SPRFMO

4th Meeting of the Scientific Committee

The Hague, Kingdom of the Netherlands
10 - 15 October 2016

SC-04-16

Chinese Taipei's Annual Report

2016 National Report of Chinese Taipei to SPRFMO Scientific Committee on the Squid Jigging Fishery in the Southeast Pacific Ocean

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 reaching about latitude 50° for both North and South hemispheres. This species has been targeted by the distant-water squid-jigging fleet of Chinese Taipei in the Southeast Pacific (SEP) since 2002. The number of operating vessels varied between 5 and 29 from 2002 to 2015 (Figure 1).

The monthly number of operating vessels for the *Dosidicus gigas* fishery of Chinese Taipei in the SEP varied inter-annually between 2010 and 2015 (Figure 2). In 2015, there was no fishing vessel operated in the SEP between July and September, while there were 6 to 7 fishing vessels operated between October and December.

The monthly fishing days (vessel-day) deployed by the *Dosidicus gigas* fishery of Chinese Taipei in the SEP in 2015 is shown in Figure3. The fishing days increased from 0 day in September to 88 days in October, and reached the highest 181 days in November, while decreased slightly to 165 days in December.

2. Catch, Effort and CPUE Summaries

Annual catch and fishing effort for the *Dosidicus gigas* fishery of Chinese Taipei in the SEP from 2010 to 2015 is shown in Table 1. The catch was 10,072 tons in 2015 which was higher than the catch (4,795 tons) in 2014. This may due to the increase in fishing efforts (fishing vessels and operation days).

There was no bycatch recorded in the retrieved logbooks from the fishing vessels. This may be a result of performing a highly selective fishing gear (jigging) and method by the

vessels in this region.

The annual nominal CPUE (tons/vessel-day) for the *Dosidicus gigas* fishery of Chinese Taipei in the SEP from 2010 to 2015 is shown in Figure 4. The nominal CPUE in 2015, 16.35 tons/vessel-day, reached the highest value for the period of 2010~2015.

The annual spatial distributions of average CPUE (tons/vessel-day) for the *Dosidicus gigas* fishery of Chinese Taipei in the SEP from 2010 to 2015 is shown in Figure 5. The major fishing ground for this fishery was located at the area around 15–28°S and 74–82°W. There were a number of fishing vessel operating within the EEZ of Peru, under the permission of fishing licenses issued by the competent authority of Peru between 2008 and 2010. However, during the period of 2011 to 2015, the fishing fleet of Chinese Taipei only operated in high seas of the SEP.

3. Fishery Data Collection and Research Activities

3.1 Logbook system

The fishermen of the distant-water squid fishery of Chinese Taipei are required to maintain a fishing logbook on a daily basis. All the logbooks for the vessels operating in the SEP have been retrieved completely between 2002 and 2015. In addition, the distant-water squid-jigging vessels of Chinese Taipei are required to equip an e-logbook system on board since 2007 and submit their catch information through this system daily.

3.2 Transshipment and landing data collection

In accordance with domestic regulations of Chinese Taipei, relevant information of transshipment and landing for the *Dosidicus gigas* fishery in the SEP has been collected by the competent authorities and has been submitted to the Secretariat of SPRFMO since 2013 as required respectively by CMM 1.03, CMM 2.02 and CMM 3.02 (Conservation

and Management Measure on Standards for the Collection, Reporting, Verification and Exchange of Data).

3.3 Research

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

4. Biological Sampling and Length/Age Composition of Catches

Items of the logbooks for the *Dosidicus gigas* fishery of Chinese Taipei include size categories (commercial category) for squid caught in the SEP. Four categories were recorded: A, <1 kg; B, 1-2 kg; C, >2 kg; and D, processed products (head, tube and fin). The weights of category D were calculated by weights of the processed products and adjusted by a ratio of weight of the viscera. The processed products might comprise of various size categories of the squids, while almost dominated by the extra-large size (>2 kg) individuals. The annual catch by size compositions of *Dosidicus gigas* between 2010 and 2015 are presented in Table 2.

5. Summary of Observer and Port Sampling Program

Neither observer nor port sampling program is implemented for the *Dosidicus gigas*

fishery of Chinese Taipei in the SEP.

Table 1: Annual catch and fishing effort for the *Dosidicus gigas* fishery of Chinese Taipei in the Southeast Pacific between 2010 and 2015.

Year	No. of vessels	Fishing days	Catch (tons)
2010	20	2874	29206
2011	21	3597	35418
2012	14	2211	14177
2013	9	1045	7759
2014	5	474	4795
2015	9	616	10072

Table 2. Annual catch (tons) by size compositions (in weight) for the *Dosidicus gigas* fishery of Chinese Taipei in the Southeast Pacific between 2010 and 2015. (Category: A, <1 kg; B, 1-2 kg; C, >2 kg; D, non-categorized)

Year	A	B	C	D	Total
2010	163	7	0	29036	29206
2011	57	3	3	35356	35418
2012	1485	138	81	12472	14177
2013	205	0	12	7542	7759
2014	50	1	1	4743	4795
2015	33	41	1	9996	10072

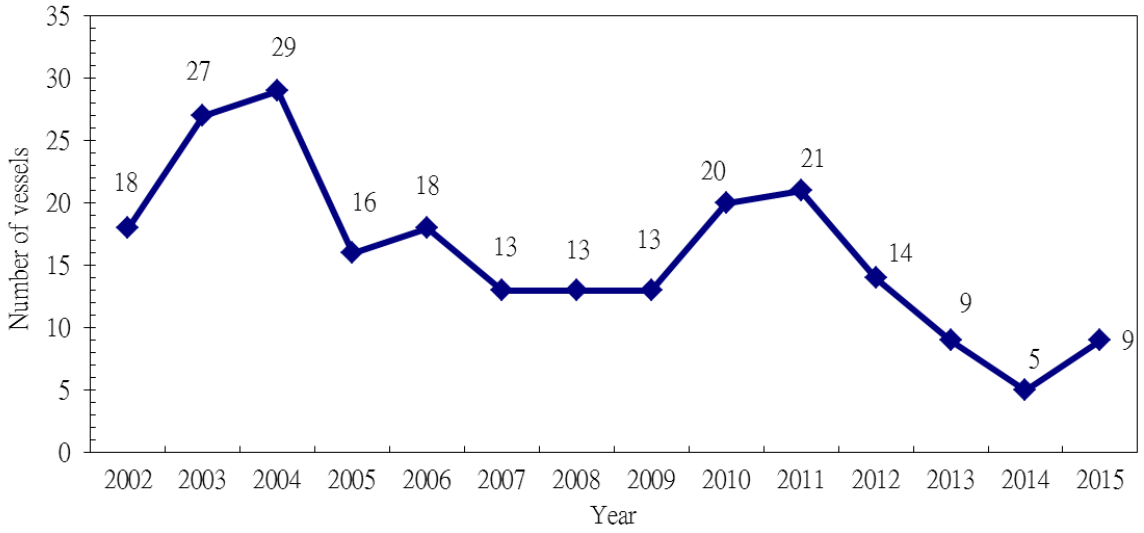

Figure 1: Annual variations in number of operating vessels for the *Dosidicus gigas* fishery of Chinese Taipei in the Southeast Pacific between 2002 and 2015.

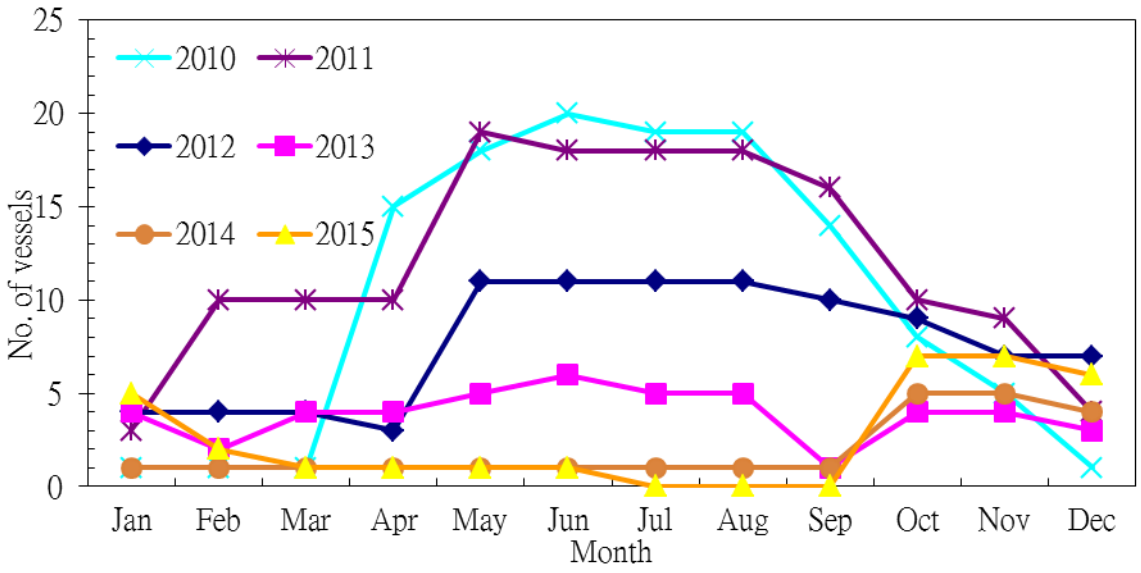

Figure 2. Monthly variations in number of operating vessels for the *Dosidicus gigas* fishery of Chinese Taipei in the Southeast Pacific from 2010 to 2015.

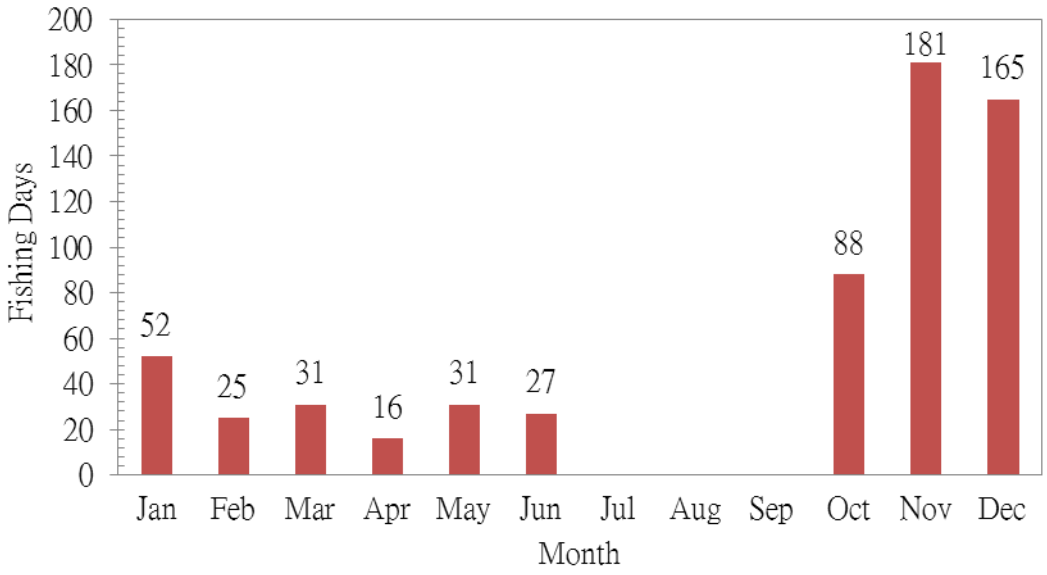

Figure 3. Monthly fishing days deployed by the *Dosidicus gigas* fishery of Chinese Taipei in the Southeast Pacific in 2015.

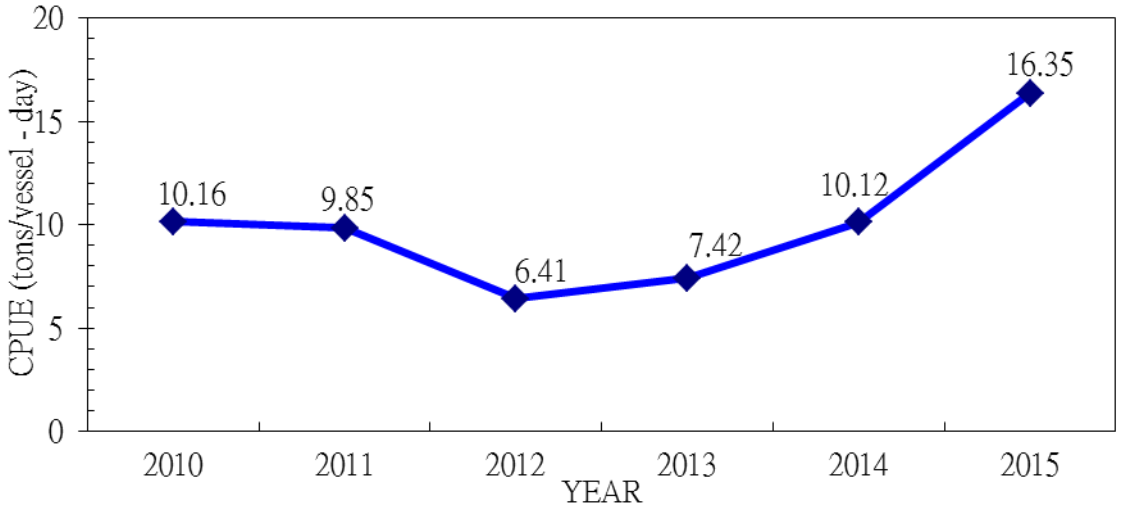

Figure 4. Annual nominal CPUE for the *Dosidicus gigas* fishery of Chinese Taipei in the Southeast Pacific between 2010 and 2015.

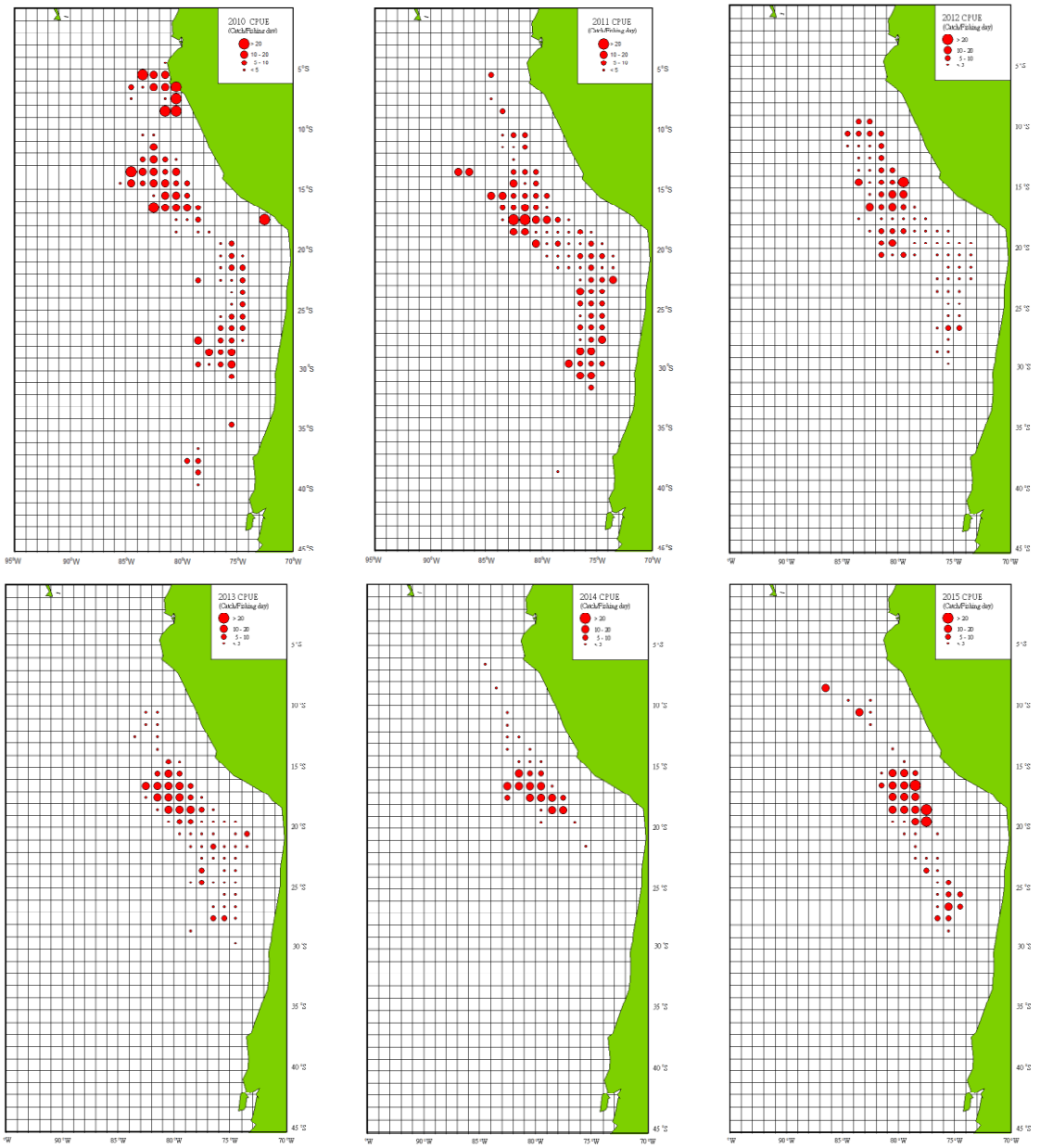

Figure 5. Spatial distributions of annual average CPUE for the *Dosidicus gigas* fishery of Chinese Taipei in the Southeast Pacific Ocean from 2010 to 2015.