

**2<sup>nd</sup> Meeting of the Scientific Committee**

Honolulu, Hawaii, USA

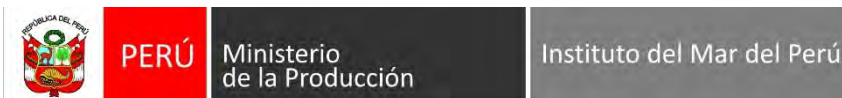
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**Peru Annual report No. 1 (SPRFMO Area)**

*Ministerio de la Produccion; Instituto del Mar del Peru*

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**South Pacific Regional Fisheries Management Organisation  
2<sup>nd</sup> Meeting of the Scientific Committee  
Honolulu, Hawaii, United States of America, 01-07 October 2014**

**Peru National Report N° 1**

## **PERU**

**REPORT ON THE FISHING ACTIVITIES OF THE  
PERUVIAN FLEET IN THE  
AREA OF APPLICATION OF THE SOUTH  
PACIFIC REGIONAL FISHERIES  
MANAGEMENT ORGANISATION (SPRFMO)  
DURING JANUARY 2013 – JULY 2014**

**2014**

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## 1 DESCRIPTION OF THE FISHERY

### 1.1 Area of operation and structure of the fleet

During 2013 and the first half of 2014 the Peruvian fishing fleet that targeted on Jack mackerel (*Trachurus murphyi*) in the area of application of the Convention of the South Pacific Regional Fisheries Management Organization (SPRFMO) operated off Peru and Chile at distances from 200 nm to 1000 nm from the coast, in a general area encompassed by 14°30'S and 42°56'S and 79°40'W and 87°48'W. This fleet operated in areas characterized sea surface temperatures ranging from a minimum of 12.5°C and a maximum of 18.1°C, with an average of 15.2°C.

The Peruvian fleet registered to participate in the Jack mackerel fisheries in the area of application of the SPRFMO is comprised by 92 fishing vessels, including 79 purse seiners with an average holding capacity of 491 m<sup>3</sup>, 7 trawlers with an average holding capacity of 3897 m<sup>3</sup> and 6 multipurpose vessels (purse seine/trawler) with an average holding capacity of 1691 m<sup>3</sup> (Table 1).

**Table 1. Peruvian fleet registered to participate in the Jack mackerel fisheries in the SPRFMO area**

Number of vessels	Types of fishing gear	Total holding capacity (m <sup>3</sup> )	Average holding capacity (m <sup>3</sup> )
79	Purse seine	38 790	491
7	Trawl	27 280	3 897
6	Purse seine/trawl	10 147	1 691

Out of the 92 registered vessels, only 1 trawler and 5 multipurpose vessels (purse seine/trawler) operated during 2012, only 1 trawler operated during 2013 and 5 multipurpose vessels (purse seine/trawlers) operated between January and July 2014 (Table 2).

**Table 2. Peruvian fleet that operated in the SPRFMO area during the period January 2013 – July 2014**

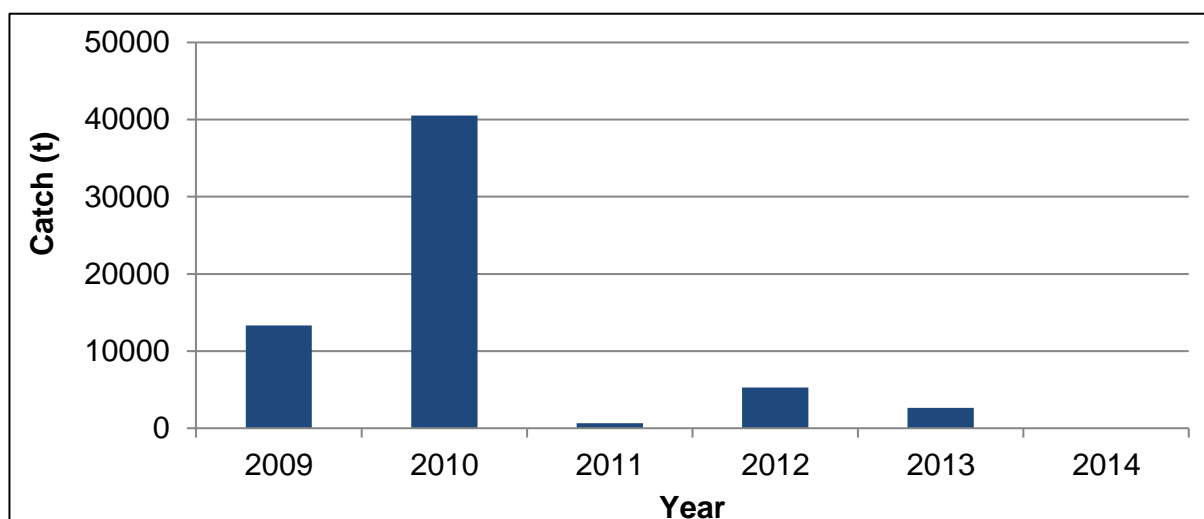
Year	Number of vessels	Types of fishing gear	Total holding capacity (m <sup>3</sup> )	Average holding capacity (m <sup>3</sup> )	Jack mackerel catch (t)
2012	1	Trawl	2436	2436	5290
	5	Purse seine/trawl	8667	1733	
2013	1	Trawl	2436	2436	2670
2014*	5	Purse seine/trawl	10230	2046	0

\* January-July

## 1.2 Annual catches and fishing areas

The annual catches of Jack mackerel by the Peruvian fleet in the SPRFMO Convention area shows a high variability with a general declining trend since the relatively high catches in 2010 (Figure 1). In 2012 the total catch was 5290 tonnes, 57% of this total was obtained between March and June 2012 by 6 fishing vessels while the remaining 43% was obtained between September and November 2012 by a single and one of the largest vessels that operated during 2012, the “Sheriff”. This same vessel was also the only one that operated during 2013, catching 2670 tonnes of Jack mackerel during the first half of the year, between April and July 2013, with no catches reported latter in the year (Table 3).

From 10 March to 10 June 2014, up to 5 Peruvian fishing vessels were involved in trawling and/or searching for commercial concentrations of Jack mackerel in the Convention area off central-southern Chile, but without success. Reports from observers on board indicate that no effective catches of Jack mackerel were made during this period, mostly due to a combination of low availability of Jack mackerel shoals and bad weather. Then these 5 vessels moved north, to waters beyond the 200 miles off Peru, where from around 15 June they started targeting on jumbo squid while probably still looking for Jack mackerel. By mid-August this fleet has moved south, from the northern fishing grounds off Peru to fishing grounds off central Chile where apparently it is targeting on Jack mackerel.



**Figure 1. Annual Peruvian catches of Jack mackerel in the SPRFMO Convention area, years 2009 to 2013, and part of 2014 (January-July)**

**Table 3. Monthly catches of Jack mackerel reported by the Peruvian fleet operating in the SPRFMO area during 2013 and during January-July 2014**

Year 2013 (January – December)										
Vessel Name	March	April	May	June	July	August	September	October	November	Total (t)
Sheriff		42	1036	845	747					2670
<b>Total</b>		<b>42</b>	<b>1036</b>	<b>845</b>	<b>747</b>					<b>2670</b>
Year 2014 (January – July)										
Vessel name	March	April	May	June	July	August	September	October	November	Total (t)
Pacific Champion										0
Pacific Voyager										0
Pacific Hunter										0
Enterprise										0
Liajford										0
<b>Total 2014</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## 2 CATCH, EFFORT AND CPUE IN THE JACK MACKEREL FISHERY

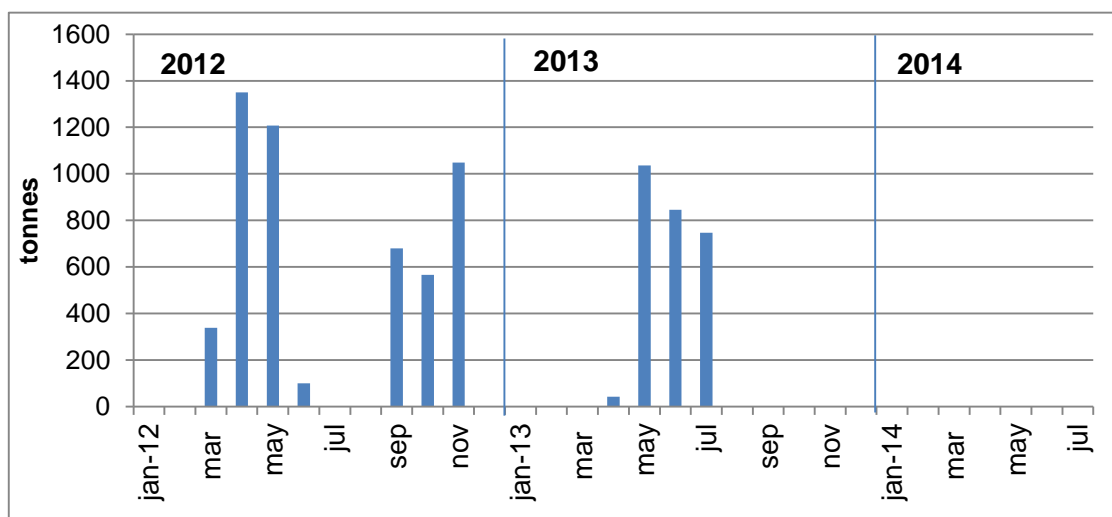
### 2.1 Species composition

Jack mackerel (*Trachurus murphyi*) was the main species caught by the Peruvian vessel that operated in the SPRFMO Convention area between January and July 2013. During this period the catch of Jack mackerel was 2670 tonnes, which represented 99.0% of the total (2697 tonnes), followed by mackerel (*Scomber japonicus*) with 0.72% and other species with 0.28%. No fishing activities and no catches were reported from August to December 2013.

During the first part of 2014 (up to July 2014) the main species caught by the Peruvian fleet was the jumbo squid (*Dosidicus gigas*) with an accumulated total catch of 152 tonnes, representing 99% of the accumulated catches. The total catch of other species was 1 ton (1%), and mainly included lightfish (*Vinciguerria sp*) and bonito (*Sarda chiliensis*). These catches were made in June and July 2014. No catches are reported for the earlier months of 2014, although there are indications that some unfruitful attempts to search and trawl for Jack mackerel were made between 10 March and 10 June 2014.

### 2.2 Catch trends

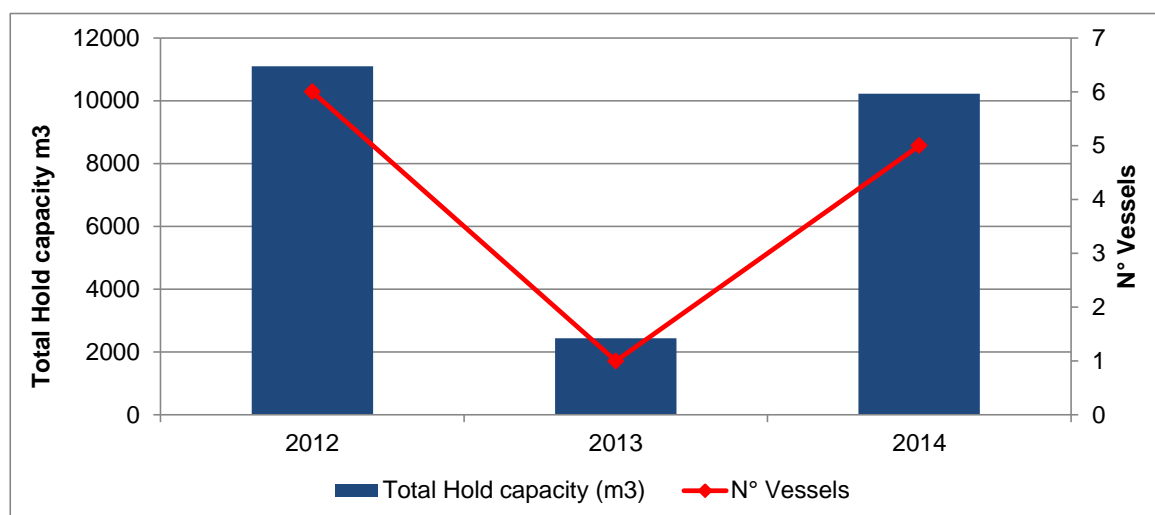
The total monthly catches of Jack mackerel by the only Peruvian vessel that operated in the SPRFMO area during the first part of 2013 (April-July 2013) were within similar levels to those obtained by the Peruvian fleet during 2012 (Figure 2). No catches of Jack mackerel were made in the SPRFMO area by Peruvian vessels between August-December 2013 and January-July 2014.



**Figure 2. Jack mackerel catch by the Peruvian fleet in the SPRFMO area, January 2012 – July 2014**

### 2.3 Fishing effort trends

The fishing effort of the Peruvian fleet that participated in the Jack mackerel fishery in the SPRFMO area expressed in number of vessels and total holding capacity decreased from 6 vessels with a total holding capacity of 11103 m<sup>3</sup> in 2012 to only 1 vessel with a total holding capacity of 2436 m<sup>3</sup> in 2013, and increased to 5 vessels with a total holding capacity of 10230 m<sup>3</sup> in 2014 (Table 2, Figure 3).



**Figure 3. Number of vessels and total holding capacity of the Peruvian fleet that operated in the SPRFMO area, by year 2012–2014 (up to July 2014)**

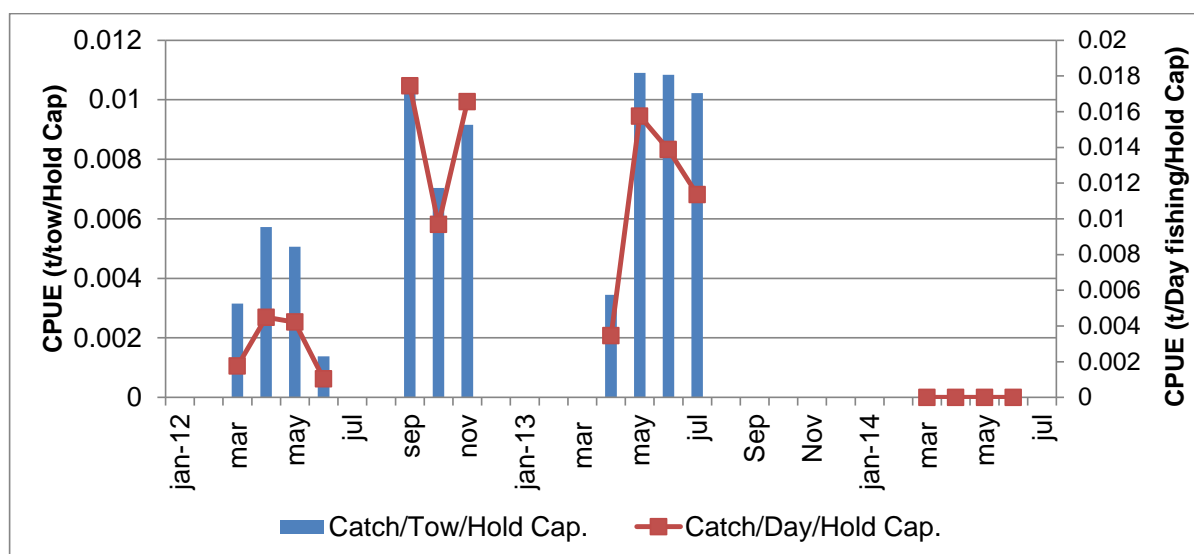
### 2.4 CPUE trends

Monthly CPUE indexes of the Peruvian fleet fishing for Jack mackerel in the SPRFMO area are expressed in catch/(tow x holding capacity), catch/(fishing days x holding capacity) and catch/(hours trawling x holding capacity). During the first half of

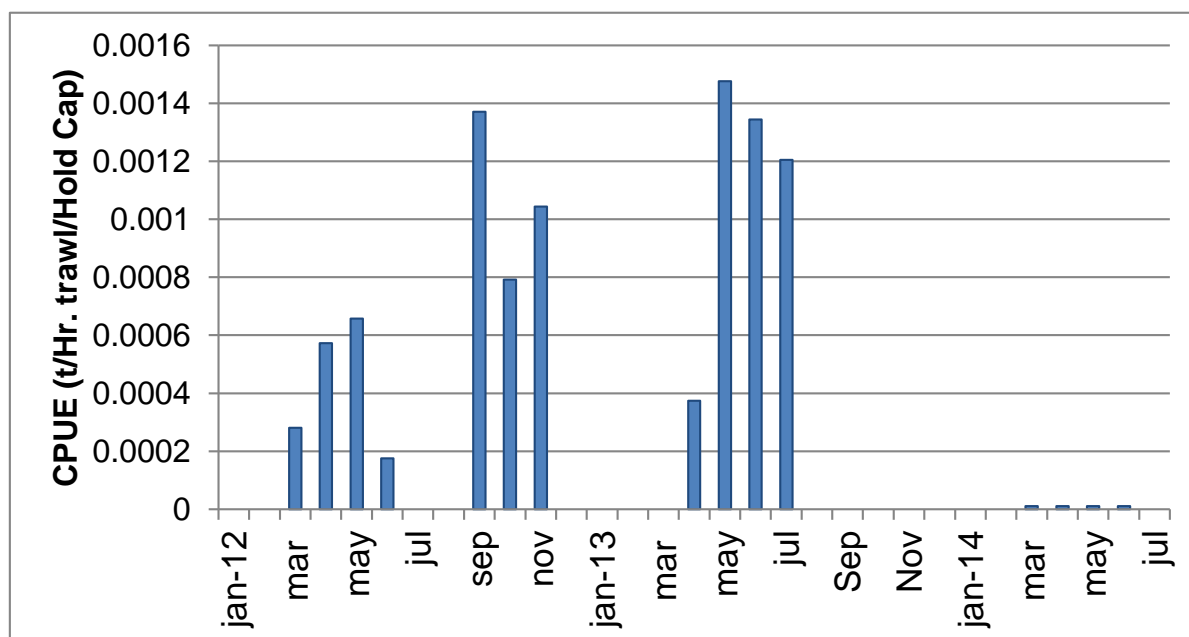
2012 there were 6 vessels in operation with an average holding capacity of 1850 m<sup>3</sup>, during the second half of 2012 and the first part of 2013 there was only 1 vessel with a holding capacity of 2436 m<sup>3</sup> and during the first part of 2014 there were 5 vessels in operation with an average holding capacity of 2046 m<sup>3</sup>.

During 2013 the only vessel in operation (the “Sheriff”) made a total of 105 tows lasting 847.15 towing-hours during 99 days. During 2014 the effective fishing effort directed to Jack mackerel by the 5 vessels of the Peruvian fleet was drastically reduced to approximately 60 tows lasting around 500 towing-hours, all unsuccessful, in 90 days between 11 March and 10 June 2014. From approximately 15 June and throughout the end of July 2014 this Peruvian fleet that has moved further north, stopped targeting on Jack mackerel and started targeting on jumbo squid.

The resulting standardized CPUE values (Figure 4 and Figure 5) show an upward trend, with higher values in the second half of 2012 and first half of 2013. These higher CPUE values in late 2012 and early 2013 are most likely related to the improved efficiency of the single larger vessel, the “Sheriff” with 2436 m<sup>3</sup> holding capacity that was the only one that operated between September 2012 and July 2013. All CPUE values dropped to 0 between March and June 2014, since the limited fishing effort that was exerted resulted in no catches.



**Figure 4. Monthly CPUE estimates of the Peruvian fleet targeting on Jack mackerel in the SPRFMO area, in tonnes/tow/hold capacity and tonnes/fishing days/hold capacity, from January 2012 to June 2014**



**Figure 5. Monthly CPUE estimates of the Peruvian fleet targeting on Jack mackerel in the SPRFMO area, in tonnes/hours trawling x holding capacity, from January 2012 to June 2014**

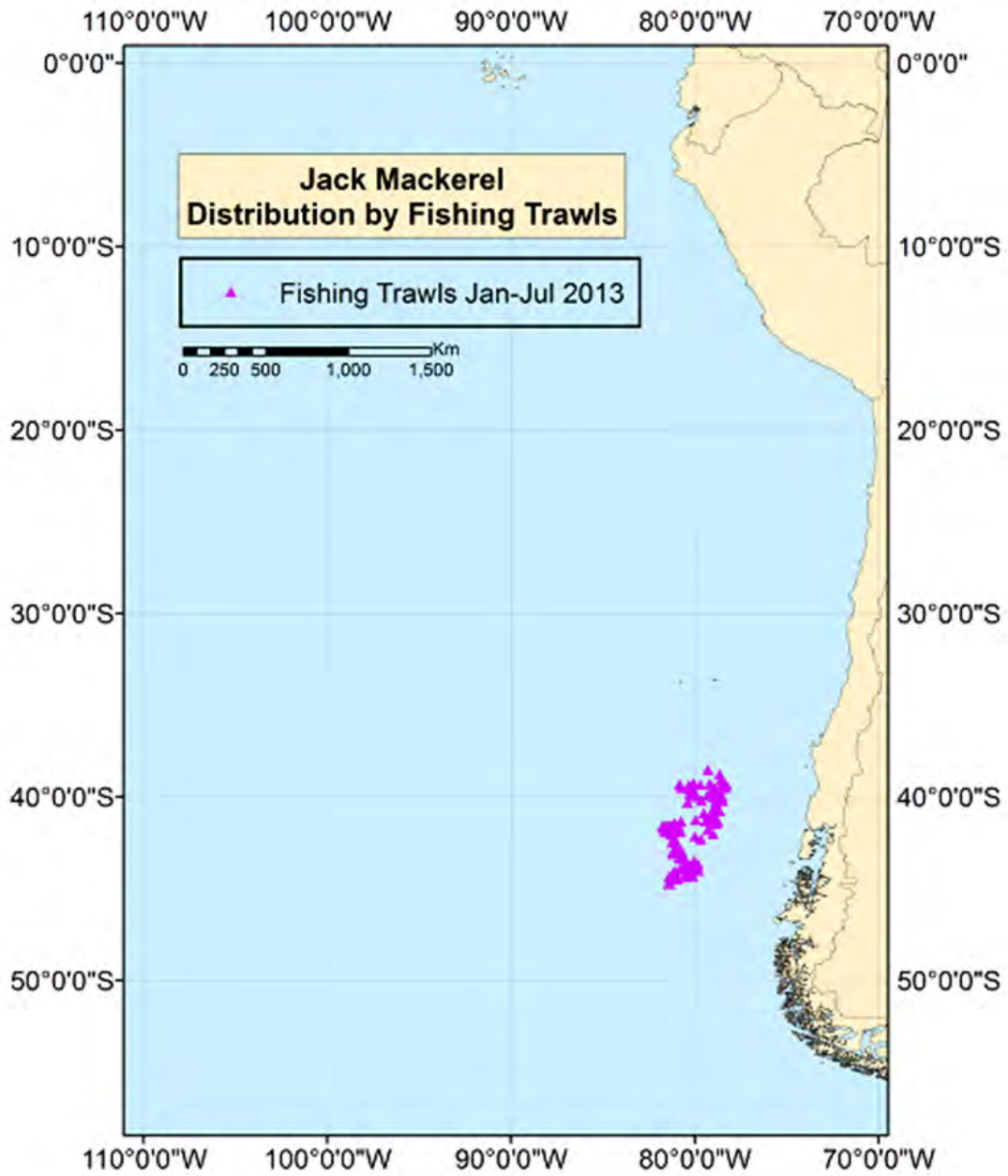
### 3 BIOLOGICAL INFORMATION

#### 3.1 Geographical distribution of the Jack mackerel catches during 2013

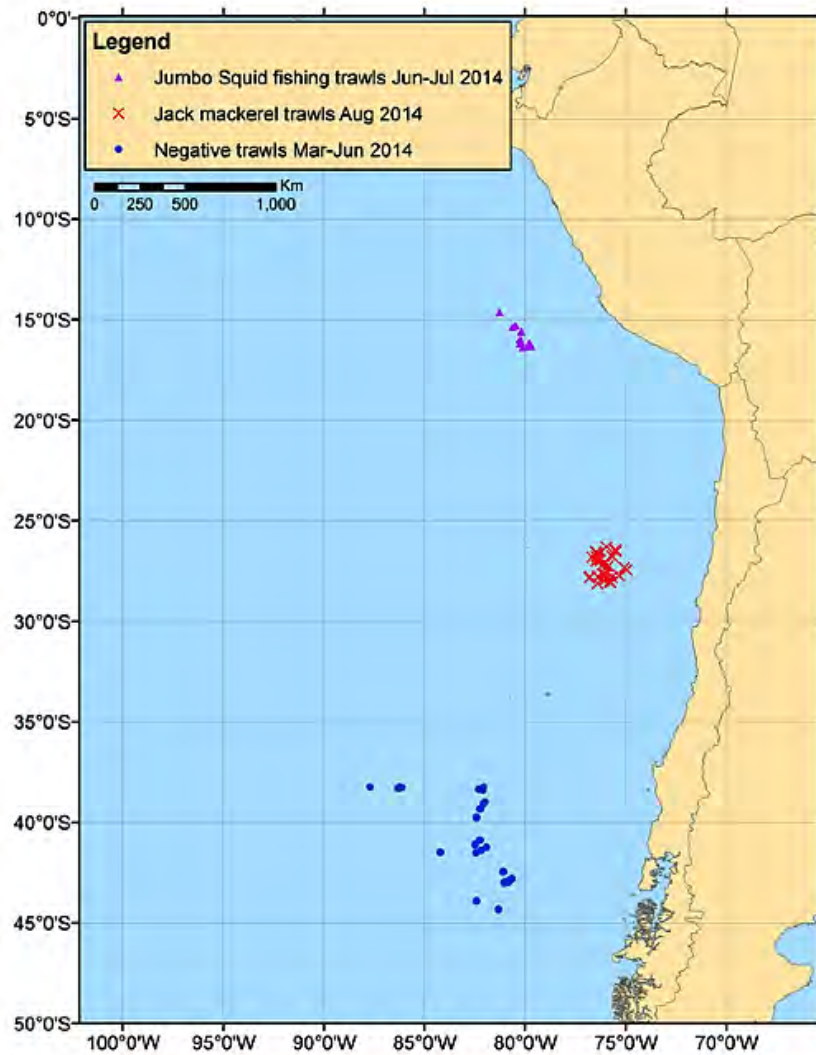
During the first half of 2013, the fishing areas of the Peruvian fleet targeting on Jack mackerel in the SPRFMO Convention area were within the 38°S and 45°S (Figure 6), with a general distribution slightly closer to the coast than during the same period in 2012. This Peruvian fleet conducted no fishing operations during the second part (August-December) of 2013.

#### 3.2 Preliminary information on the fishing areas of the Peruvian fleet during 2014

No Jack mackerel catches were made in the SPRFMO area during the first part of 2014 even if some fishing effort was exerted. During the period 10 March-10 June 2014 the Peruvian fleet surveyed the area off central-southern Chile, within the 034°S and 043°S, where it made approximately 50 trawls attempting to catch Jack mackerel but had no positive results (Figure 7, round symbols). Between 10 and 15 June 2014 this fleet moved north and during the remaining of June throughout July 2014 has targeted on jumbo squid while probably still looking for Jack mackerel in the SPRFMO area off Peru, between 14°S and 17°S (Figure 7, triangles), where so far has reported a total catch of 152 tonnes of jumbo squid. Preliminary indicate that by mid-August 2014 this Peruvian fleet moved south to parts of the SPRFMO area 240-300 nm from the coast of central Chile, between 26-28°S where it has been targeting on Jack mackerel (Figure 7).



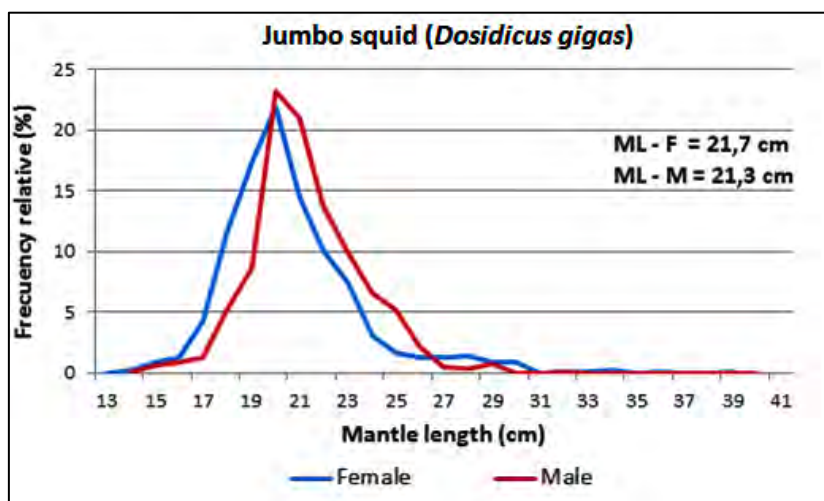
**Figure 6. Distribution of the fishing trawls of the Peruvian fleet targeting on Jack mackerel in the SPRFMO area during January-July 2013**



**Figure 7. Distribution of the fishing trawls of the Peruvian fleet targeting on Jack mackerel and on jumbo squid in the SPRFMO area during January-August 2014**

### 3.3 Jumbo squid length frequency distribution in the catches during 2014

The length frequency distribution of jumbo giant squid caught by the Peruvian fleet in the SPRFMO area during the period 24 June – 31 July 2014 ranged from 13 to 41 cm mantle length, with a unimodal distribution and modal size of 21 cm mantle length, for both female and male (Figure 8).



**Figure 8. Length frequency distribution of the jumbo squid caught by the Peruvian fleet in the SPRFMO area, from January to July 2014**

#### **4 RESEARCH ACTIVITIES AND DATA COLLECTION (Observations onboard and sampling program)**

The research activities in the SPRFMO area are mostly based on the activities undertaken under the onboard observer's program, which aims at monitoring the fishing fleet and obtaining biological information in their areas of operation. This programme has an almost full coverage of the Peruvian fishing fleet operating in the SPRFMO area and during 2014 there has been an observer on each of the 5 Peruvian vessels in the Convention area. The monitoring of the fleet provides reliable information on fishing effort, catch volumes, species composition of the catches, fishing areas, horizontal and vertical distribution of the target species, and sea surface temperature in the fishing area, in addition to the biological information through an onboard sampling programme.

The sampling program is aimed at obtaining biological information of the species caught, including total length, total weight, gonad weight and sexual maturity, and to also obtain samples of ovaries, otoliths and stomachs to undertake further studies of spawning activity, growth and feeding. This is done using a stratified two-stage sampling, where 10 individuals are taken for each range of sizes.