Yokawa and Ando, 2011). Majority of blue shark catch obtained in the temperate area of the northwest Pacific, the main fishing ground of the Japanese offshore surface longliners. The observed increasing trend of blue shark catch in the period between 1994 and 2001 is due to the increase of the ratio of blue shark directed sets of the offshore surface longliners. Up to the mid 1990s, This fleet actively targeted tunas during winter, especially 4th quarter of the year but those tuna directed sets gradually replaced by blue shark and swordfish directed sets during period between the mid 1990s to the early 2000s (Yokawa, 2009). This is primarily due to the decrease of the catch rate of bigeye tuna as well as it price down (Person. Comm.,. Kesennuma skipper and radio operator union). The one of the major reason of the decrease of blue shark catch after the 2001 is the decrease of the number of the offshore surface longliners. The number of surface longliners decreased down to about two third in the period between 2001 and 2010. Some year before, a new method to process Surimi of blue shark meet was developed, and the price of blue shark increased recently (about 2 or 3 US$ per kilogram in average).

Majority of the catches of mako sharks are obtained in the area 1 (Table 1), which primarily caught by Japanese offshore surface longliners based on Kesennuma fishing port as bycatch, and all of them are believed to be shortfin mako shark.based on the information of port sampling at Kesennuma fishing port initiated recently (Taguchi and Yokawa, 2011). They are unloaded as fresh and their market price is rather low in compare to blue shark (lower than 1 US$ per kilogram). One the other hand, almost of mako sharks caught in the areas west of the date line are caught by the distant-water longliners. These are frozen and at least partially sold at forging port or export.

Salmon shark is also mostly caught in the area 1. The catch of salmon shark is suddenly increased in 2004 from 100 tons in 2003 to 500 tons, but again decreased drastically in 2009 and 2010. The part of reason of observed increase in the period of 2004 – 2008 is the increase of demands for the filet of salmon shark and as a result of this, increase of the market price of

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salmon shark. Some skippers of Kesennuma offshore surface longlines suggest the decrease of the catches in 2009 and 2010 is due to the high sea surface temperature, but exact reason is not clear at now

. National Research Institute of Far Seas Fisheries had initiated the blue shark size sampling at Kesennuma fishing port in the end of 2008, in addition to the already existed sampling program of billfishes, tunas and shortfin mako sharks. Because the number of blue shark landed in a day at Kesennuma fishing port are quite large and it sometime becomes larger than 1,000, effective sampling methods are investigated when the program initiated (Kanaiwa, et. Al., 2011). The unloaded blue shark to Kesennuma fishing port for wholesale auction are classified by the size, sex, and freshness for market categories, and the port samplers collect sexed size data from each categories. Thus, the blue shark size data should be weighted by the number of fishes in each market categories and summed up to estimate catch at size of single cruise. The coverage of size data in 2009 and 2010 are about 2.5 %.

In 11th of March 2011, historical large Tsunami attacked at Kesennuma fishing port. Two offshore surface longliners and one distant-water longliners were completely broken and many other fishing boats in the port were seriously injured, and some skippers, crew and their family were lost. Japanese offshore surface longliners based on Kesennuma fishing port stopped their operation at least for several months, and they restart their operation since last September (Few of them came back to the fishing ground much earlier). The facility of Kesennuma fishing port damaged seriously, and it would take 3 or more years to recover. The largest damage for the offshore surface lonline fleet is the lost of freezing storehouses and the lost of shark meet processing factories. Though the offshore surface longliners had already restarted their operation, re-construction of factories would take another half or one year at least. Currently, all shark meat caught by this fleet is processed for meal and thus the current price of blue shark is much cheaper than the one before the Tsunami attack.

References

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Table 1. Annual amount of catch (ton) of blue shark, mako sharks and salmon shark.

Blue shark

year	area 1	area 2	area 3	area 4	area 5	Total
1994	10452	242	407	828	375	12305
1995	9049	206	226	963	756	11201
1996	11271	147	250	826	236	12730
1997	14264	245	156	780	384	15830
1998	12995	101	79	684	372	14231
1999	14616	91	87	877	80	15751
2000	15318	78	53	491	101	16041
2001	15465	388	48	352	133	16386
2002	14634	329	43	449	45	15500
2003	13224	1633	33	500	66	15456
2004	10324	2362	46	365	39	13136
2005	11591	835	16	169	14	12624
2006	9662	1266	13	138	13	11093
2007	8311	565	20	94	3	8994
2008	7003	99	35	107	7	7252
2009	6800	1058	30	54	2	7943
2010	6493	970	113	41	4	7621

Mako sharks

year	area 1	area 2	area 3	area 4	area 5	Total
1994	220	74	5	155	109	563
1995	207	78	4	159	323	770
1996	322	74	4	47	125	571
1997	329	102	2	70	71	574
1998	394	92	1	39	61	586
1999	496	96	1	104	13	709
2000	501	48	3	61	5	618
2001	421	66	3	35	8	532
2002	402	44	1	30	2	480
2003	375	74	0	41	4	495
2004	321	85	1	26	3	436
2005	417	79	0	30	1	527
2006	557	69	1	42	2	671
2007	596	40	17	14	0	668
2008	449	47	2	15	2	515
2009	445	35	1	19	1	501
2010	396	35	3	17	1	452

Salmon shark

year	area 1	area 2	area 3	area 4	area 5	Total
1994	214	10	1	27	51	301
1995	258	2	1	73	93	427
1996	293	2	0	7	43	347
1997	203	3	1	5	41	253
1998	153	2	0	13	59	228
1999	155	3	1	22	11	192
2000	94	2	1	13	9	119
2001	173	1	0	9	17	199
2002	115	0	0	11	1	128
2003	89	1	2	4	17	113
2004	547	3	1	2	1	556
2005	445	1	0	0	2	448
2006	599	0	1	16	1	617
2007	457	2	0	1	0	461
2008	643	1	3	2	0	649
2009	294	0	3	4	0	301
2010	105	1	2	0	0	108

All values in 2009 and after is preliminary.

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Table 2. Outline of blue shark size data caught by Japanese offshore surface longliners

Year	Number	Coverage (%)
2008	1012	0.5
2009	14923	2.5
2010	13385	2.6

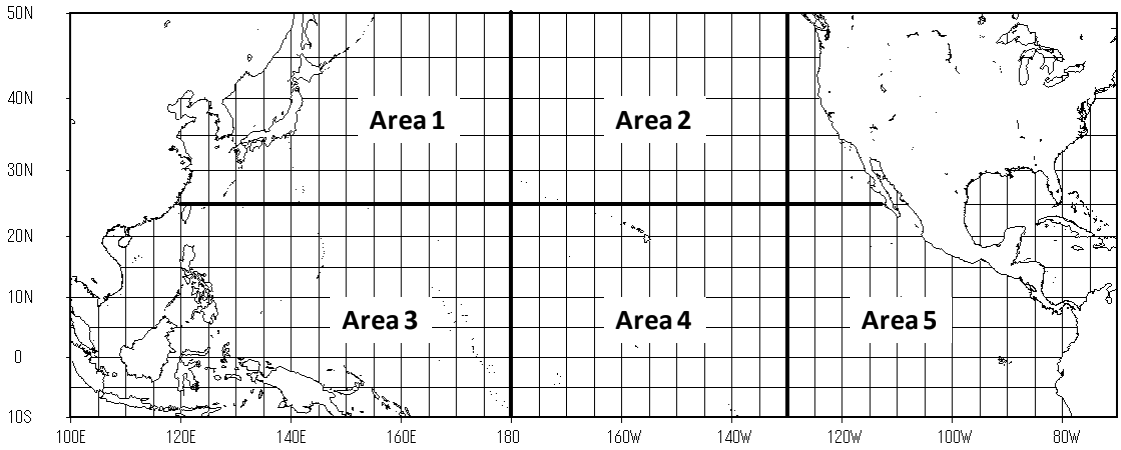

Fig. 1. Area stratification used in this study.

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