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Chinese Taipei's Annual Report

2017 National Report of Chinese Taipei to SPRFMO Scientific Committee on the Squid Jigging Fishery in the Southeast Pacific Ocean

Summary

Jumbo flying squids inhabit in the eastern Pacific and have been targeted by Chinese Taipei's squid-jigging fleet since 2002. The number of vessels varied from 5 to 29 between 2002 and 2016. The catch of jumbo flying squid increased to 12,989 tons in 2016. The nominal CPUE of this fishery has been stable in recent years. The major fishing ground for this fishery is around 76–83°W and 15–20°S. Data of logbook, transshipment and landing of Chinese Taipei's squid-jigging fleet have all been collected and submitted. Research on the stock status and spatial dynamics of jumbo flying squid has been conducted. The length composition of jumbo flying squid was converted from weight category. Neither observer nor port sampling program is implemented.

1. Description of the Fishery

Jumbo flying squid *Dosidicus gigas*, also known as Humboldt squid, is a large pelagic squid inhabiting in the eastern Pacific Ocean and its distribution reaches about latitude 50° for both North and South hemispheres. This species has been targeted by Chinese Taipei's distant-water squid-jigging fleet in the Southeast Pacific Ocean since 2002. The number of operating vessels varied from 5 to 29 between 2002 and 2016 (see Figure 1).

The monthly vessel number of Chinese Taipei's squid-jigging fleet varied inter-annually between 2012 and 2016 (see Figure 2). The monthly operation days deployed by Chinese Taipei's squid-jigging fleet in 2016 is shown in Figure 3. The main fishing season for *D. gigas* of Chinese Taipei's squid-jigging fleet occurred from October to December in 2016.

2. Catch, Effort and CPUE Summaries

Annual catch and fishing efforts of Chinese Taipei's squid-jigging fleet from 2012 to 2016 is shown in Table 1. The annual catch was 12,989 tons in 2016, higher than 10,072 tons in 2015. The fishing effort (day-vessel) was 1880 d-v in 2016.

There was no bycatch record for the Chinese Taipei's squid-jigging fleet in 2016. This may be a result of performing highly selective fishing gear (jigging) and method by the squid-jigging fleet.

The annual nominal CPUE (tons/day-vessel) of Chinese Taipei's squid-jigging fleet in the Southeast Pacific Ocean from 2012 to 2016 is shown in Figure 4. The nominal CPUE value was 6.91 tons/day-vessel in 2016.

The annual spatial distributions of average CPUE (tons/day-vessel) of Chinese Taipei's squid-jigging fleet in the Southeast Pacific Ocean from 2012 to 2016 is shown in Figure 5. The major fishing ground for this fishery was around 5°~30°S and 75°~85°W. There was a number of fishing vessels operating within the EEZ of Peru between 2007 and 2010 with permission of fishing licenses issued by the competent authority of Peru. However, Chinese Taipei's squid-jigging fleet only operated in the high seas of the Southeast Pacific Ocean during the period of 2011 to 2016.

3. Fishery Data Collection and Research Activities

3.1 Logbook system

All of Chinese Taipei's squid-jigging vessels have been required to maintain fishing logbooks on a daily basis. All of the logbooks had been retrieved between 2002 and 2016. In addition, Chinese Taipei's distant-water squid-jigging vessels have been required to equip with electronic logbook system (e-logbook) on board since 2007 and to submit their catch information through this system on a daily basis.

3.2 Transshipment and landing data collection

In accordance with Chinese Taipei's domestic regulations of, relevant information of transshipment and landing for *Dosidicus gigas* fishery in the Southeast Pacific Ocean has been collected by the competent authorities and has been submitted to the Secretariat of SPRFMO since 2013 as per CMM 02-2017.

3.3 Research

Researches on the stock status and spatial dynamics of *Dosidicus gigas* have been conducted by the scientists of Chinese Taipei. In recent years, research programs have been carried out on spatial distribution patterns, CPUE trend, stock status and exploitation rate of this species. The result of researches showed that the distribution of *D. gigas* abundance was higher in the coastal waters off northern Peru. The size composition harvested by Chinese Taipei's fleet has been dominated by large-size group in recent years. The result of GAM suggested that the variation of squid abundance could be explained by the temporal and spatial variables to a degree. It may result from a long-distant migration pattern for the jumbo flying squid and plasticity in life-history traits of squid populations with a decreasing trend of squid abundance index since 2005 which has also been noted.

4. Biological Sampling and Length/Age Composition of Catches

The logbook for Chinese Taipei's *D. gigas* fishery includes size categories (commercial category). Four categories are recorded: A, <1 kg; B, 1-2 kg; C, >2 kg; and D, processed products (head, tube and fin). The live weight of category D is calculated by a ratio between head, mantle weight and body weight. The processed products might comprise various size categories of the squid, while almost dominated by the extra-large size (>2 kg) individuals. The annual catch by size compositions of *D. gigas* between 2012 and 2016 is presented in Table 2.

5. Summary of Observer and Port Sampling Program

Neither observer nor port sampling program is implemented for Chinese Taipei's *Dosidicus gigas* fishery in the Southeast Pacific Ocean.

Table 1: Annual catches of *Dosidicus gigas* and fishing effort of Chinese Taipei's squid-jigging fleet in the Southeast Pacific Ocean between 2012 and 2016.

Year	No. of vessels	Fishing effort (day-vessel)	Catch (tons)
2012	14	2211	14177
2013	9	1045	7759
2014	5	474	4795
2015	9	616	10072
2016	11	1880	12989

Table 2: Annual catches (tons) of *Dosidicus gigas* by size composition (in live weight) of Chinese Taipei's squid-jigging fleet in the Southeast Pacific Ocean between 2012 and 2016. (Category: A, <1 kg; B, 1-2 kg; C, >2 kg; D, non-categorized)

Year	A	B	C	D	Total
2012	1485	138	81	12472	14177
2013	205	0	12	7542	7759
2014	50	1	1	4743	4795
2015	33	41	1	9996	10072
2016	210	62	23	12694	12989

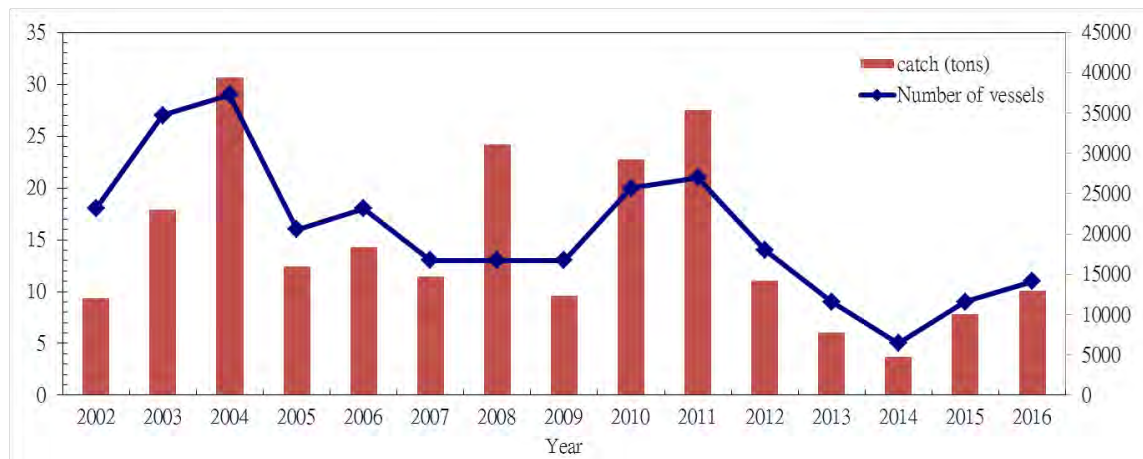


Figure 1: Annual variations in number of vessels and catch for Chinese Taipei's squid-jigging fleet in the Southeast Pacific Ocean between 2002 and 2016.

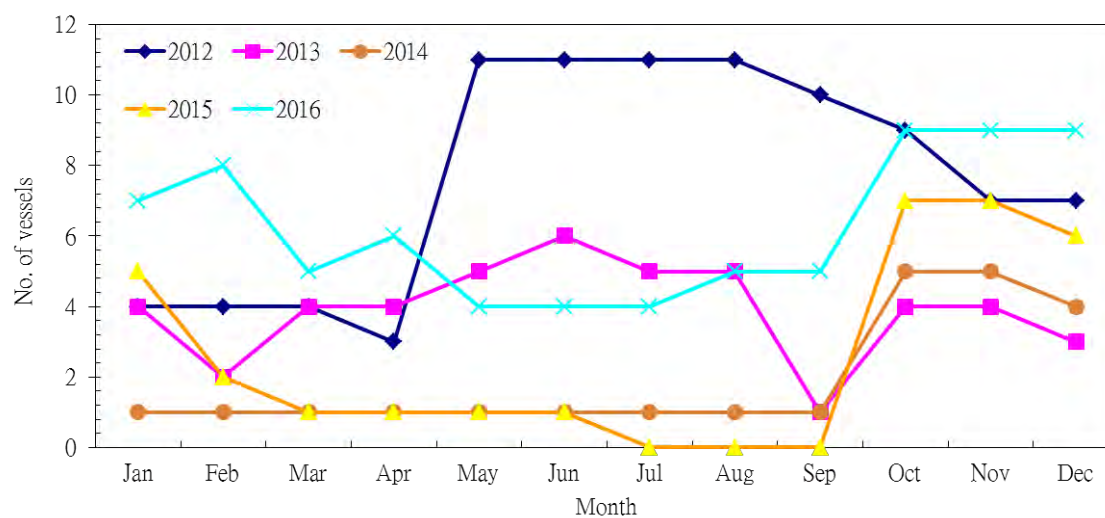


Figure 2: Monthly variations in number of vessels for Chinese Taipei's squid-jigging fleet in the Southeast Pacific Ocean from 2012 to 2016.

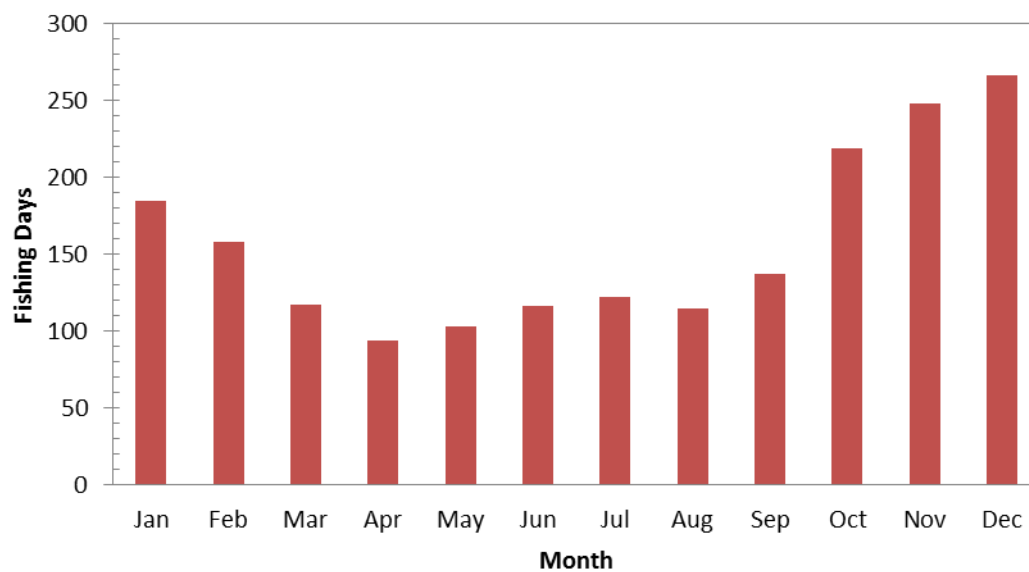


Figure 3: Monthly fishing days deployed by Chinese Taipei's squid-jigging fleet in the Southeast Pacific Ocean in 2016.

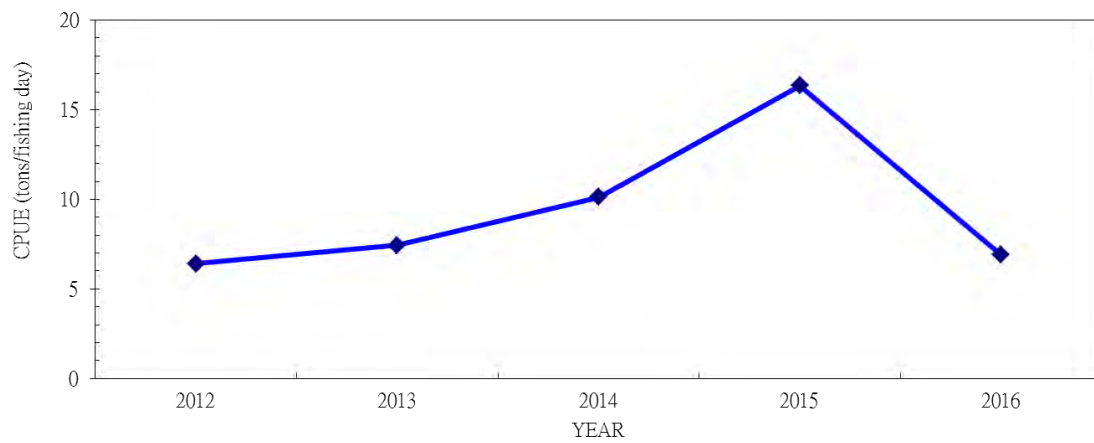


Figure 4: Annual nominal CPUE of *Dosidicus gigas* of Chinese Taipei's squid-jigging fleet in the Southeast Pacific Ocean between 2012 and 2016.

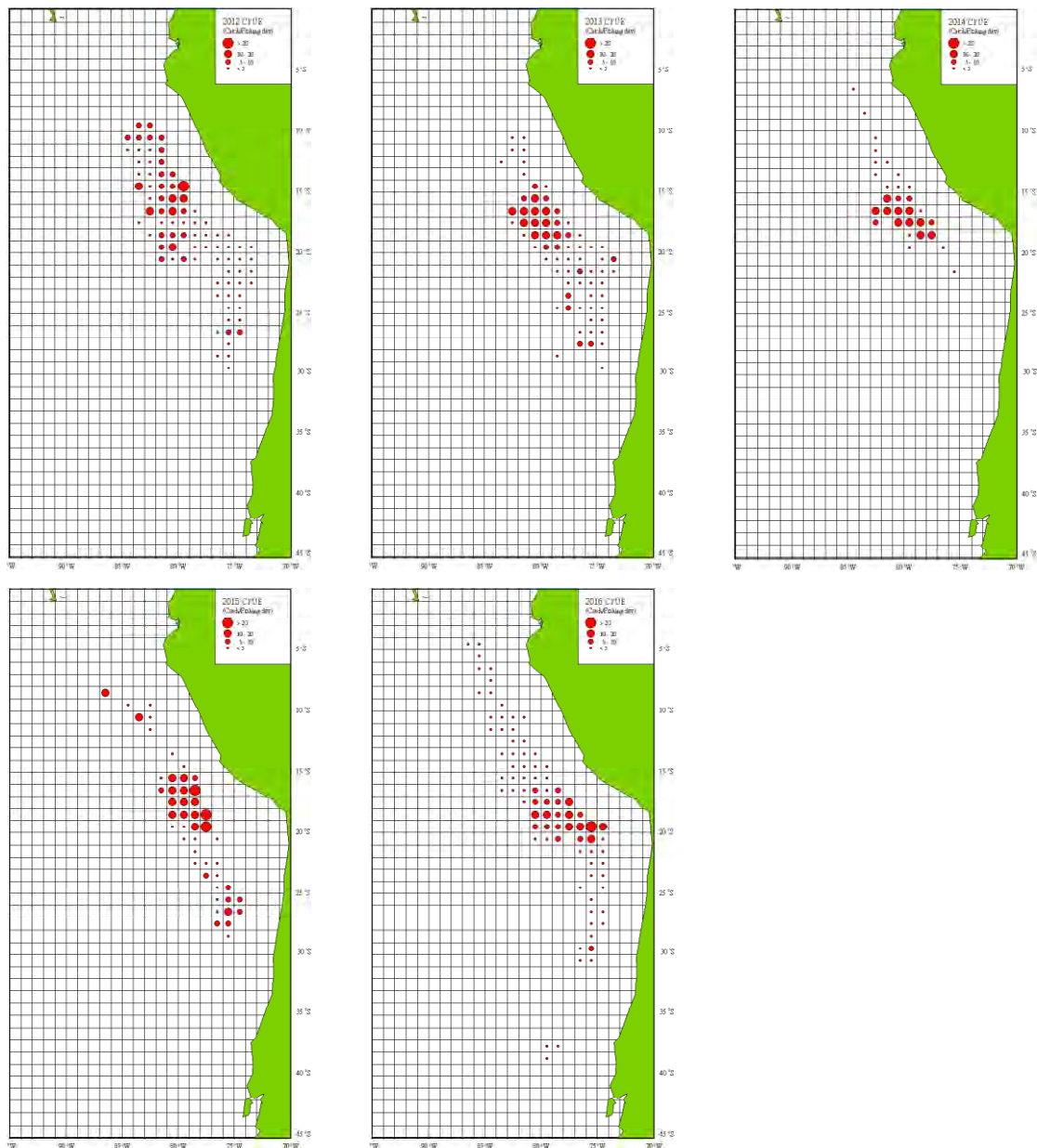


Figure 5: Spatial distributions of annual average CPUE of *Dosidicus gigas* of Chinese Taipei's squid-jigging fleet in the Southeast Pacific Ocean from 2012 to 2016.