ISC Data exchange with WCPFC

Izumi Yamasaki & Akiko Nagata

National Research Institute of Far Seas Fisheries, Fisheries Research Agency
5-7-1, Orido, Shimizu, Shizuoka, 424-8633, Japan

July 2011

Yamasaki & Nagata (2011)

ISC Data exchange with WCPFC

Izumi Yamasaki & Akiko Nagata
National Research Institute of Far Seas Fisheries, Fisheries Research Agency
5-7-1, Orido, Shimizu, Shizuoka, 424-8633, Japan

Introduction

We have been preparing for data exchange with WCPFC in 2012 for four data sets of three categories, Category Ic (annual catch), Ie (annual effort), II (aggregated catch and effort), and III (size frequency). To have a precise comprehension of data inventory of both ISC and WCPFC, the Statistical Working Group proceeded to compare the inventories of the ISC and WCPFC databases, based on the WCPFC submitted inventories of Category II and III in 2010 and the ISC database inventory. In addition, in 2011 the ISC members have submitted updated additional data and WCPFC have sent new data sets corresponding to Category Ic. Thus we report here a revision of the comparison table of the ISC and WCPFC databases, and also the data submission condition of the ISC members.

Renewal and modification of WCPFC data inventory

No modification or change was seen between 2010 and 2011 WCPFC data inventories of Category II and III except for addition of new data.

General review

Data submission condition depends on the members and fishing gears. In many cases, ISC data holdings and WCPFC data holdings do not match in periods and fishing gears. China has not been submitting and directly registering data to ISC database for Categories I, II, and III.

<u>Category I</u>

- Only ISC has Japan Set-net and Troll data.
- Also, ISC has Canada Troll data of 1939 to 1951, but WCPFC does not.
- Korea submitted longer period of data to ISC than WCPFC.
- Mexico has not submitted data to WCPFC.
- Only ISC has the USA data of certain fleets.

<u>Category II</u>

- ISC has Japan Purse seine data, but WCPFC does not.

Yamasaki & Nagata (2011)

- Many of the Canada and the USA data sets are exclusive to the ISC database.
- Korea data sets do not have area codes, thus resolution is unknown. Periods of data sets are almost matched in ISC and WCPFC.
- Taiwan does not have a clear definition of fishing gears in the ISC database. Regarding periods of data sets, WCPFC possesses more data.

Category III

- Direct comparison was difficult because of data resolution differences. In total, WCPFC often has higher resolution in data.
- Only ISC has data sets of Canada.
- Only WCPFC has data sets of China.
- ISC holds more massive data of Japan until 1992.
- Data sets of Korea does not have area codes, thus resolution is unknown. ISC possesses more continuous data in period.
- ISC exclusively has data of certain fishing gears of the USA, and vice versa.

Questions for practical operation of data exchange

- Qualification of data for exchange (e.g., fishing gears: WCPFC has data for only four fishing gears (longline, hand-line, ring net and purse seine). Do they want data of other gears? Or do they target only for these four fishing gears?)
- ISC and WCPFC adopt different data formats and codes. How can we treat these differences?
- Some data sets of WCPFC have higher resolution and longer periods than ISC data sets. How do we balance the unequal quality of data between WCPFC and ISC?
- Some members only submitted data to either ISC or WCPFC. Do we exchange these data too?

Table1-1 Data holding status of ISC and WVPFC (Categoryl; Annual catch)

Holding status ★;ISC, ●;WCPFC, ORANGE CELL; Irregurar code for ISC database

Line No.	Country	Gear	Species	Holdings	Year																																	
					1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
1	Canada	Purse seine	Albacore	ISC																									★								
2				WCPFC															●	●									●								
3	Canada	Troll	Albacore	ISC				★	★	★		★	★	★	★	★	★	★	★	★	★	★			★	★	★	★	★	★	★	★	★	★	★	★	★
4				WCPFC																	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●
5	China	Longline	Albacore	WCPFC																																	
6			Striped marlin	WCPFC																																	
7			Pacific bluefin tuna	WCPFC																																	
8			Swordfish	WCPFC																																	
9	Japan	Gillnet	Albacore	ISC																																	
10				WCPFC																																	
11			Pacific bluefin tuna	ISC																																	
12				WCPFC																																	
13			Striped marlin	ISC																★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
14				WCPFC																																	
15			Swordfish	ISC																★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
16				WCPFC																																	
17	Japan	Harpoon	Swordfish	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
18	Japan	Longline	Albacore	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
19				WCPFC															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
20			Pacific bluefin tuna	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
21				WCPFC															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
22			Striped marlin	ISC																★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
23				WCPFC															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
24			Swordfish	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
25				WCPFC															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
26	Japan	Not specified	Albacore	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
27			Striped marlin	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
28			Swordfish	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
29	Japan	Other gears	Albacore	WCPFC																●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
30			Pacific bluefin tuna	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
31				WCPFC																●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
32			Striped marlin	ISC																★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
33				WCPFC																●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
34			Swordfish	ISC																★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★

Line No.	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total N. of year	Line No.
1																																			★	★							3	1
2																																											3	2
3	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	69	3
4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	57	4
5																																								●	●	●	3	5
6																																								●	●	●	3	6
7																																								●		●	2	7
8																																								●		●	2	8
9				★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	39	9
10				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	39	10
11																																							★	★			2	11
12				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	39	12
13	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		59	13
14				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	39	14
15	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		59	15
16				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	39	16
17	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★							53	17
18	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	59	18
19	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	61	19
20	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	59	20
21	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	61	21
22	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		59	22
23	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	61	23
24	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		58	24
25	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	61	25
26	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★					55	26
27	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★							53	27
28	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★							53	28
29	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	60	29
30	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	59	30
31	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	60	31
32	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		59	32
33	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	60	33
34	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		59	34

Line No.	Country	Gear	Species	Holdings	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
35				WCPFC																●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
36	Japan	Pole-and-line	Albacore	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
37				WCPFC															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
38			Pacific bluefin tuna	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
39				WCPFC															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
40			Striped marlin	WCPFC															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
41				WCPFC															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
42	Japan	Purse seine	Albacore	ISC																	★	★	★	★		★	★			★	★	★	★	★	★	★	★
43				WCPFC																●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
44			Pacific bluefin tuna	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
45				WCPFC																●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
46			Striped marlin	WCPFC																●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
47			Swordfish	WCPFC																●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
48	Japan	Set-net	Albacore	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
49			Pacific bluefin tuna	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
50			Striped marlin	ISC																★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
51			Swordfish	ISC																★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
52	Japan	Troll	Albacore	ISC																																	
53			Pacific bluefin tuna	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
54	Korea	Gillnet	Albacore	ISC																																	
55				WCPFC																																	
56			Striped marlin	WCPFC																																	
58			Swordfish	WCPFC																																	
59	Korea	Longline	Albacore	ISC																																	
60				WCPFC																																	
61			Pacific bluefin tuna	ISC																																	
62				WCPFC																																	
63			Striped marlin	ISC																																	
64				WCPFC																																	
65			Swordfish	ISC																																	
66	Korea	Other gears	Pacific bluefin tuna	ISC																																	
67	Korea	Purse seine	Pacific bluefin tuna	ISC																																	
68	Mexico	Longline	Albacore	ISC																																	
69			Swordfish	ISC																																	
70	Mexico	Not specified	Swordfish	ISC																																	
71	Mexico	Other gears	Albacore	WCPFC																																	

Line No.	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total N. of year	Line No.
35	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	60	35
36	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	59	36
37	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	61	37
38	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	59	38
39	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	61	39
40	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	61	40
41	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	61	41
42	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	56	42
43	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	60	43
44	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	59	44
45	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	60	45
46	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	60	46
47	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	60	47
48	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	59	48
49	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	59	49
50	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		59	50
51	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		59	51
52																											★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	16	52
53	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	59	53
54											★	★	★	★	★	★	★	★	★	★	★	★	★	★											★	★	★	★					18	54
55												●	●	●	●	●	●	●	●	●	●	●	●	●																			13	55
56												●	●	●	●	●	●	●	●	●	●	●	●	●																			13	56
58							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	36	58
59			★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	40	59
60							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	36	60
61			★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	40	61
62																																									●	●	2	62
63			★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	40	63
64							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	36	64
65			★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	40	65
66																																★	★	★	★	★							5	66
67														★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	29	67
68																															★	★											2	68
69																																								★	★	★	3	69
70				★	★	★					★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★					31	70
71				●		●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	37	71

Line No.	Country	Gear	Species	Holdings	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
72			Pacific bluefin tuna	ISC																								★									
73			Striped marlin	WCPFC																																	
74			Swordfish	WCPFC																																	
75	Mexico	Pole-and-line	Albacore	ISC																										★							
76		*Pole-and-line (PL)*	Pacific bluefin tuna	ISC																																	
77	Mexico	Purse seine	Albacore	ISC																										★		★					
78			Pacific bluefin tuna	ISC																								★		★	★	★	★	★	★	★	★
79	Mexico	Sport	Striped marlin	ISC																																	
80			Swordfish	ISC																																	
81	Taiwan	Gillnet	Albacore	ISC																																	
82				WCPFC																																	
83			Pacific bluefin tuna	ISC																																	
84			Striped marlin	WCPFC																																	
85			Swordfish	WCPFC																																	
86	Taiwan	*Harpoon (HP)*	Albacore	ISC																																	
87			Pacific bluefin tuna	ISC																																	
88			Striped marlin	ISC																																	
89			Swordfish	ISC																																	
90	Taiwan	*Large-scale longline (LTLL)*	Albacore	ISC																																	
91			Pacific bluefin tuna	ISC																																	
92			Striped marlin	ISC																																	
93			Swordfish	ISC																																	
94	Taiwan	Longline	Albacore	ISC																																★	★
95				WCPFC																			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
96			Pacific bluefin tuna	ISC																														★		★	★
97				WCPFC																			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
98			Striped marlin	ISC																													★	★	★	★	★
99				WCPFC																			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
100			Swordfish	ISC																													★	★	★	★	★
101				WCPFC																			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
102	Taiwan	Not specified	Striped marlin	ISC																													★	★	★	★	★
103			Swordfish	ISC																													★	★	★	★	★
104	Taiwan	Other gears	Albacore	WCPFC																																	
105			Pacific bluefin tuna	ISC																																	
106				WCPFC																																	
107			Striped marlin	WCPFC																																	

Line No.	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total N. of year	Line No.
72																				★						★				★	★	★		★	★	★							9	72
73				●		●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	37	73
74				●		●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	37	74
75								★								★	★														★	★	★										7	75
76																																								★			1	76
77				★		★	★	★	★	★	★	★	★			★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		★	★	★	★	★	37	77
78	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	51	78
79																																								★	★	★	3	79
80																																								★	★	★	3	80
81																			★	★	★	★	★	★																			6	81
82																			●	●	●	●	●																				5	82
83														★	★		★	★	★	★	★	★	★	★																			10	83
84																			●	●	●	●	●																				5	84
85																			●	●	●	●	●																				5	85
86																																					★	★	★	★	★		5	86
87																																					★	★	★	★	★		5	87
88																																					★	★	★	★	★	★	6	88
89																																					★	★	★	★	★	★	6	89
90																																					★	★	★	★	★	★	6	90
91																																					★	★	★	★	★	★	6	91
92																																					★	★	★	★	★	★	6	92
93																																					★	★	★	★	★	★	6	93
94	★	★	★	★		★	★	★	★	★	★	★	★	★	★						★	★	★		★	★	★	★	★	★	★	★	★	★	★	★	★	★					33	94
95	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	57	95
96	★		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★					40	96
97	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	57	97
98	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★						42	98
99	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	57	99
100	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★						42	100
101	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	57	101
102	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★						42	102
103	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★						42	103
104		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●														28	104
105						★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★							31	105
106		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●														28	106
107		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●														28	107

Line No.	Country	Gear	Species	Holdings	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
108			Swordfish	WCPFC																																	
109	Taiwan	Purse seine	Albacore	ISC																																	
110			Pacific bluefin tuna	ISC																																	
111			Striped marlin	ISC																																	
112			Swordfish	ISC																																	
113	Taiwan	*Small-scale longline (STLL)*	Albacore	ISC																																	
114			Pacific bluefin tuna	ISC																																	
115			Striped marlin	ISC																																	
116			Swordfish	ISC																																	
117	USA	Gillnet	Albacore	ISC																																	
118				WCPFC																																	
119			Pacific bluefin tuna	ISC																																	
120			Striped marlin	ISC																																	
121				WCPFC																																	
122			Swordfish	ISC																																	
123				WCPFC																																	
124	USA	Handline	Albacore	ISC																																	
124			Striped marlin	ISC																																	
124			Swordfish	ISC																																	
125	USA	Harpoon	Albacore	ISC																																	
126			Pacific bluefin tuna	ISC																																	
127			Striped marlin	ISC																																	
128			Swordfish	ISC																																	
129	USA	Hook-and-line	Albacore	ISC																																	
130			Pacific bluefin tuna	ISC																																	
131			Striped marlin	ISC																																	
132			Swordfish	ISC																																	
133	USA	Longline	Albacore	ISC													★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
134				WCPFC															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
135			Pacific bluefin tuna	ISC																																	
136			Striped marlin	ISC																																	
137				WCPFC															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
138			Swordfish	ISC																																	
139				WCPFC															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
140	USA	Other gears	Albacore	ISC																										★	★			★			
141				WCPFC																	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●

Line No.	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total N. of year	Line No.
108		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●														28	108
109																																					★	★	★	★	★		5	109
110															★	★	★	★	★	★	★	★		★	★												★	★	★	★	★		15	110
111																																					★	★	★	★	★		5	111
112																																					★	★	★	★	★		5	112
113																																					★	★	★	★	★	★	6	113
114																																					★	★	★	★	★	★	6	114
115																																					★	★	★	★	★	★	6	115
116																																					★	★	★	★	★	★	6	116
117																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	26	117
118																	●	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	24	118
119													★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		29	119
120																																								★	★		2	120
121																	●	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	24	121
122												★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		30	122
123																	●	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	24	123
124																																									★	★	2	124
124																			★					★	★			★	★		★												6	124
124																																									★		1	124
125																																								★	★		2	125
126																																								★	★		2	126
127																																								★	★		2	127
128		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	41	128
129																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		25	129
130																																								★	★		2	130
131																	★	★																					★	★	★		5	131
132																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★				★	★	★	★	★	★	★		22	132
133	★	★	★	★	★	★	★	★	★	★			★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	61	133
134	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	61	134
135																★							★	★	★	★	★	★	★	★	★	★	★	★	★	★		★		★	★		18	135
136																			★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	24	136
137	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	61	137
138		★	★						★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	36	138
139	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	61	139
140							★	★		★				★						★	★	★	★	★		★	★		★	★	★	★							★	★	★		21	140
141	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	58	141

Line No.	Country	Gear	Species	Holdings	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
142			Pacific bluefin tuna	ISC																														★			
143			Striped marlin	ISC																																	
144				WCPFC																	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●
145			Swordfish	ISC																																	
146				WCPFC																	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●
147	USA	Pole-and-line	Albacore	ISC																										★	★	★	★	★	★	★	★
148				WCPFC																										●	●	●	●	●	●	●	●
149			Pacific bluefin tuna	ISC																								★	★	★	★	★	★	★	★	★	★
150				WCPFC																																	
151			Striped marlin	ISC																																	
152				WCPFC																										●	●	●	●	●	●	●	●
153			Swordfish	ISC																																	
154				WCPFC																										●	●	●	●	●	●	●	●
155	USA	Purse seine	Albacore	ISC																																	
156				WCPFC																																	
157			Pacific bluefin tuna	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
158			Striped marlin	ISC																																	
159				WCPFC																																	
160			Swordfish	ISC																																	
161				WCPFC																																	
162	USA	Sport	Albacore	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
163			Pacific bluefin tuna	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
164			Striped marlin	ISC																	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
165	USA	Troll	Albacore	ISC	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
166				WCPFC															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
167			Pacific bluefin tuna	ISC																														★			
168			Striped marlin	ISC																																	
169				WCPFC															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
170			Swordfish	ISC																																	
171				WCPFC															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Line No.	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total N. of year	Line No.
142				★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★				★	★	★									★	★		28	142
143																																								★	★		2	143
144	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	58	144
145														★	★		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		27	145
146	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	58	146
147	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		49	147
148	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	50	148
149	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★					★	★		47	149
150		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	41	150
151																																								★	★		2	151
152	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	50	152
153													★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		★	★				★	★		25	153
154	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	50	154
155																★	★	★	★	★	★	★						★	★	★	★	★	★	★	★	★			★	★	★		19	155
156																●						●						●	●	●	●	●	●	●	●	●	●						12	156
157	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		★		★	★	★		56	157
158																																								★	★		2	158
159																●						●						●	●	●	●	●	●	●	●	●	●						12	159
160															★	★	★	★	★	★	★		★	★	★				★	★				★						★	★		15	160
161																●						●						●	●	●	●	●	●	●	●	●	●						12	161
162	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			57	162
163	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			57	163
164	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★											49	164
165	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	75	165
166	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	61	166
167					★	★		★					★															★	★	★	★	★	★	★						★	★		14	167
168																			★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	24	168
169	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	61	169
170														★	★					★					★		★	★	★	★	★	★		★						★	★		13	170
171	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	61	171

Table1-2 Data Holdings status of WCPFC and ISC (CategoryII; Catch and Effort)
Holding status ★;ISC, ●;WCPFC, ORANGE CELL; Irregurar code for ISC database

Line No.	Country	Gear	Resolution	Species	Holdings	Year																										
						1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
1	Canada	Troll	1x1	Albacore	ISC																											
2	China	Longline	5x5	Albacore	ISC																											
2					WCPFC																											
3				Striped marlin	ISC																											
3					WCPFC																											
4				Pacific bluefin tuna	WCPFC																											
5				Swordfish	ISC																											
5					WCPFC																											
6	Japan	Longline	5x5	Albacore	ISC			★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
7					WCPFC	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
8				Pacific bluefin tuna	ISC			★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
9					WCPFC			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
10				Striped marlin	ISC			★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
11					WCPFC	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
12				Swordfish	ISC			★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
13					WCPFC	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
14	Japan	Pole-and-line	1x1	Albacore	ISC																							★	★	★	★	★
15					WCPFC																							●	●	●	●	●
16				Pacific bluefin tuna	ISC																							★	★	★	★	★
17	Japan	Purse seine	1x1	Albacore	ISC																						★	★	★	★	★	★
18				Pacific bluefin tuna	ISC																						★	★	★	★	★	★
19	Korea	Longline	5x5	Albacore	WCPFC																										●	●
20				Pacific bluefin tuna	WCPFC																										●	●
21				Striped marlin	WCPFC																										●	●
22				Swordfish	ISC																											
23					WCPFC																										●	●
24			*NA*	Albacore	ISC																								★	★	★	★
25				Pacific bluefin tuna	ISC																								★	★	★	★
26				Striped marlin	ISC																								★	★	★	★
27				Swordfish	ISC																								★	★	★	★
28	Korea	Purse seine	*NA*	Pacific bluefin tuna	ISC																											
29	Mexico	Longline	10x10	Swordfish	ISC																											
30	Mexico	Purse seine	10x10	Albacore	ISC																											
31				Pacific bluefin tuna	ISC																											
32	Mexico	Sport	20x20	Striped marlin	ISC																											
33	Taiwan	Longline	5x5	Albacore	WCPFC									●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
34				Pacific bluefin tuna (BFT)	WCPFC																			●				●				
35				Striped marlin	WCPFC									●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
36				Swordfish	WCPFC									●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
37	Taiwan	*Large-scale longline (LTLL)*	5x5	Albacore	ISC																											
38				Pacific bluefin tuna (BFT)	ISC																											
39				Striped marlin	ISC																											
40				Swordfish	ISC																											
41	Taiwan	*Small-scale longline (STLL)*	5x5	Albacore	ISC																											
42				Striped marlin	ISC																											
43				Swordfish	ISC																											
44				Pacific bluefin tuna (BFT)	ISC																											
45	USA	Gillnet	1x1	Albacore	ISC																											

Line No.	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total N. of year	Line No.
1																							★	★	★	★	★	★	★	★	★	★					1
2																																	★			1	2
2														●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	2
3																																	★			1	3
3																	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		18	3
4														●	●	●	●	●	●	●	●	●		●	●		●									12	4
5																																	★			1	5
5													●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	22	5
6	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			58	6
7	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		61	7
8	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			58	8
9	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		59	9
10	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			58	10
11	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		61	11
12	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			58	12
13	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		61	13
14	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		39	14
15	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		39	15
16	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		39	16
17	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		40	17
18	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		40	18
19	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		36	19
20		●	●								●	●	●	●							●	●	●	●	●	●		●						●		16	20
21	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		36	21
22				★																																1	22
23	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		36	23
24	★	★		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		37	24
25	★	★		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			36	25
26	★	★		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		37	26
27	★	★		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		37	27
28																								★	★	★	★	★	★	★	★	★	★	★		11	28
29																																★	★	★			29
30																																	★	★			30
31																																	★	★			31
32																																★	★	★			32
33	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	52	33
34									●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	27	34
35	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	53	35
36	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	53	36
37																											★	★	★	★	★	★	★	★		8	37
38																													★	★	★	★	★	★		6	38
39																											★	★	★	★	★	★	★	★		8	39
40																											★	★	★	★	★	★	★	★		8	40
41																															★	★	★	★		4	41
42																															★	★	★	★		4	42
43																															★	★	★	★		4	43
44																															★	★	★	★		4	44
45					★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			29	45

Line No.	Country	Gear	Resolution	Species	Holdings	Year																									
						1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
46				Pacific bluefin tuna	ISC																											
47				Striped marlin	ISC																											
48				Swordfish	ISC																											
49	USA	Harpoon	1x1	Albacore	ISC																											
50				Pacific bluefin tuna	ISC																											
51				Striped marlin	ISC																											
52				Swordfish	ISC																									★	★	★
53	USA	Longline	5x5	Albacore	ISC																											
54					WCPFC																											
55				Pacific bluefin tuna	ISC																											
56					WCPFC																											
57				Striped marlin	ISC																											
58					WCPFC																											
59				Swordfish	ISC																											
60					WCPFC																											
61	USA	Pole-and-line	1x1	Albacore	ISC												★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
62				Pacific bluefin tuna	ISC																											
63				Striped marlin	ISC																											
64				Swordfish	ISC																											
65	USA	Sport	1x1	Albacore	ISC																											
66				Pacific bluefin tuna	ISC																											
67				Striped marlin	ISC																											
68				Swordfish	ISC																											
69	USA	Troll	1x1	Albacore	ISC												★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
70					WCPFC																											
71				Pacific bluefin tuna	ISC																											
72				Striped marlin	ISC																											
73				Swordfish	ISC																											
74	USA(Guam)	Longline	5x5	Albacore	WCPFC																											
75				Striped marlin	WCPFC																											
76				Swordfish	WCPFC																											

Line No.	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total N. of year	Line No.
46					★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			29	46
47					★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			29	47
48					★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			29	48
49																																★				1	49
50																																★				1	50
51																																★				1	51
52	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★				35	52
53														★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			20	53
54															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		20	54
55														★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			20	55
56																		●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●		16	56
57														★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			20	57
58															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		20	58
59														★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★			20	59
60															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		20	60
61	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★				★					★		★	★	★	★	★	★	★	★	★		42	61
62																																★	★			2	62
63																																★	★			2	63
64																																★	★			2	64
65																																★	★			2	65
66																																★	★			2	66
67																																★	★			2	67
68																																★	★			2	68
69	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	50	69
70																													●							1	70
71																																★	★			2	71
72																																★	★			2	72
73																																★	★			2	73
74																			●			●	●													3	74
75																			●																	1	75
76																●			●	●			●	●												5	76

Table1-3 Data holding status of ISC and WVPFC (CategoryIII; Size Frequency)

Holding status ★; ISC, ●; WCPFC(Y), ○; WCPFC(N), ORANGE CELL; Irregurar code for ISC database

Line No.	Country	Gear	Area size	Species	Holdings	Year																																			
						1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
1	Canada	Troll	1x1	Albacore	ISC																																		★	
2	China	Longline	10x20	Albacore	WCPFC																																			
3				Striped marlin	WCPFC																																			
4				Swordfish	WCPFC																																			
5			5x5	Albacore	WCPFC																																			
6				Striped marlin	WCPFC																																			
7				Swordfish	WCPFC																																			
8	China	Purse Seine	5x5	Striped marlin	WCPFC																																			
9	Japan	Gillnet	20x20	Albacore	ISC																																			
10				Pacific bluefin tuna	ISC																																★			
11				Striped marlin	ISC																																			
12				Swordfish	ISC																																			★
13	Japan	Handline	20x20	Albacore	ISC																		★	★					★											
14	Japan	Longline	10x20	Albacore	WCPFC																																			
15				Striped marlin	WCPFC																																			
16				Swordfish	WCPFC																																			
17			20x20	Albacore	ISC																		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
18				Pacific bluefin tuna	ISC	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
19				Striped marlin	ISC																							★	★	★	★	★	★	★	★	★	★	★	★
20				Swordfish	ISC																							★	★	★	★	★	★	★	★	★	★	★	★	★
21			5x5	Albacore	WCPFC																																			
22				Striped marlin	WCPFC																																			
23				Swordfish	WCPFC																																			
24	Japan	Pole-and-line	20x20	Albacore	ISC																		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
25				Pacific bluefin tuna	ISC				★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★		★		★		★	★		★	★		★		★
26				Swordfish	ISC																																			
27	Japan	Purse Seine	20x20	Albacore	ISC																						★	★			★				★	★	★	★	★	★
28			5x5	Albacore	WCPFC																																			
29				Striped marlin	WCPFC																																			
30	Japan	Troll	20x20	Albacore	ISC																														★	★	★	★	★	★
31				Pacific bluefin tuna	ISC				★	★																							★		★	★	★	★		
32	Korea	Longline	5x5	Albacore	WCPFC																																			
33				Striped marlin	WCPFC																																			
34				Swordfish	WCPFC																																			
35			*NA*	Albacore	ISC																																			
36				Striped marlin	ISC																																			
37				Swordfish	ISC																																			
38	Korea	Purse Seine	5x5	Albacore	WCPFC																																			

1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total N. of year	Line No.
	★	★							★				★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	19	1
															●			●	●									3	2
																	●		●									2	3
																		●	●					●				3	4
										●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		17	5
										●	●		●	●	●	●	●	●		●	●	●	●	●	●	●		15	6
									●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		18	7
																			●				●					2	8
					★	★	★	★	★								★					★	★		★	★	★	11	9
							★	★									★					★	★		★	★	★	9	10
							★	★	★												★						★	5	11
							★	★	★													★	★		★	★	★	9	12
																					★						★	5	13
													●	●			●		●									4	14
											●	●		●	●		●											5	15
										●	●	●	●	●	●		●											7	16
★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	46	17
	★		★		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	47	18
★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	41	19
★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	41	20
											●	●	●	●	●	●	●	●		●	●	●	●	●				13	21
										●	●	●	●	●	●	●	●	●				●	●	●		●		13	22
										●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		16	23
★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	46	24
	★	★	★			★		★				★					★											23	25
																				★								1	26
	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★				★							27	27
																			●	●	●				●		●	5	28
															●			●					●			●		4	29
	★	★	★	★					★	★	★	★	★	★	★	★					★	★	★					21	30
																				★								6	31
															●	●		●					●	●	●		●	7	32
									●	●					●				●	●			●	●				7	33
									●	●					●				●	●			●	●				7	34
																	★	★	★	★	★	★	★	★	★	★		10	35
																	★	★	★	★	★	★	★	★	★	★		10	36
																	★	★	★	★	★	★	★	★	★	★		10	37
													●				●	●		●		●	●				●	7	38

Line No.	Country	Gear	Area size	Species	Holdings	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
39				Striped marlin	WCPFC																																			
40			*NA*	Pacific bluefin tuna	ISC																																			
41	Mexico	Purse Seine	20x20	Pacific bluefin tuna	ISC																																			
42	Mexico	Sport	10x10	Striped marlin	ISC																																			
43				Swordfish	ISC																																			
44	Taiwan	Longline	10x20	Albacore	WCPFC																																			
45				Pacific bluefin tuna	WCPFC																																			
46				Striped marlin	WCPFC																																			
47				Swordfish	WCPFC																																			
48			5x5	Albacore	WCPFC																																			
49				Striped marlin	WCPFC																																			
50				Swordfish	WCPFC																																			
51	Taiwan	*Large-scale longline (LTLL)*	*10x20*	Albacore	ISC																																			
52				Pacific bluefin tuna	ISC																																			
53				Striped marlin	ISC																																			
54				Swordfish	ISC																																			
55	Taiwan	Purse Seine	5x5	Albacore	WCPFC																																			
56				Striped marlin	WCPFC																																			
57	USA	Hook and Line	*NA*	Striped marlin	ISC																																			
58	USA	*LH*	1x1	Albacore	ISC																																			
59	USA	Longline	5x5	Albacore	ISC																																			
60					WCPFC																																			
61			*NA*	Striped marlin	ISC																																			
61			5x5		WCPFC																																			
62			*NA*	Swordfish	ISC																																			
63			5x5		WCPFC																																			
64			*NA*	Striped marlin	ISC																																			
65	USA	Pole-and-line	5x5	Albacore	ISC																					★		★	★		★			★	★	★	★	★	★	★
66	USA	Purse Seine	10x20	Albacore	WCPFC																																			
67			5x5																																					
68				Striped marlin	WCPFC																																			
69	USA	Troll	5x5	Albacore	ISC														★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
70	USA(Guam)	Longline	5x5	Albacore	WCPFC																																			
71				Striped marlin	WCPFC																																			
72			10x20	Swordfish	WCPFC																																			
73			5x5																																					

1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total N. of year	Line No.
																	●				●	●	●	●	●		●	7	39
																	★	★	★	★	★	★	★					7	40
																											★	1	41
																									★	★	★	3	42
																									★	★	★	3	43
													●	●								●	●	●	●	●	●	8	44
																									●			1	45
										●	●		●	●			●						●	●	●	●	●	10	46
											●	●		●	●	●	●	●			●		●	●	●	●	●	13	47
										●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	17	48
									●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	●	17	49
									●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	18	50
																					★	★	★	★	★	★	★	7	51
																									★		★	2	52
																					★	★	★	★	★	★	★	7	53
																					★	★	★	★	★	★	★	7	54
																●						●	●		●			4	55
													●	●	●	●	●				●	●	●	●			●	10	56
																							★	★	★	★		4	57
																								★	★			2	58
				★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	24	59
											●	●	●	●	●	●	●	●	●	●	●							11	60
																							★	★		★	★	4	61
											●	●	●	●	●	●	●	●	●	●	●							11	61
																				★	★	★	★	★		★	★	7	62
										●	●	●	●	●	●	●	●	●		●	●							11	63
																							★	★		★	★	4	64
★	★	★	★	★	★	★	★								★	★	★	★	★	★	★	★	★	★	★	★	★	32	65
														●														1	66
																	●		●	●		●				●		5	67
																	●		●	●	●			●	●	●		7	68
★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	50	69
													●															1	70
												●	●	●	●													4	71
												●																1	72
												●	●		●	●												4	73