National report of Korea to 1st Scientific Committee of SIOFA

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1. Description of fisheries

Korean trawl fishery in the Indian Ocean commenced in 1968, and it had focused in African EEZs where were inside area for 12 n miles. Longline fishery in the high seas of the Indian Ocean started in 1999. Its target species was Patagonian toothfish, *Dissostichus eleginoides* and Polyprionidae. And since 2000, Korean trawl fishery initiated operating in SIOFA area, and has targeted Splendid alfonsino, *Beryx splendens* and Pelagic armorhead, *Pseudopentaceros richardsoni*.

In the SIOFA area, one vessel of Korean lonline fishery operated in 2011-2012, respectively, and three vessels of the fishery operated in 2013. The size ranges of longline vessels from 500 to 1,000 gross tonnage classes. Since 2014, Korean longline have had no fishing records. One vessel of Korean trawl fishery operated in 2011-2013, respectively, and there has been no fishery operation since 2014 (Table 1).

Table 1. Number of Korean fishing vessels operating in the SIOFA area in 2011-2015

Fishery	GT	Year				
		2011	2012	2013	2014	2015
Longline	500-1,000	1	1	3	-	-
Trawl	1,000-2,000	1	1	1	-	-

2. Catch, effort and CPUE

2.1. Catch and effort

Annual catches of target and Korean longline fishery had caught less than 100 tons in 1999 (Figure 1). In 2000, the catch was a peak with more than 2,500 tons by trawl fishery. During 2001-2003, Catch of Korean longline and trawl fisheries sharply increased to over 800 tons and 2,500 tons, respectively. And then there were no fishing operation by Korean longline and trawl fisheries for 5 years. Catch of longline and trawl fisheries maintained steady amounts of ca. 160 tons and 800 tons, respectively, in 2009-2013, except in 2011, when showed relative lower effort in the SIOFA area.

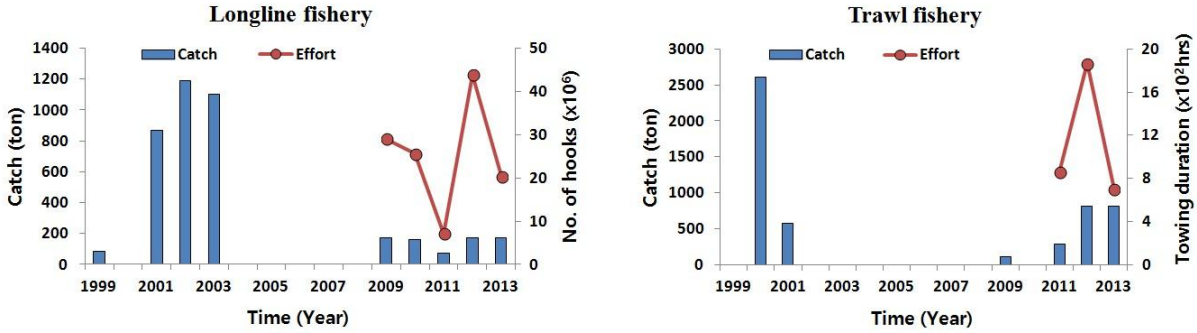

Figure 1. Time series of catch and effort of Korean longline and trawl fisheries in the SIOFA area from 1999 to 2013.

2.2. Catch by species

In terms of annual catches of target and bycatch species, Korean longline and trawl fisheries in the SIOFA area had started to catch as targeting species, which were Sparidae, Serranidae, Polyprionidae and toothfishes from 1999 to 2013. Their catch records had not accurately done identification of species level during the period of 1999-2003. From 2009 to 2011, Korean fishing vessels have caught less than 400 tons, and their main species was *Dissostichus eleginoides* in SIOFA area. The catch was increased about 1,000 tons in 2012 and 2013, respectively, due to the catch increase of *Beryx splendens* by trawl fishery (Figure 2).

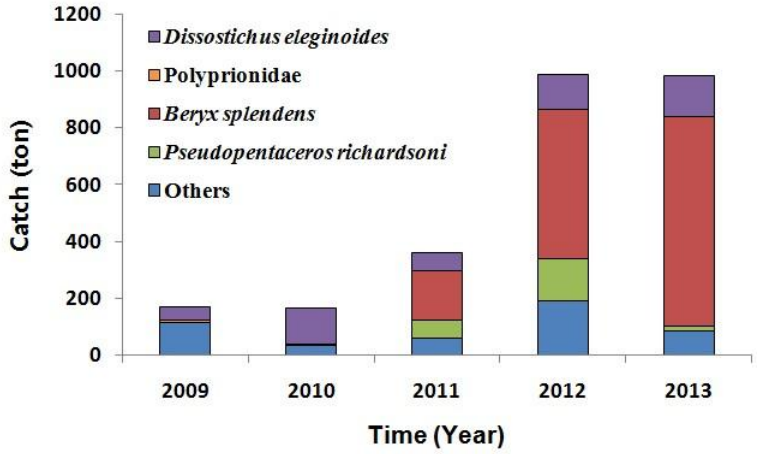

Figure 2. Time series of catch with target species by Korean fishing vessels in the SIOFA area from 2009 to 2013.

2.3. CPUE by fishery for the target species

The variation in the CPUE of *Dissostichus eleginoides* by longline fishery had interannual fluctuations with the range of 5-18 kg/100hooks. Catch of Polyprionidae was low (Figure 2), while their CPUE was high in 2010 (Figure 3). CPUE of *Beryx splendens* by trawl fishery have largely changed from below 1 ton/hr in 2011-2012 to 3.5 ton/hr in 2013. CPUE of *Pseudopentaceros richardsoni* was sustained at relatively low level during 2011-2013.

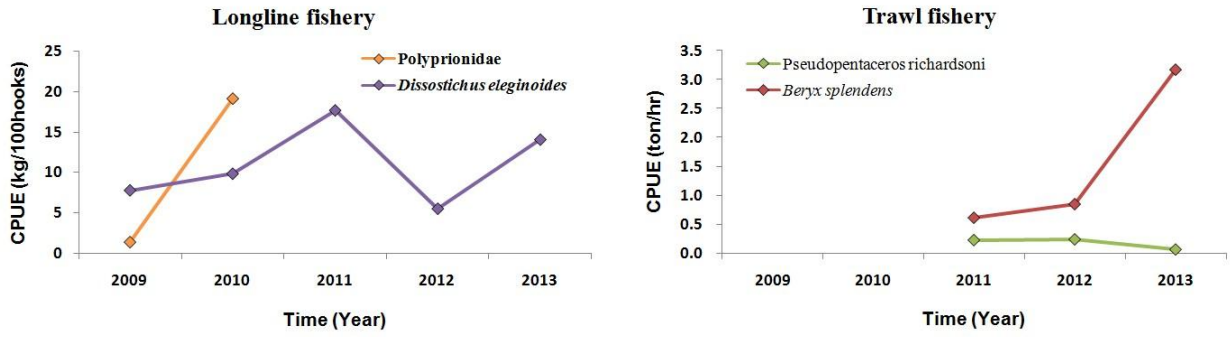

Figure 3. Time series of CPUE with target species of Korean longline and trawl fisheries in the SIOFA area from 2009 to 2013.

3. Fisheries data collection and research activities

3.1. Fisheries data collection

National Institute of Fisheries Science (NIFS) has collected the data sets of Korean fishing vessels. Data from logsheet are available from 2009 in the SIOFA area. In 2012, Korean domestic law (Distant Water Fisheries Development Act) was revised that the time for data submission was changed from within 30 days (home-based) or 60 days (foreign-based) after completion of their operations to monthly report for improving the data collection to meet the timely submission of data and to have higher quality and quantity of the data. After September 2014, the Act obliged fishers to report the catch statistics to NIFS every week, and it has been changed to a daily basis since September 2015.

Catch statistics of Korean fishing vessels are obtained from two sources of data reporting. Korea Overseas Fisheries Association (KOSFA) collects monthly catch by species and vessels from fishery industries, and NIFS collects logsheet data from vessels filled out by captain onboard.

3.2. Observer data collected

The observers collected the biological data which are length, weight, sex, etc. as required by the Korean scientific observer program standards. The biological measurements were conducted on all species, if

possible.

3.3. Research activities

Korean research vessel, Tamgu No.1 was conducted research fishing in the Southeastern Indian Ocean in 2011 and 2012.

4. Biological data

4.1. Scientific observer coverage

In 2013, Korea had deployed 5 scientific observers on 3 longline vessels and 1 trawls vessel operating in the SIOFA area (Table 1). They collected biological data and observed operating during all fishing season on board, which their observer coverage was estimated to be 100% (Table 2).

Table 2. Annual observer coverage (%) by Korean bottom longline and trawl fisheries for the most recent five years

Fishery	2011	2012	2013	2014	2015
Longline	100	100	100	-	-
Trawl	100	100	100	-	-

4.2. Length frequency of target species

Target species of SIOFA area were *Dissostichus eleginoides* and Polyprionidae by longline fishery and *Beryx splendens* and *Pseudopentaceros richardsoni* by trawl fishery. Polyprionidae have had no catch records since 2010. *Dissostichus eleginoides* was measured a total of 9,292 individuals in 2011-2013. The range of total length was 43-198 cm, and mean length was 94.5 cm. Annual mean length have trended to decrease. In 2011, there were two modes in the length frequency. After 2012 there was only one group with one mode at 80 cm (Figure 4).

Beryx splendens and *Pseudopentaceros richardsoni* were measured a total of 12,561 and 2,518, respectively in 2011-2013. The fork length range of *Beryx splendens* was 15-56 cm, and mean length was 23.9 cm. Annual mean length of *Beryx splendens* was about 25 cm in 2011-2012, but sharply decreased as in 2013. There was dominantly one length class at 20 cm in 2013. The total length range of *Pseudopentaceros richardsoni* was 13-66 cm, and mean length was 51.7 cm. Annual mean length have trended not to change. There was only one group with one mode at 52 cm (Figure 5).

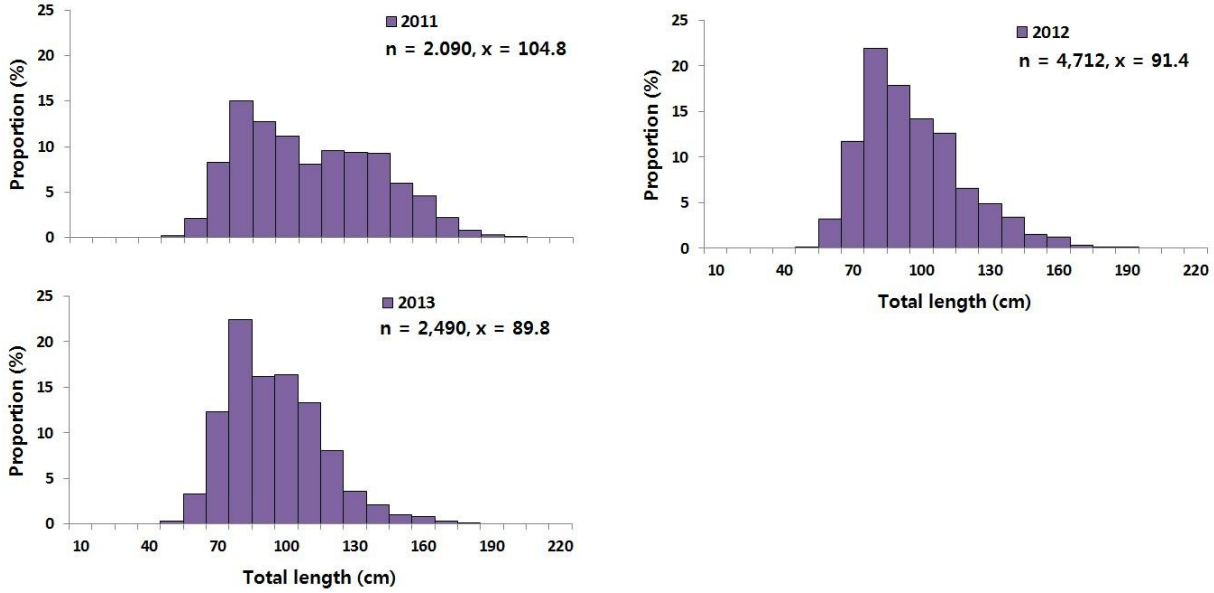

Figure 4. Length frequency of *Dissostichus eleginoides* by longline fishery.

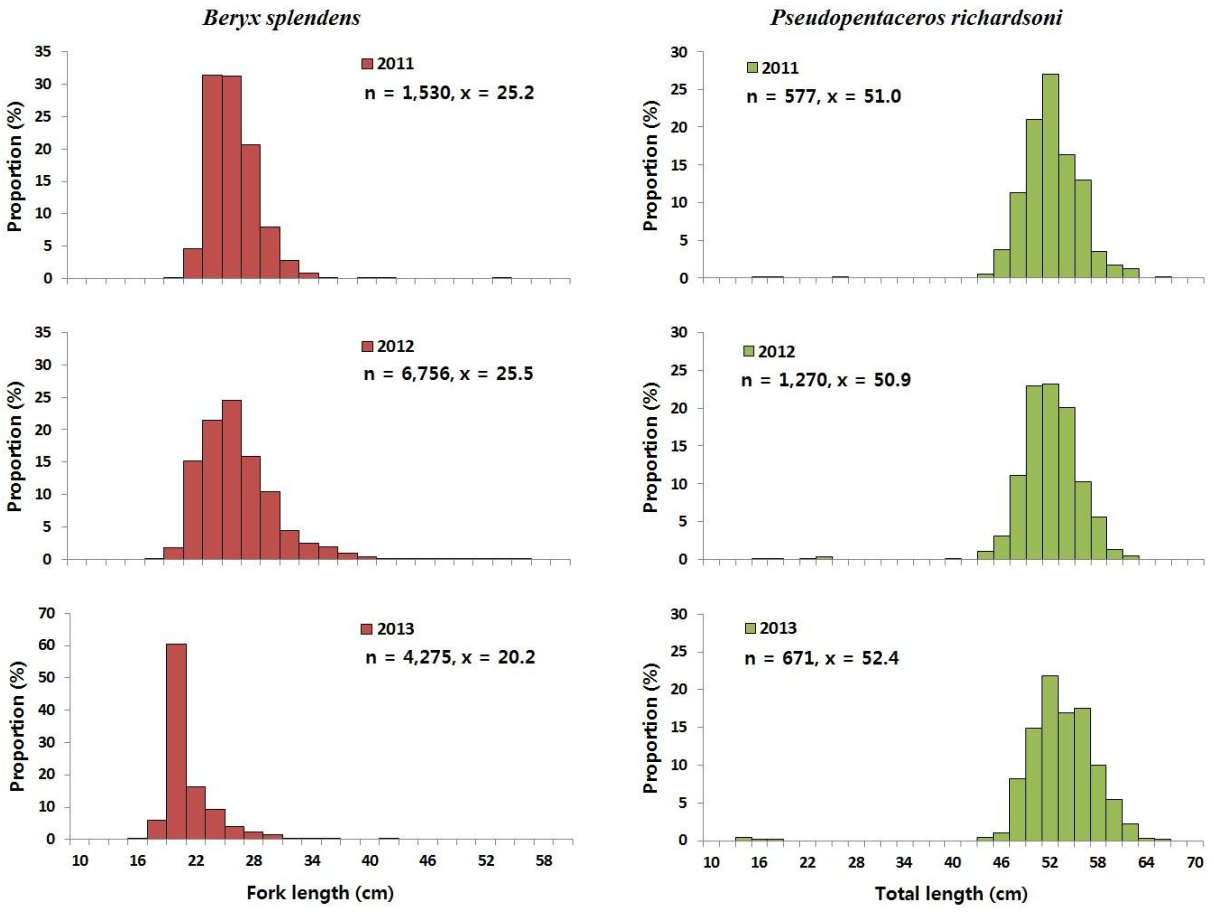

Figure 5. Length frequency of *Beryx splendens* and *Pseudopentaceros richardsoni* by trawl fishery.

5. Observer program

5.1. Observer training

Korean scientific observer program for distant water fisheries was started in 2002. National Institute of Fisheries Science (NIFS) is responsible for implementing and developing the observer program. The qualification for being observers is college graduated where major field is nature science or fisheries high school graduated with at least 1-year experience on board having a certificate of qualification to deck officer. Candidates for observer who have passed the paper review (including medical check) and oral interview have to take training programs for 3 weeks. Observer training programs include basic safety training for seafaring, operations of navigation devices, biological information training for target and non-target species and data collection method for fishing activities. During the training program they have two kinds of test. One is the test on a technical term of fisheries and biology, and the other is the test on species identification. The person who scored above 70 in the two tests and attended 100% of the course timetable can be qualified and deployed on board as a scientific observer.

5.2. Port sampling program

Korea has not conducted any port sampling programs within the SIOFA area.