SPRFMO
South Pacific Regional Fisheries Management Organisation

8th MEETING OF THE SCIENTIFIC COMMITTEE

New Zealand, 3 to 8 October 2020

SC8-SQ01

Squid information held by the Secretariat

Secretariat

1. Introduction

This paper identifies and describes Jumbo flying squid datasets held by the SPRFMO Secretariat, including a comparison between the data in the datasets held by the Secretariat and the data in the FAO data series, and some simple measures of effort (number of vessels and gross tonnage). It is an update to the paper SC7-SQ01, Jumbo flying squid datasets held by the Secretariat, presented to the 7th Scientific Committee meeting in 2019.

The Multiannual SC WorkPlans and CMM 18-2020 requested the development of templates to support stock assessment and to monitor the fishery. These draft templates were presented to the Scientific Committee by China, Chile and the Secretariat and are included here for reference.

- Members are invited to check the catch data contained in Table 1 and 2 and liaise with the Secretariat in cases where significant discrepancies exist.
- The SC is invited to recommend that the Secretariat update the Japan catch figures using the information contained in the FAO database so that SPRFMO has a more complete record for Jumbo flying squid captures.
- The SC is invited to note that this paper also now shows the number of vessels (and gross tonnage) for vessels that fished in the squid fishery in the SPRFMO area by flag State and Year.

Regarding the various templates, SC8 is requested to:

- Recommend a "Squid monthly catch and effort" template so that Member provided information can be uploaded into the SPRFMO database from 2021 as envisioned in CMM 18-2020 (Squid).
- Recommend a "Squid jigging observer data" template so that Member provided information can be uploaded into the SPRFMO database from 2021.
- Consider recommending a "Squid biological sampling" template so that information collected in ports (or on reefers) can be submitted and stored within the SPRFMO database.
- Consider the "Squid stock assessment data monthly" template and make any comments or recommendations they deem necessary.
- Consider the "Squid depletion model data" template and make any comments or recommendations they deem necessary.

2. Recommendations from SC7 and COMM 8

Paragraph 3 of CMM 18-2020 requires that each Member and CNCP participating in the jumbo flying squid fishery shall collect, verify, and provide all required data to the Executive Secretary, in accordance with CMM 02-2020 (Data Standards) and using the templates prepared by the Secretariat and available on the SPRFMO website, including an annual catch report detailing catches on a monthly basis. The template for the reporting of catch and effort data shall be developed by the Secretariat and submitted to the Scientific Committee and the Commission for consideration at the annual meeting in 2021.

The Multiannual SC WorkPlan has two items related to Observer data collection templates, one to "develop a template to support stock assessment" and a second to "develop a template to monitor the fishery". Both items are on the timeline for 2020, and to be coordinated by China and Chile with support from CALAMASUR and the Secretariat.

Paragraph 237 of the SC7-Report records that the SC requested that the tables of catch currently available on the SPRFMO website are made available as downloadable excel files. The Secretariat agreed to follow up with affected delegations offline to resolve outstanding issues. The data in the tables in this paper have been loaded as an Excel spreadsheet to the SPRFMO SC8 Squid Workstream on the SPRFMO Microsoft Teams site.

3. Annual Catch Data

The annual catch data for Jumbo flying squid beginning in 1990 is shown in Table 1. Updated figures are indicated by an underline. There have been some updates to historic Peru catches primarily due to the identification and estimation of catches from the SPRFMO Area (refer SC7-Doc33).

Where possible catches from 2018 have been updated based on Annual Catches (rather than the estimates presented in SC7-SQ01). Catches from 2019 (when present) have been estimated based on Fishing Activity data submitted to the Secretariat by 30 June 2020.

Table 1: Annual Catch weights (t) for Jumbo flying squid (GIS) as submitted to the SPRFMO Secretariat (post 1990).

Year[1]	Chile			China	Ecuador	EU	Japan			Korea			Panama	Peru		Chinese Taipei		Ukraine	Total
FAO 87 Area	EEZ-CHL	FAO 87	High Seas	High Seas	FAO87	High Seas	EEZ-other	FAO87	High Seas	EEZ-PER	High Seas	FAO87	High Seas	EEZ-PER	High Seas	FAO87	High Seas	FAO87	
1990							0		1 605			3 465		7 441				142	12 653
1991		445					2 173		50			24 015		20 657				398	47 738
1992		9 400			???		49 313		1 874			43 022		12 695			1 698	1	118 002
1993		7 442			???		52 221		3 579			62 887		7 769			0		133 897
1994		205					81 507		2 698			69 664		42 838			0		196 912
1995					???		36 478		37			35 719		25 676			0		97 909
1996		2					557		644			12 896		8 138			0		22 237
1997							12 924		297			3 359		16 061			0		32 641
1998		5					0	0	0					547			0		552
1999		6					6		40			19 728		54 652			0		74 431
2000		9					32 174		1 704			20 822		53 795			0		108 504
2001		3 476		17 770			71 069		1 132	5 797	0			71 834			0		171 078
2002		5 589		50 483			26 268		33 978	13 130	8 629			146 390			12 064		296 531
2003		15 191		81 000			22 549		4 510	1 681	3 041			153 727			23 009		304 708
2004		175 134		205 600			22 385		4 615	2 026	8 761			270 368			39 450		728 338
2005		296 953		86 000					1 633	2 519	0			291 140			15 976		694 221
2006		219 800		62 000					323	2 048	437			434 261			18 349		737 217
2007	124 389			46 400						0	0			427 591		14 750			613 130
2008	145 171			79 064						5 971	804			533 414		31 161			795 585
2009	56 337			70 000						7 221	0			411 805		12 319			557 681
2010	200 428			142 000					498	7 764	6 742			369 822		29 206			756 460
2011	163 450		45	250 000							7 410			404 730			35 418		861 053
2012	144 956		9	261 000							8 310			497 462			14 177		925 914
2013	105 905		22	264 000	???						6 034			451 061			7 759		834 780
2014	176 569		0	332 523	???[2]						7 203			554 882	1 274		4 795		1 077 246
2015	143 716		0	323 636	1 500						4 263			513 492	304		10 072		996 981
2016	183 123		0	223 300		0.1					4 388		842	322 338	999		12 989		747 979
2017	155 389		*0*	296 100							3 460		289	290 933	5 067		7 338		758 577
2018	145 927		*0*	346 200							3 651			317 000[3]	288		3 848		816 914
2019 (est.)				*301 272*							*5 577*						*2 072*		

2019 figures are estimates from fishing activity data where available. Updated figures have been underlined.

[1] SC6 in 2018 agreed that 1990 is a suitable start year for historic squid data. The Secretariat holds catch data back to 1978.

[2] Ecuador provided some information in paper SC-03-35 during 2015, but no updates have been provided.

[3] This figure is from the Peru PRODUCE datasheet http://ogeiee.produce.gob.pe/index.php/informacion-sectorial/pesca/aucicultura

4. Comparison with Annual Catch figures held by FAO

Table 2 compares the SPRFMO catch data series with an FAO extracted series and highlights observed differences.

Table 2: Comparison (on a percentage basis) of Annual Catch figures (t) for Jumbo flying squid (GIS) submitted to the SPRFMO Secretariat with FAO figures for FAO Area 87. Percentage differences greater than 10% are highlighted (green figures indicate that the SPRFMO figures are larger, orange that they are smaller).

	Chile	China	Ecuador	Japan	Korea	Panama	Peru	Chinese Taipei	Ukraine	FAO	SPRFMO	Difference
Year	FAO87	FAO87	FAO87	FAO87	FAO87	FAO87	FAO87	FAO87	FAO87	Total	Total	%
1990	0	0	0	16	86	0	0	0	0	9 405	12 653	25.7
1991	0	0	0	0	29	0	0	0	0	40 739	47 738	14.7
1992	0	0	0	0	6	0	0	0	0	111 082	118 003	5.9
1993	0	0	0	0	4	0	0	0	0	128 789	133 898	3.8
1994	0	0	0	0	5	0	0	0	0	193 634	196 912	1.7
1995	0	0	0	0	4	0	0	0	0	96 631	97 910	1.3
1996	0	0	0	0	9	0	0	0	0	21 125	22 237	5.0
1997	0	0	0	0	29	0	0	0	0	31 666	32 641	3.0
1998	0	0	0	0	-100	0	0	0	0	753	552	-26.7
1999	0	0	0	-1	5	0	0	0	0	73 517	74 432	1.2
2000	0	0	0	-42	25	0	0	0	0	127 766	108 504	-15.1
2001	0	0	0	1	0	0	0	0	0	170 523	171 078	0.3
2002	0	0	0	0	0	0	0	0	0	296 531	296 531	0.0
2003	0	0	0	0	0	0	0	0	0	304 707	304 708	0.0
2004	0	0	0	-42	0	0	0	0	0	747 526	728 339	-2.6
2005	0	0	0	-95	0	0	0	0	0	726 241	694 221	-4.4
2006	-12	0	-100	-99	0	0	0	0	0	805 724	737 218	-8.5
2007	0	0	-100	-100	0	0	0	0	0	627 310	613 130	-2.3
2008	0	0	-100	-100	0	0	0	0	0	810 892	795 585	-1.9
2009	0	0	0	-100	0	0	0	0	0	584 953	557 682	-4.7
2010	0	0	0	-97	0	0	0	0	0	773 075	756 460	-2.1
2011	0	0	0	-100	-6	0	0	0	0	871 463	861 053	-1.2
2012	0	0	-100	-100	0	0	0	0	0	927 453	925 914	-0.2
2013	0	0	-100	0	-15	0	0	0	0	836 160	834 780	-0.2
2014	0	0	-100	0	0	0	-9	0	0	1 151 713	1 077 246	-6.5
2015	0	0	15	0	0	0	-1	0	0	1 000 908	996 982	-0.4
2016	1	0	-100	0	0	100	0	0	0	745 413	747 979	0.3
2017	2	0	-100	0	0	100	0	0	0	760 259	758 577	-0.2
2018	1	0	-100	0	4	0	-12	0	0	890 630	816 914	-8.3

Overall, SPRFMO submitted catch figures and FAO catch records have been within 10% of each other. However, since the year 2004, catches for Ecuador and Japan have displayed consistent and significant differences.

Paragraph 13 of the SC7 report records that Ecuador noted that squid fishing in Ecuador is currently done at an artisanal level and is caught as bait for the fishing of large pelagic (tuna, mahi mahi, billfishes), and direct targeting of Squid is low. During SC7 Ecuador undertook to present catch data and biological aspects at future meetings.

As requested during SC7, Japan has been contacted regarding its catches in the period 2004 to 2012, but Japan has not provided any updates to the SPRFMO.

5. Vessels

Table 3 shows the number of vessels that fished in the squid fishery in the SPRFMO area by flag State and Year as determined from the Annual Reports. Table 4 shows an estimate of the total Gross Tonnage by Flag state and Year based on the Gross Tonnage in the SPRFMO Record of Vessels for active vessels (determined from official submissions compared with submitted fishing activity and Transhipment data).

Table 3: Number of Active vessels by Flag and Year in the SPRFMO Area.

Year	China	Korea	Panama	Chinese Taipei	Total
1990		6			6
1991		24			24
1992		33			33
1993		42			42
1994		49			49
1995		50			50
1996		48			48
1997		27			27
1998					0
1999		11			11
2000		14			14
2001	22	7			29
2002	43	17			60
2003	74	5			79
2004	119	8			127
2005	93	2			95
2006	43	1			44
2007	37				37
2008	50	1			64
2009	54	1			68
2010	104	1			125
2011	172	1			194
2012	254	6			274
2013	205	6			220
2014	264	6		14	289
2015	252	2		32	295
2016	276	4	2	98	391
2017	356	8	1	558	936
2018	435	17		44	510
2019	516	17		11	544

Table 4: Total Gross Tonnage of Active vessels by Flag and Year in the SPRFMO Area.

Year	China	Korea	Panama	Chinese Taipei	Grand Total
2014	177 345	3 751		4 295	185 391
2015	168 516	898		7 902	177 316
2016	196 464	2 655	434	9 625	209 178
2017	287 731	6 131	288	12 282	306 432
2018	370 168	13 837	288	12 871	397 164
2019	425 245	13 837		11 389	450 471

6. Templates

Five templates were presented at the third web meeting of the Scientific Committee (SC8-Doc06).

1) A template (Squid monthly catch and effort) as requested in Paragraph 3 of CMM 18-2020 (Squid) for the provision of annual catch detailing catches on a monthly basis, with both catch and effort (number of vessels and number of days fished) data.
2) A template (Squid jigging observer data template) for the provision of Observer data collected on squid jigging vessels including vessel data, trip data, fishing activity data, biological data (mantle length, sex, maturity stage), length frequency data and observed transhipments.
3) A template (Squid Biological sampling template) for the provision of Observer biological data (mantle length, sex, maturity stage) collected either in port or at sea from landed or transhipped whole squid, where the date or location of capture may not be known.
4) A template (Squid stock assessment data monthly) for the provision of scaled up biological information from Observer data (catch by age and catch by length class) and effort (days for all vessels) to be provided by a Member on a monthly basis.
5) A template (Squid Depletion Model Data) for the provision of weekly information by area and "pulse", with catch, mean weight, CPUE and acoustic index.

These templates are available on the SPRFMO SC8 Teams forum, in the Squid channel.