

6th Meeting of the Scientific Committee

Puerto Varas, Chile, 9 - 14 September 2018

SC6-SQ01

Jumbo flying squid datasets held by the Secretariat *Secretariat*

Summary

The Jumbo flying squid fishery is a large fishery that covers an extensive area of the Eastern Pacific Ocean. During 2017 there were 352 Chinese vessels, 5 Korean vessels, 14 Chinese Taipei vessels and 16 reefers operating in the SPRFMO Area as well as numerous vessels (mainly artisanal) operating in the nearby EEZs and Territorial waters.

This paper identifies and describes Jumbo flying squid data sets held by the SPRFMO Secretariat. It also shows a comparison of the data sets held by the Secretariat vs the FAO data series and provides some starter questions intended to progress a specific task contained in the 2018 SC workplan being:

- Reconstruct historical total catch records including non CNCPs and non-members

Fishing activity data

The Secretariat holds fishing effort data at varying resolutions as shown below in Table 1.

Recently, as per the Commissions 2016 agreement, more participants have begun to submit data that is consistent with the specifications of CMM 02-2018, Annex 4 (represented in the table below as “0.1*0.1 degree Jig – Daily”).

Squid fishing activity data (coded green) generally contains information on vessels, fishing date, start and end position, crew numbers, and number of jigging machines, lighting power, hours fished and catch weights.

However, other aggregated data only occasionally contains summarised measures of effort such as vessel days, fishing hours or number of vessels.

Participant	Datatype	Available years
China	5*5 degree (Jig - Annual)	2002-2006
	1*1 degree (Jig - Monthly)	2008, 2015
	0.1*0.1 degree (Jig - Daily)	2016
Japan	0.1*0.1 degree (Jig - by Trip)	2010
Korea	0.1*0.1 degree (Jig - Daily)	2012-2017
Peru	0.1*0.1 degree (Trawl -Tow by Tow)	2014
Chinese Taipei	5*5 degree (Jig - Annual)	2007-2015
	0.1*0.1 degree (Jig - Daily)	2016, 2017

Table 1: Resolution of the various types of fishing activity data held by the Secretariat (SPRFMO Area).

Year	Chile			China	Ecuador	EU	Japan			Korea			Chinese Taipei		Peru		Ukraine	Total
	EEZ-CHL	FAO87	HS-FAO87	HS-FAO87	FAO87	HS-FAO87	EEZ-Other	FAO87	HS-FAO87	EEZ-PER	HS-FAO87	FAO87	FAO87	HS-FAO87	EEZ-PER	HS-FAO87	FAO87	
1978								7										7
1983					???			1										1
1984								9										9
1985								15 503										15 503
1986								94										94
1988							0		43									43
1989							0		14									14
1990							0		1 605			3 465		7 441		142		12 653
1991	445						2 173	50			24 015			81 655		398		108 736
1992	9 400				???		49 313	1 874			43 022		1 698	106 547		1		211 855
1993	7 442				???		52 221	3 579			62 887		0	140 355				266 484
1994	205						81 507	2 698			69 664		0	209 970				364 044
1995					???		36 478	37			35 719		0	109 155				181 389
1996	2						557	644			12 896		0	8 138				22 237
1997							12 924	297			3 359		0	16 061				32 641
1998	5						0	0	0				0	547				552
1999	6						6	40			19 728		0	54 652				74 432
2000	9						32 174	1 704			20 822		0	53 795				108 504
2001	3 476			17 770			71 069	1 132	5 797	0			0	71 834				171 078
2002	5 589			50 483			26 268	33 978	13 130	8 629			12 064	146 390				296 531
2003	15 191			81 000			22 549	4 510	1 681	3 041			23 009	153 727				304 708
2004	175 134			205 600			22 385	4 615	2 026	8 761			39 450	270 368				728 339
2005	296 953			86 000				1 633	2 519	0			15 976	291 140				694 221
2006	219 800			62 000				323	2 048	437			18 349	434 261				737 218
2007	124 389			46 400					0	0			14 750	427 591				613 130
2008	145 171			79 064					5 971	804			31 161	533 414				795 585
2009	56 337			70 000					7 221	0			12 319	411 805				557 682
2010	200 428			142 000				498	7 764	6 742			29 206	369 822				756 460
2011	163 450		45	250 000						7 410			35 418	404 730				861 053
2012	144 956		9	261 000						8 310			14 177	497 462				925 914
2013	105 905		22	264 000	???					6 034			7 759	451 061				834 780
2014	176 569		0	332 523	???					7 203			4 795	556 156	1 190			1 078 436
2015	143 716		0	323 636	1 500					4 263			10 072	513 796	0.1			996 982
2016	183 123		0	223 300		0.1				4 388			12 989		1			423 800
2017 (estimate)													7 338					7 338

Table 2: Annual Catch weights (t) for Jumbo flying squid (GIS) as submitted to the SPRFMO Secretariat.

2017 figures are estimates (if available). Updated figures have been underlined.

??? - Ecuador provided some information in paper [SC-03-35](#) during 2015, but complete annual figures have not yet been supplied.

Annual Catch data

The annual catch data series for Jumbo flying squid held by the Secretariat begins in 1978 and updated figures are indicated by an underline (refer Table 2).

Recalling that one of the Squid tasks in the 2018-2020 SC workplan was to “Reconstruct historical total catch records including non-CNCs and non-members” the secretariat has prepared Table 3 which compares the SPRFMO catch data series with an FAO extracted series and highlights observed differences.

	Chile	China	Ecuador	Japan	Korea	Peru	Chinese Taipei	Ukraine	FAO	SPRFMO	Difference
Year	FAO87	FAO87	FAO87	FAO87	FAO87	FAO87	FAO87	FAO87	Total	Total	%
1969				-200					200	0	-100
1970						-500			500	0	-100
1971						-400			400	0	-100
1972									0	0	0.0
1973									0	0	0.0
1974									0	0	0.0
1975									0	0	0.0
1976						-717			717	0	-100
1977						-1			1	0	-100
1978									7	7	0.0
1979						-59			59	0	-100
1980									0	0	-100
1981						-61			61	0	-100
1982						-888			888	0	-100
1983				1		-2			2	1	-100
1984						-7			16	9	-77.8
1985						-206			15,709	15,503	-1.3
1986						-870			964	94	-100
1987						-84			84	0	-100
1988				43		-852			852	43	-100
1989				14		-2,992			2,992	14	-100
1990				257	2,991				9,405	12,653	25.7
1991					6 981	60 998		18	40 739	108 736	62.5
1992					6 921	93 852			111 082	211 855	47.6
1993					5 109	132 586			128 789	266 484	51.7
1994					3 278	167 132			193 634	364 044	46.8
1995					1 279	83 479			96 631	181 389	46.7
1996					1 202				21 125	22 237	5.4
1997					975				31 666	32 641	3.0
1998					-201				753	552	-36.4
1999					915				73 517	74 432	1.2
2000				-24 459	4 595				127 766	108 504	-17.8
2001				555					170 523	171 078	0.3
2002									296 531	296 531	0.0
2003				1					304 707	304 708	0.0
2004				-19 187					747 526	728 339	-2.6
2005	-1			-32 019					726 241	694 221	-4.6
2006	-31 189		-212	-37 105					805 724	737 218	-9.3
2007			-121	-14 059					627 310	613 130	-2.3
2008	-496		-668	-14 143					810 892	795 585	-1.9
2009				-27 271					584 953	557 682	-4.9
2010				-16 615					773 075	756 460	-2.2
2011				-9 977	-433				871 463	861 053	-1.2
2012			-91	-1 448					927 453	925 914	-0.2
2013	-344		-2		-1 033				836 160	834 780	-0.2
2014	-33		-18 146			-55 098			1 151 713	1 078 436	-6.8
2015	32		221			-4 178			1 000 908	996 982	-0.4
2016	2 209		-485			-323 337			745 413	423 800	-75.9

Table 3: Comparison of Annual Catch figures (t) for Jumbo flying squid (GIS) submitted to the SPRFMO Secretariat with FAO figures for FAO Area 87. Green figures indicate the SPRFMO figures are larger

It can be seen from Table 3 that the FAO series has data beginning 1969 whilst the SPRFMO dataset has limited information prior to 1990. This explains most of the early differences. Most of the differences between the Ecuador and Japan catch series are explained by a lack of SPRFMO held information. The remaining differences since 1998 are mostly small but there are a few isolated notable differences.

Based on Table 3 and to complete the reconstruction of the historic catches for squid the Secretariat encourages the SC to:

- Agree on a suitable start year for historic squid data;
- Decide which figures/timeseries to use for Japan and whether direct correspondence is needed;
- Request that relevant members make recommendations regarding their historic catch data;
- Consider whether there are likely to be any double-ups within the presented data series.