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**Korean Tuna Longline Fishery in the Indian Ocean**

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## **Abstract**

Most of the Korean tuna fisheries occur in the Pacific and Indian Ocean. Indian Ocean tuna fishery is still most important distant-water fishery for Korea, although its fleets kept decreasing since mid-1970s because some of them shifted to the Pacific Ocean from the Indian Ocean. In 2004, total annual catch amounted to 7,735 mt from 36 longliners which is an increase by 50.4 % compared to 2003 and more than 80 % of the total catch were composed of yellowfin and bigeye tunas. The National Fisheries Research and Development Institute (NFRDI) has conducted a small-scale tagging project through which it encourages fishermen to have voluntary tagging practices during their fishing operation. NFRDI also initiated a fisheries observer program in 2002 for international fisheries including tuna fisheries to meet the recommendations of the international fisheries organization and some relevant regional fisheries bodies and to fulfill the duties as a responsible fishing country. At the initiated stage, size of the observer program is fairly small to cover for the tuna longline fisheries to be urgently implemented but will be gradually developed to cover all required areas of the fisheries. One Korean observer deployed on the Korean tuna longline vessel in the Indian Ocean in 2004.

## **Data collection system**

Tuna catch statistics of Korea are obtained from two sources of data reports. Korea Deep-Sea Fisheries Association (KODEFA) collects total catches by gear from industries, which are used as Korean official nominal catch. NFRDI collects logsheet sampling data from fishing vessels. NFRDI is now reconstructing database system for handy manipulation and analysis of fisheries data by scientists. Old data files will be revisited and reviewed for the correction or verification of the existing statistics. Therefore, we do not exclude a possibility of minor correction in our previous statistics. However, this can be interpreted as a strenuous effort for Korea to collaborate with all regional fisheries organizations for the better understanding of our fishery statistics.

## **Fleet structure**

Korean tuna longline fishery in the Indian Ocean started with 3 fishing vessels in 1966. It was picked at 185 vessels in 1975. Total number of vessels operated in the Indian Ocean has been decreasing since early-1980s. In 2004, 36 vessels were operated in the Indian Ocean, which is an increase by 11 vessels compared to 2003 (Figure 1).

## **Catch and CPUE**

Major target species for Korean tuna longline fishery are yellowfin, bigeye and albacore tunas. However, in recent years albacore tuna remains as a minor species.

The catch of yellowfin tuna was 6,500 mt in 1971 and rapidly increased to 31,400 mt in 1977. Thereafter it showed a decreasing trend with fishing vessels. In 2004 yellowfin catch was 4,068 mt which was an increase by 93.7 % compared to 2003. The catch trends of bigeye tuna were almost similar with the yellowfin catch. Catch of bigeye was 4,059 mt in 1971 and peaked at 32,900 mt in 1978. It has also decreased since 1979 as yellowfin catch and it was recorded 2,466 mt in 2004.

The CPUE (no. of fish/100 hooks) trends of yellowfin and bigeye were also the same pattern with catch trends. The highest CPUE was 1.34 fish of yellowfin in 1977 and 1.14 fish of bigeye in 1978. The ranges of CPUEs were 0.01-0.13 fish of yellowfin and 0.01-0.09 fish of bigeye over the last five years (Figure 1).

The traditional fishing grounds of Korean tuna longline fishery were mainly formed in the central tropical area between 20°N and 20°S. From 1991 onward some longliners moved to the southwestern area of the Indian Ocean. Distributions of CPUE for yellowfin tuna were generally higher than that of bigeye tuna during 2003-2004. Higher density area of yellowfin tuna was appeared at off Somalia, around Madagascar and off South Africa during 2003-2004. The major fishing grounds of bigeye tuna was formed at 0° - 20° S in 2003 and 5° N-5° S, 60° in 2004 (Figure 2).

## **Size composition**

The fork length data of yellowfin and bigeye tunas collected from the Korean tuna longliners were analyzed for the whole Indian Ocean. as shown in Figure 3. The range of fork length of yellowfin tuna was 94-174 cm from 609 fishes measured. The mean fork length was 128.4 cm and mode was formed at 130-134 cm. The range of bigeye tuna was 95-190 cm from 403 fishes. The mean fork length was 126.9 cm and mode was formed at 120-124 cm.

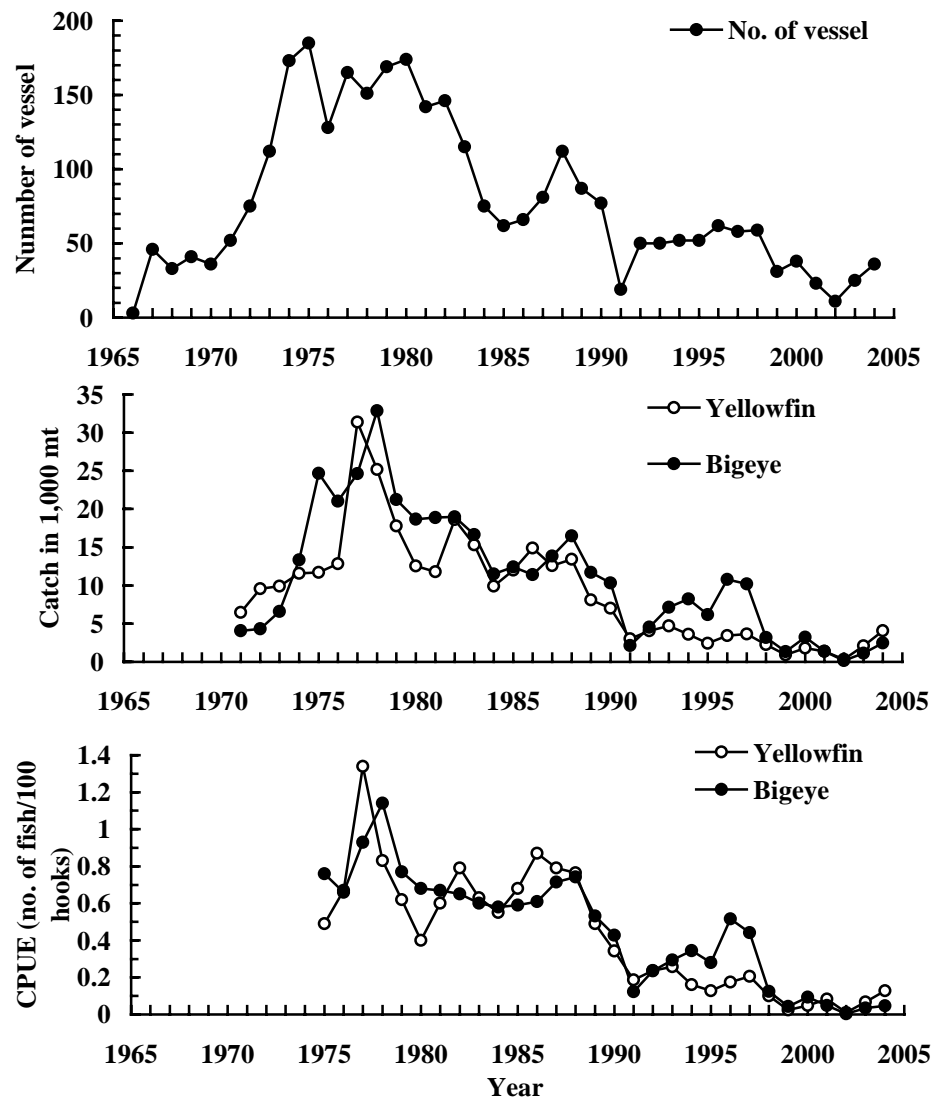


Figure 1. Annual number of fishing vessels, nominal catch and CPUE for the Korean tuna longline fishery in the Indian Ocean, 1966-2004

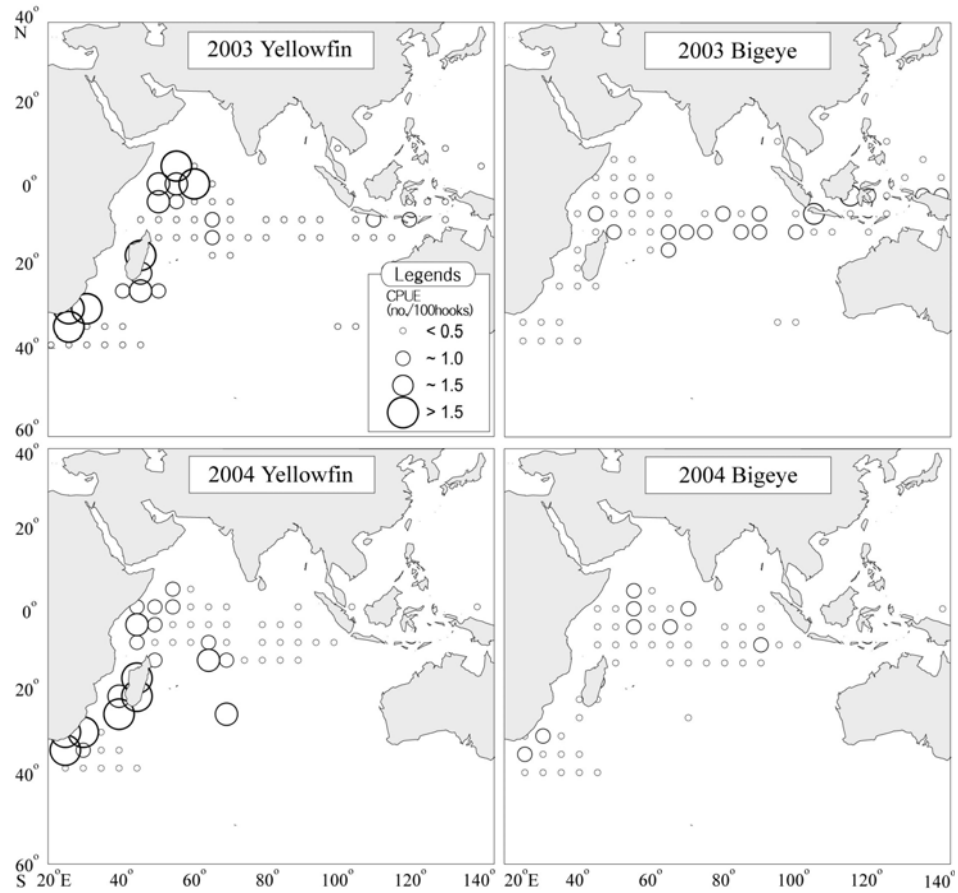


Figure 2. Distribution of CPUE (no. of fish/100 hooks) of yellowfin and bigeye tunas for the Korean tuna longline fishery in the Indian Ocean, 2003-2004.

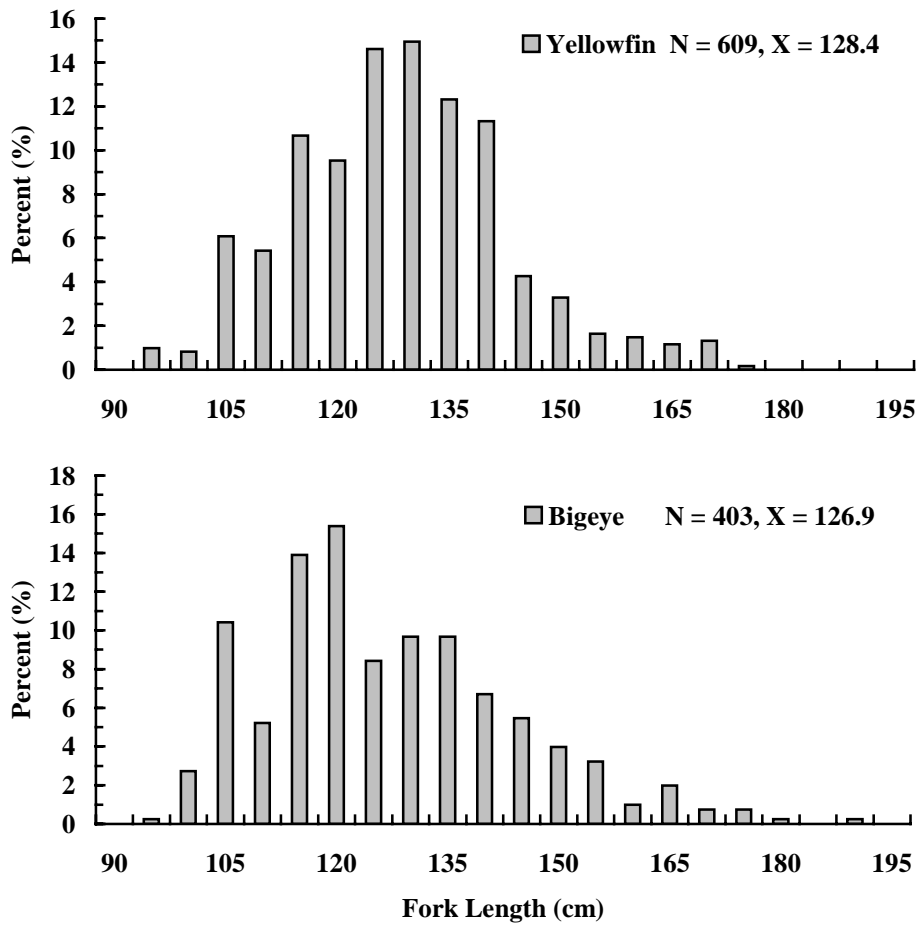


Figure 3. Fork length compositions of yellowfin and bigeye tunas taken from the Korean tuna longline fishery in the Indian Ocean in 2004.