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National report of Korea to 2nd Scientific Committee of SIOFA]

Relates to agenda item: 4 Working paper ☒ info paper ☐

Delegation of Republic of Korea

Abstract

Korean longline fishery in the high seas of the Indian Ocean started in 1999, and Korean trawl fishery initiated operating in the SIOFA area since 2000. The number of trawlers and longliners operated in the SIOFA Area between 2011 and 2013 were one and one-to-three vessels respectively; however, none of the fishing vessels have been operating in the SIOFA Area since 2014. Major target species for Korean trawlers in the area have been pelagic armorhead and splendid alfonsino, while those of Korean longliners have been Patagonian toothfish and hapuka. Korean fishing vessels have caught less than 400 tons yearly in 2009-2011. The catch increased up to about 1,000 tons in 2012 and 2013, due to the increased catch by the trawl fishery. The annual observer coverage has been more than 50 % for bottom impacted gear fishery since 2009. Korea established a procedure to protect Vulnerable Marine Ecosystems from bottom fishing in the high seas in 2009. It consists of threshold of VME organisms, move on rule etc. In terms of the verification of catch data and landing and transshipment information, measures to cross-check information collected by different authorities (e.g. NIFS, NFQ, FMC) are specified.

National report of Korea to 2nd 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 a 12 nmiles area within the African EEZ. The longline fishery in the high seas of the Indian Ocean started in 1999. Its target species were Patagonian toothfish (*Dissostichus eleginoides)* and hapuka (*polyprion spp*, Family Polyprionidae). And in 2000, Korean trawl fishery initiated operating in SIOFA area, targeting splendid alfonsino (*Beryx splendens*) and pelagic armorhead (*Pseudopentaceros richardsoni)*.

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

Table 1. Number of Korean fishing vessels operating in the SIOFA area in 2011-2016

Fishery	GT	Year					
		2011	2012	2013	2014	2015	2016
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

The annual catch of target for Korean longline fishery was less than 100 tons in 1999 (Figure 1). The highest catch was in 2000 when catch of the Korean trawl fishery was over 2,500 tons. 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 app. 160 tons and 800 tons, respectively, in 2009-2013, except in 2011, when showed a relatively lower effort in the SIOFA area.

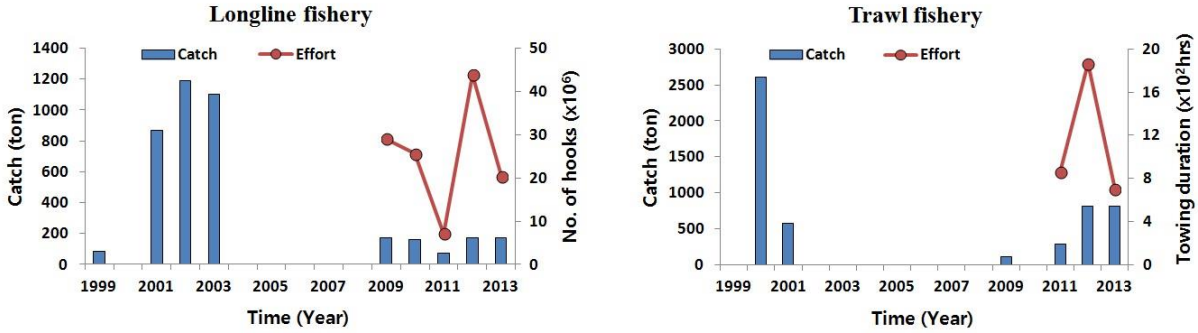


Figure 1. Time series of catch and effort of Korean longline and trawl fisheries in the SIOFA area from 1999 to 2013.

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 the target species from 1999 to 2013. Their catch records did not apply an accurate identification by species level during the period of 1999-2003. From 2009 to 2011, Korean fishing vessels have caught less than 400 tons each year, and their main species was Patagonian toothfish in SIOFA area. The catch was increased up to about 1,000 tons in 2012 and 2013, respectively, due to the increased catch of splendid alfonsino by the trawl fishery (Figure 2).

Table 2. Lists of target species by Korean fishing vessels

	Scientific name	Common name	FAO 3-alpha code
Main target	*Beryx splendens*	Splendid alfonsino	BYS
Main target	*Dissostichus eleginoides*	Patagonian toothfish	TOP
Main target	*Pseudopentaceros richardsoni*	Pelagic armourhead	EDR
Target	Polyprion spp	Hapuka	HAU

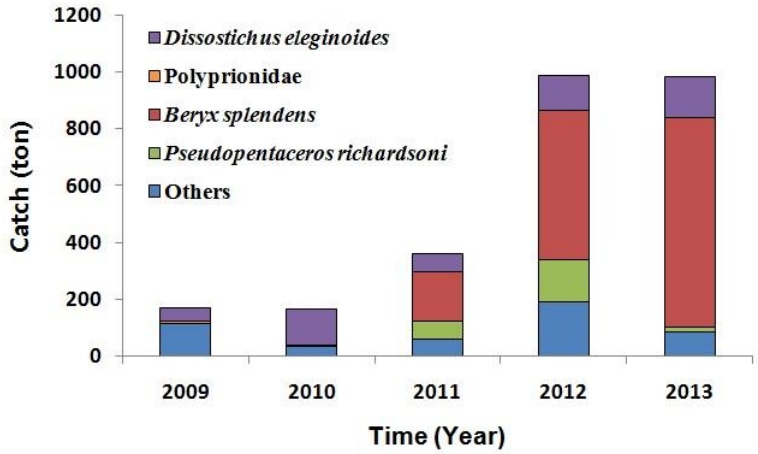


Figure 2. Time series of catch with target species by Korean fishing vessels in the SIOFA area from 2009 to 2013.

2.3. CPUE by fishery for the target species

The variation in the CPUE of Patagonian toothfish 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 splendid alfonsino by trawl fishery have largely changed from below 1 ton/hr in 2011-2012 to 3.5 ton/hr in 2013. CPUE of pelagic armourhead maintained relatively low during 2011-2013.

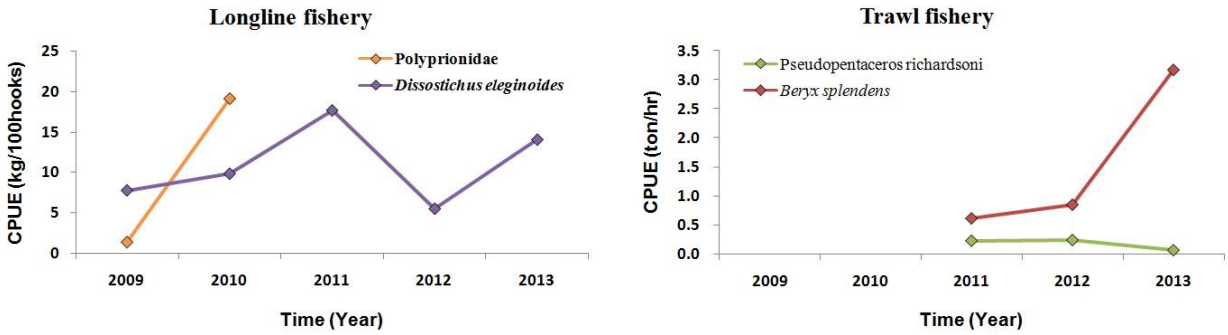


Figure 3. Time series of CPUE with target species of Korean longline and trawl fisheries in the SIOFA area from 2009 to 2013.

3. Fisheries data collection and research activities

3.1. Fisheries data collection

National Institute of Fisheries Science (NIFS) has been collecting the data sets of Korean fishing vessels. The available log-sheet data in the SIOFA area are those from 2009 up to present. In 2012, Korean domestic law (i.e. *Distant Water Fisheries Development Act*) was revised, and the frequency of data submission was changed from within 30 days (home-based) or 60 days (foreign-based) after completion of their operations to a monthly-based report to improve and satisfy a timely submission of data and to ensure 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.

3.2. Observer data collected

The observers collected the biological data as requested by the Korean scientific observer program standards (e.g. length, weight, sex). The biological measurements were conducted on all species to the extent possible. In 2013, Korea 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 operations during all fishing season on board; therefore, the observer coverage was estimated to be 100% (Table 3).

Table 3. 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	-	-

3.3. Research activities

Korean research vessel, *Tamgu No.1* conducted research fishing in the Southeastern Indian Ocean in 2001 and 2002.

4. VME Thresholds

4.1. Protocol on VME encounter of distant-water fishery

Korea established a procedure to protect Vulnerable Marine Ecosystems from bottom fishing in the high seas, in accordance with UNGA Resolution 61/105, adopted in 2006, and 64/72, adopted in 2009. Korean domestic laws request all Korean bottom fishing vessels clearly mark the start and end of each haul on each fishery, and monitor all hauls to record the quantity of VME indicator organisms recovered during that haul.

The fishing vessel, during its operation, shall submit the information with regard to its operation (e.g. position, date) to NIFS if it was confirmed that the vessel encountered VMEs. The threshold of the encounter of VMEs is over 60kg of coral per set or over 800kg of sponges per set. If the amount of VME that exceeds the weight specified in the criteria, the vessel shall apply a 2 nmiles move-on rule to resume its fishing operation. Furthermore, the vessel shall relocate its fishing position until it reaches a point where no VMSs are confirmed. In accordance with Article 15 of *Distant Water Fisheries Development Act*, an automatic location communicator shall be installed on all vessels conducting bottom fishing activities, and an observer shall be on board each vessel for over 50% of the total number of days fished during the trip.

4.2. VME Measurement

Before 2013, observation, collection, and measurement of the VMEs in the SIOFA area were mainly implemented by observers on board the vessels. Benthic organisms were the dominant VME indicators observed in the SIOFA area, and the criteria used for their classification and recording are referred in *The CCAMLR VME Taxa Classification Guide*, developed by CCAMLR. For longline fishery, the frequency of data collected was mainly by each set, without considering line segments (however it did differ by observers).

Information collected for each VME were taxa, number of individuals, weight (kg) and location (latitude, longitude). The observation was made by observers; however, they did not record information if VMEs were not encountered in the area. The position of VME encounters were recorded based on the midpoint of each set or the midpoint of the measured set. For the case of trawl fishery, the trawling route was not considered, and the last position of the applicable haul was referred to as the position of the VME encounter.

4. Biological data

4.1. Length frequency of target species

Target species of SIOFA area were *Patagonian toothfish* and Polyprionidae by longline fishery and *Splendid alfonsino* and *Pelagic armorhead* by trawl fishery. No catch record of Polyprionidae is present since 2010. *Patagonian toothfish* 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. The annual mean length had a decreasing trend. In 2011, two modes

were present in the length frequency. After 2012, there was only one group with one mode at 80 cm (Figure 4).

Splendid alfonsino and pelagic armourhead were measured a total of 12,561 and 2,518, respectively in 2011-2013. The fork length of splendid alfonsino ranged between 15 and 56 cm, and mean length was 23.9 cm. The annual mean length of splendid alfonsino was approximately 25 cm during 2011-2012, but sharply decreased in 2013. There was a dominant length class at 20 cm in 2013. The total length of pelagic armourhead ranged between 13 and 66 cm, and mean length was 51.7 cm. The trend of the annual mean length had no change. There was only one group with one mode at 52 cm (Figure 5).

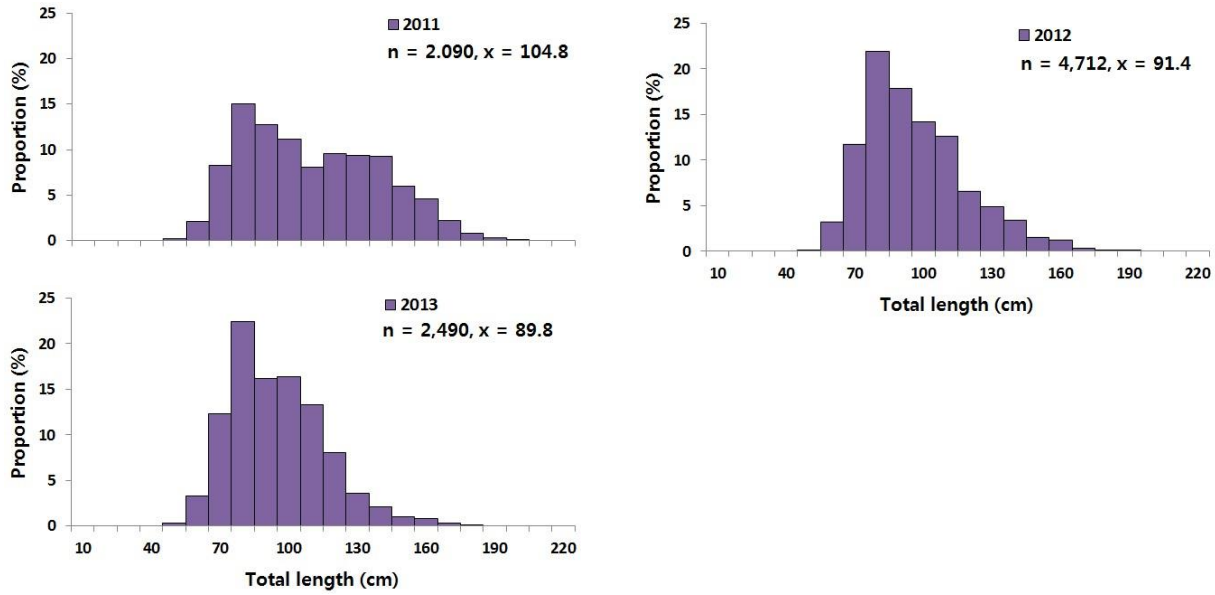
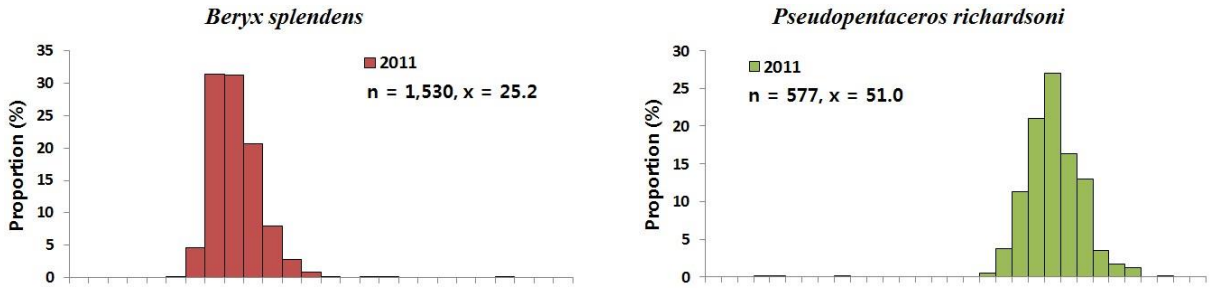


Figure 4. Length frequency of Patagonian toothfish by longline fishery.



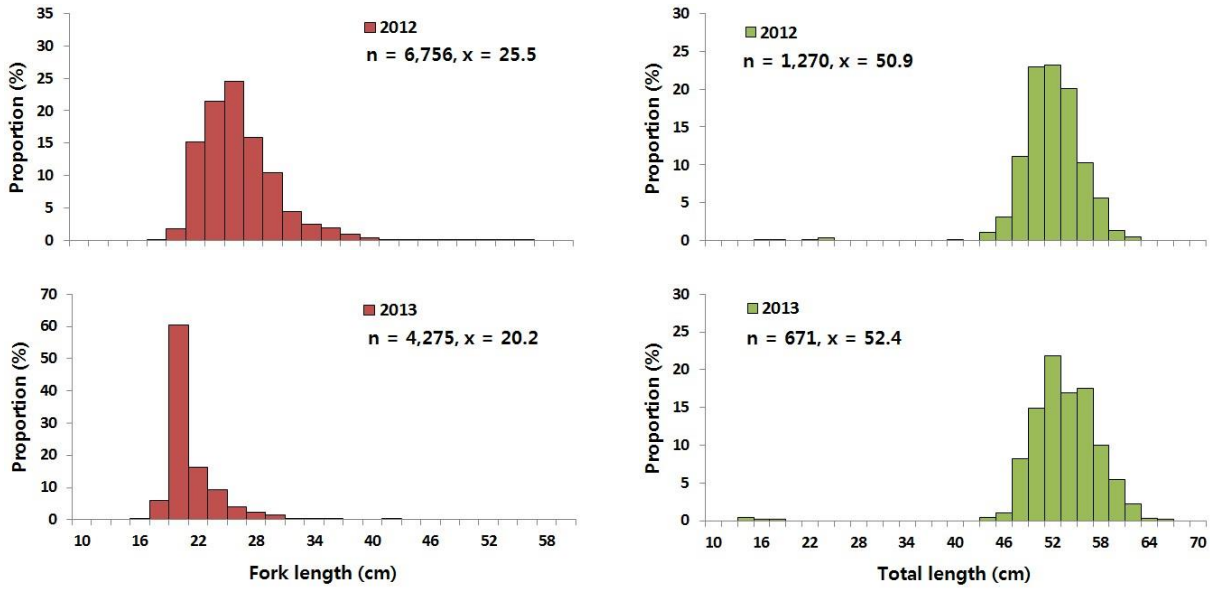


Figure 5. Length frequency of splendid alfonsino and pelagic armourhead by trawl fishery.

5. Data verification mechanisms

5.1. Catch data verification

The revision of *the Act on Fisheries Information and Data Reporting* was put into effect in December 2012. Such revision includes requirements for data collection and reporting which was recently adopted by the RFMOs regarding especially ecologically important species, discards/release and bycatch mitigation, etc. Since September 2014, *the Act on Fisheries Information and Data Reporting* has obliged fishers to report the catch statistics to NIFS every week, and again revised on 1st September 2015, that fishers make a daily reporting through an electronic reporting system (ERS) in order to manage and/or cross-check the data in real time.

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 haul by haul data from vessels which are filled out by the captain onboard. Korea also established Fisheries Monitoring Center (FMC) in March 2014 to monitor and/or manage the Vessel Monitoring System (VMS) data so that the data are cross-checked with fishing position from the logbook. Catch data are cross-checked between those of NIFS (which originate from the logbook) and those of National Fishery Products Quality Management Service (NFQS), prior to issuing Catch Documentation Scheme (CDS) as well.

5.2. Verification of landing and transhipment information

Process of verifying landing and transhipment information is also similar to catch statistics in Korea. NIFS collects total catch of each vessel by ERS. Vessels report the amount of landing and transhipment information to FMC, and they apply for the CDS issued by NFQS. The data set are verified and confirmed through cross-checking among total catch of NIFS, CDS information of NFQS and landing and transhipment report of FMC.

6. Observer program

6.1. Observer training

Korean scientific observer program for distant water fisheries started in 2002. National Institute of Fisheries Science (NIFS) is responsible for implementing and developing the observer program. The qualification for a person to be an observer is: a person who is a college graduate whose major field is nature science, or else, a fisheries high school graduate who accompanies at least 2-year experience on board having a certificate of qualification to deck officer. Candidates for observer who have passed the paper review (including medical check-up) 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 types 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 both tests and attended 100% of the course timetable can be qualified and deployed on board as a scientific observer. NIFS trains observers again before dispatching them to each RFMO area. The training includes the conservation and management measure of each RFMO, how to collect the data and sample, specific task needs to be done and more.

6.2. Port sampling program

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