

3rd Meeting of the Scientific Committee

Port Vila, Vanuatu
28 September - 3 October 2015

SC-03-07

Chinese Taipei Annual report

2015 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 with almost latitude 50° for both North and South hemisphere. 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 vessels varied between 5 and 29 from 2002 to 2014 (Fig. 1). The number of vessels decreased steadily in recent three years and reached the lowest (5 vessels) in 2014, due to the fact the part of the vessels moved to other waters for operation.

The monthly number of operating vessels for the *Dosidicus gigas* fishery of Chinese Taipei in the SEP varied inter-annually between 2009 and 2014 (Fig. 2). In 2014, only one vessel operated in the SEP from January to September, while comprising 4 to 5 vessels from October to December.

The monthly fishing days (vessel-day) deployed by the *Dosidicus gigas* fishery of Chinese Taipei in the SEP in 2014 varied between 0 (in May) and 124 (November) days (Fig. 3). The fishing days were higher between October and December (>80 days), while no fishing day in May.

2. Catch, Effort and CPUE Summaries

The annual catch and effort information for the *Dosidicus gigas* fishery of Chinese Taipei in the SEP from 2009 to 2014 are shown in Table 1. During that period, the catch of Jumbo flying squid declined to 4,795 tons in 2014, along with the decrease in number of vessels and fishing days. No bycatch was recorded in the retrieved logbooks. This may be

a result of performing a highly selective fishing gear (jigging) and method by the fleet in this region.

The annual nominal CPUE (tons/vessel-day) for the *Dosidicus gigas* fishery of Chinese Taipei in the SEP from 2009 to 2014 is shown in Figure 4. The nominal CPUE in 2014 was 10.1 tons/vessel-day, which came second to the highest CPUE (10.16 tons/vessel-day) in 2010.

The spatial distribution of average CPUE (tons/vessel-day) for the *Dosidicus gigas* fishery of Chinese Taipei in the SEP from 2009 to 2014 is shown in Figure 5. The major fishing ground for this fishery was located at the area around 76–83°W and 15–20°S. There were a number of fishing vessels operating within the EEZ of Peru between 2008 and 2010 which were under the permission of fishing licenses issued by the competent authority of Peru. During the period of 2011 to 2014, the fleet of Chinese Taipei only operated in high seas of SEP.

3. Fishery Data Collection and Research Activities

3.1 Logbook system

The fishermen of distant-water squid fishery of Chinese Taipei are required to maintain a fishing logbook on a daily basis. All the logbooks of the vessels operating in the SEP have been retrieved. In addition, the vessels of the distant-water squid fishery have been required to submit their daily catch data through e-logbook system since 2007.

3.2 Transshipment and landing data collection

In accordance with domestic regulations, relevant data on transshipment and landing conducted by the distant-water squid fishery of Chinese Taipei have been collected by the competent authorities. These data have been submitted to the Secretariat of SPRFMO

since 2013 as required respectively by CMM 1.03 and CMM 2.02 (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 jumbo flying squid have been conducted. In recent years, research programs have been carried out on spatial distribution patterns, CPUE trend, stock status and exploitation rate of this species. 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 variation of squid abundance could be explained by the temporal and spatial variables to a degree. This may result from a long-distant migration pattern for the jumbo squid and plasticity in life-history traits of squid populations. 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 of the *Dosidicus gigas* fishery of Chinese Taipei encompass size categories (in commercial category) of squid catch 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 size compositions of jumbo flying squid between 2009 and 2014 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 effort for the *Dosidicus gigas* fishery of Chinese Taipei in the Southeast Pacific between 2009 and 2014.

Year	2009	2010	2011	2012	2013	2014
No. of vessels	13	20	21	14	9	5
Fishing days	1,403	2,874	3,597	2,211	1,045	474
Catch(tons)	12,319	29,206	35,418	14,177	7,759	4,795

Table 2. Annual catch by size compositions (in weight) for the *Dosidicus gigas* fishery of Chinese Taipei in the Southeast Pacific between 2009 and 2014. (Category: A, <1 kg; B, 1-2 kg; C, >2 kg; D, non-categorized)

Year	A	B	C	D	Total
2009	80	0	0	12,239	12,319
2010	163	7	0	29,036	29,206
2011	57	3	3	35,356	35,418
2012	1,485	138	81	12,472	14,177
2013	205	0	12	7,542	7,759
2014	50	1	1	4,743	4,795

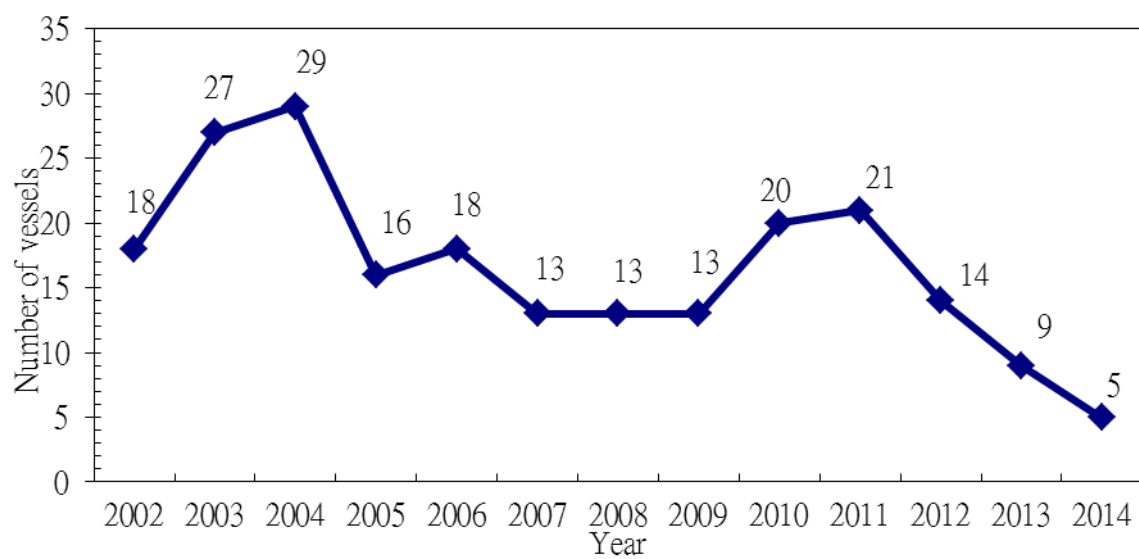


Figure 1: Annual variations in number of vessels for the *Dosidicus gigas* fishery of Chinese Taipei in the Southeast Pacific from 2002 to 2014.

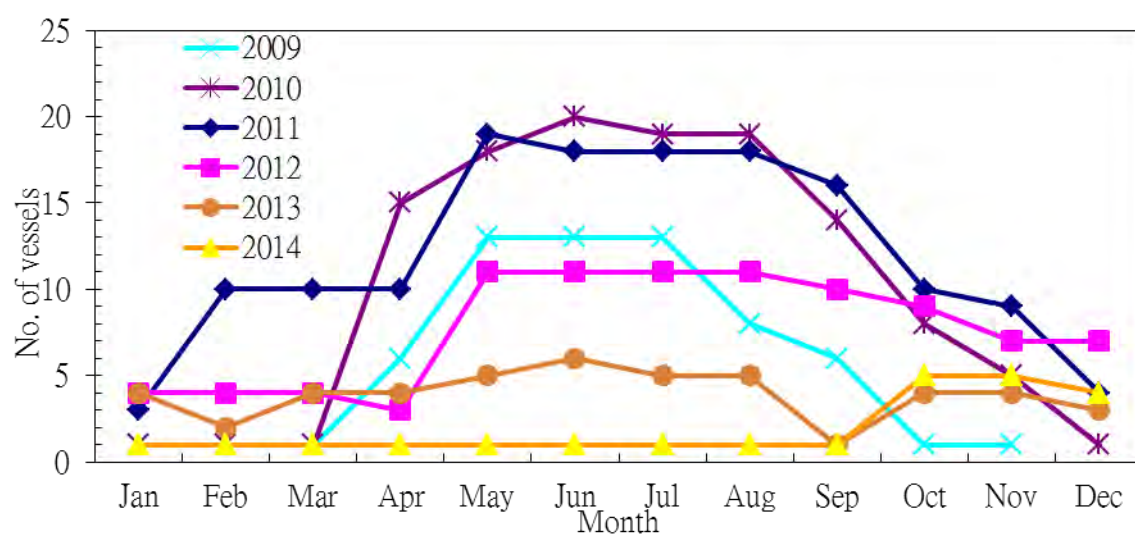


Figure 2. Monthly variations in number of operating vessels for the *Dosidicus gigas* fishery of Chinese Taipei in the Southeast Pacific from 2009 to 2014.

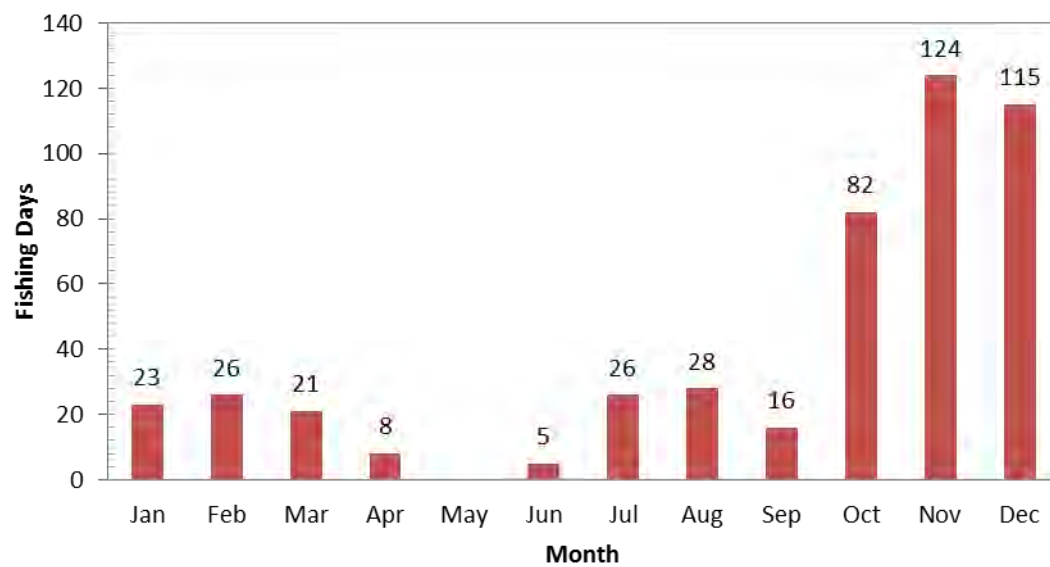


Figure 3. Monthly fishing days deployed by the *Dosidicus gigas* fishery of Chinese Taipei in the Southeast Pacific in 2014.

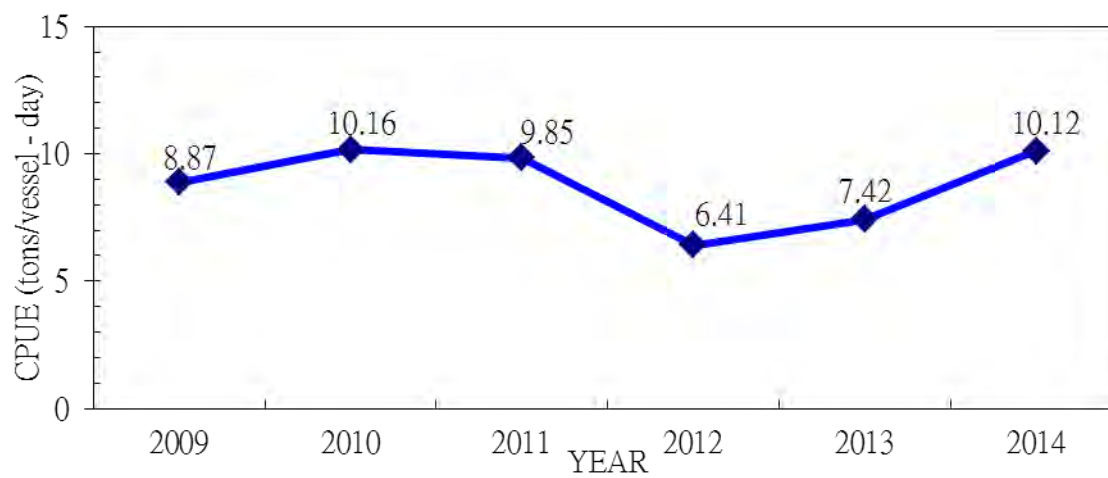


Figure 4. Annual nominal CPUE for the *Dosidicus gigas* fishery of Chinese Taipei in the Southeast Pacific between 2009 and 2014.

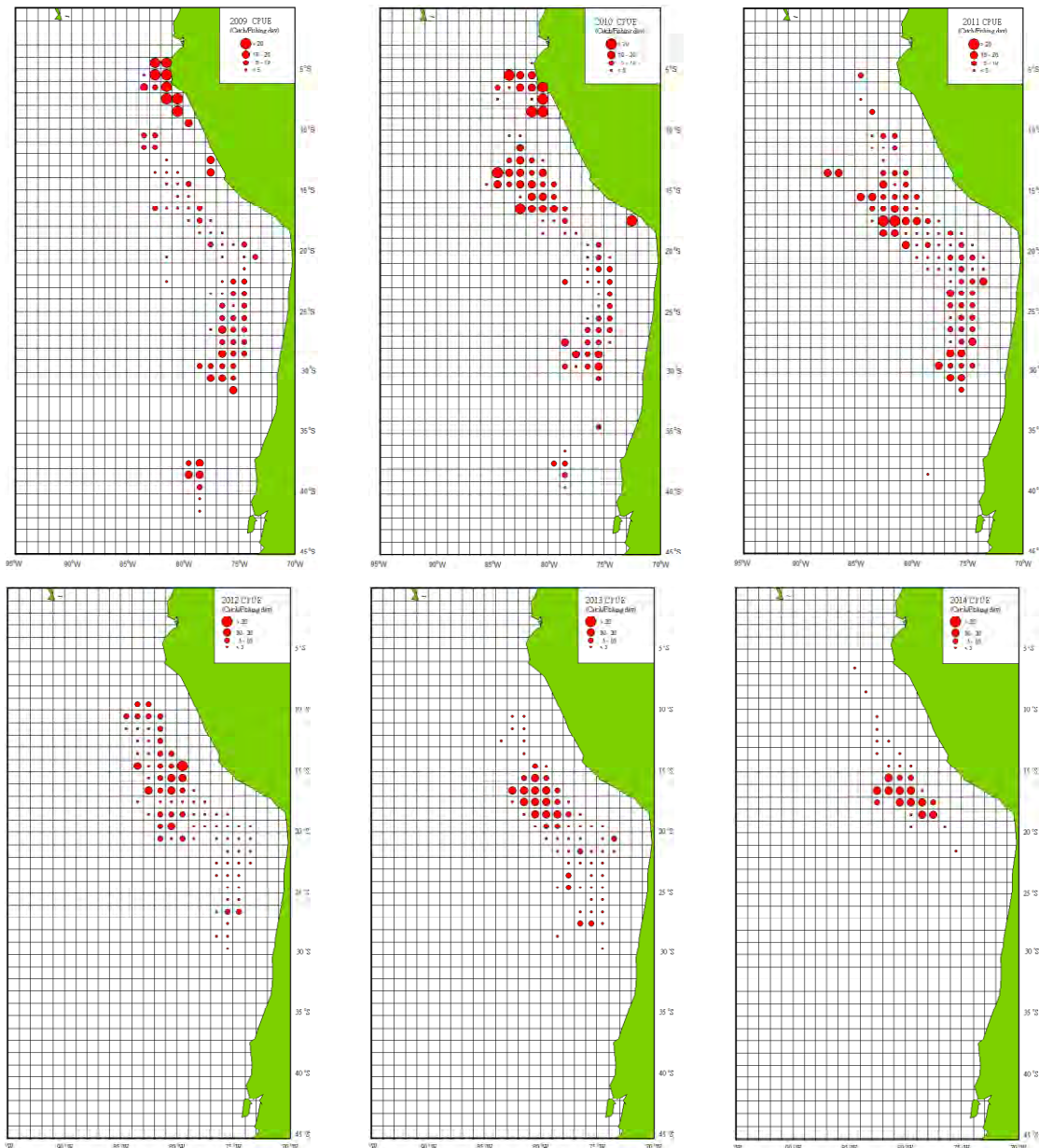


Figure 5. Spatial distribution of annual average CPUE for the *Dosidicus gigas* fishery of Chinese Taipei in the Southeast Pacific Ocean from 2009 to 2014.