**SCIENTIFIC COMMITTEE**
**FIFTH REGULAR SESSION**

**10-21 August 2009**
**Port Vila, Vanuatu**

# A Summary of the Korean Tuna Fishery Observer Program for the Pacific Ocean in 2008

**WCPFC-SC5-2005/EB-IP-03**

**Doo-Hae An, Doo-Nam Kim, Dae-Yeon Moon, Seon-Jae Hwang and You-Jung Kwon** [1]

[1] National Fisheries Research and Development Institute (NFRDI), Korea.

# A Summary of the Korean Tuna Fishery Observer Program for the Pacific Ocean in 2008

Doo-Hae An, Doo-Nam Kim, Dae-Yeon Moon, Seon-Jae Hwang and You-Jung Kwon
National Fisheries Research and Development Institute (NFRDI)
Republic of Korea

Korea began to develop its observer program for distant-water fisheries including tuna fisheries in 2002. The purpose of this program is to meet the requirements of relevant regional fisheries bodies such as the WCPFC and therefore the mission of trained observers are similar to those set out in the convention of the fisheries bodies. Before the official observer program was launched, Korea had irregularly dispatched NFRDI scientists aboard commercial tuna vessels to monitor fisheries and collect reliable catch statistics including biological samples, which were unobtainable by the regular data collection system. During the past 10 years, a total of 16 scientific observations were conducted for tuna fisheries operating in the Western and Central Pacific where the majority of Korean tuna purse seiners and longliners were active.

In 2008, 4 observers were deployed to monitor tuna fisheries in the Pacific Ocean. Of which results of three observer trips conducted in the Pacific in 2008 were summarized because one observer trip data had some problems..

## Purse seine fishery

The Western and Central Pacific Ocean (WCPO) serves as a usual fishing ground for the Korean tuna purse seine fishery since the early 1980s. To monitor this fishery, one trained observer was placed aboard two Korean tuna purse seine vessels (734GRT and 1,202 GRT) targeting skipjack and yellowfin tuna during May 30 - October 4 and during July 9 – October 23 in 2008, respectively.

Two purse seiners were equipped with radars, color video and scanning fish founders, doppler sonar current meter, net depth recorder and so on and were operating auxiliary boats consisting of a skipper boat, net boat and one speed boat. To locate tuna schools, Korean tuna purse seiners usually carry helicopters. The purse seine net used by the monitored Korean purse seiners was about 1,790 m in length and it was deployed about 110 - 300 m in depth.

During the 234 days of the observation period, a total of 208 purse seine sets were monitored in the waters off the Papua New Guinea, between 04°46'N-06°52'S and 155°18'-179°23'E (Fig. 1).

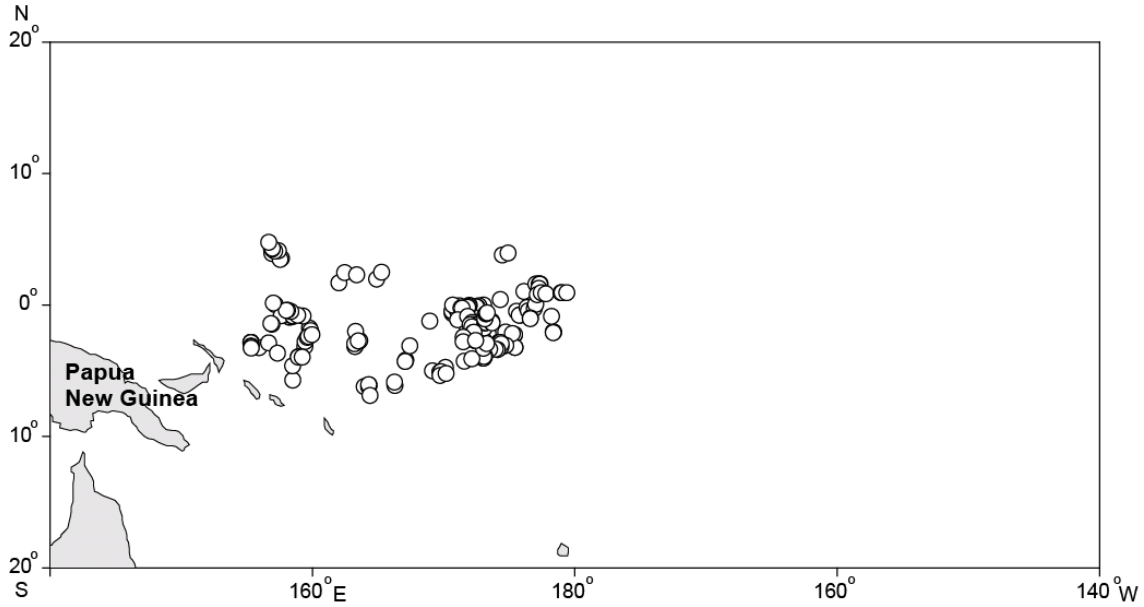


Fig. 1. Purse seine observation points in the Pacific Ocean.

The sets consisted of 180 free-swimming school sets and 28 log-associated school sets (Table 1). The success rate of operating sets were 61.7% for free-swimming school sets and 96.4% for log-associated school sets. Total observed catches were 6,473mt for target species and 37mt for bycatch species. Catch composition for target species averaged 54.4% for skipjack and 45.6% for yellowfin. Catch per unit effort (CPUE, mt/set) of free-swimming school was 29.4 mt/set on average and CPUE of log-associated school sets was 43.4 mt/set.

Bycatch were observed in 27 log-associated school and 46 free-swimming school sets. However, it was not possible for us to list all bycatch species to the species level due to the lack of data from the observer. 2 sharks and some miscellaneous fish species (i.e. rainbow runner, file fish, dolphinfish etc.) were recorded.

Length frequency data of skipjack and yellowfin tuna was also collected by the observer. A total of 1,653 skipjack and 2,833 yellowfin tuna were measured onboard (Fig. 2). The fork length of target species ranged 26-79cm (mean 58.4cm) for skipjack tuna and 22-160cm (mean 90.6cm) for yellowfin tuna. As the continuation of a small voluntary tagging program by NFRDI, the observer in cooperation with fishermen placed conventional tags on 35 yellowfin and 1 skipjack tunas and released them.

Table 1. Catch (mt) and CPUE (mt/set) by school types of the Korean tuna purse seine fishery during the scientific observation in 2008

| School type | No. of set | Success rate (%) | Skipjack tuna | | Yellowfin tuna | | Subtotal (SKJ+YFT) | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Catch | CPUE | Catch | CPUE | Catch | CPUE | Catch | CPUE |
| Free-swimming school | 180 | 111 (61.7%) | 2,525 | 14.0 | 2,758 | 15.3 | 5,283 | 29.3 | 5,296 | 29.4 |
| Log-associated school | 28 | 27 (96.4%) | 995 | 35.5 | 196 | 7.0 | 1,191 | 42.5 | 1,215 | 43.4 |
| Total | 208 | 138 | 3,520 | 16.9 | 2,954 | 14.2 | 6,473 | 31.1 | 6,511 | 31.3 |

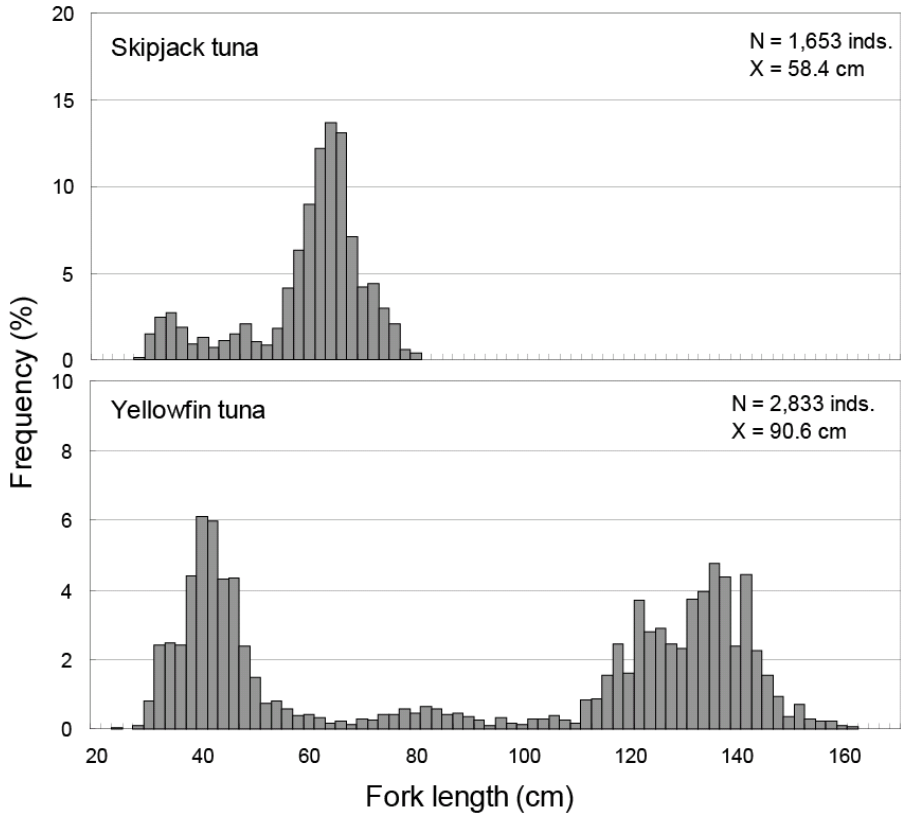


Fig. 2. Length frequency distributions of skipjack and yellowfin tunas.

## Longline fishery

To monitor the Korean tuna longline fishery operated in the Pacific, one trained observer was deployed to Korean longliner (411 GRT) fishing in the Pacific Ocean, between 12°10'N - 05°25'S and 171°57'-176°38'W (Fig. 3).

During the 44 days of the observation period from May 25 to July 7 2008, a total of 33 longline sets were monitored. The average number of baskets used for each set was averaged 159 and hooks used ranged from 2,380 to 2,975 (17 hooks per basket). Mean length of main line was 133km and those of buoy line were 50m. Length of branch line was 46 m and 10m length of lead line was used. Lead material was nylon monofilament with diameter 1.5mm. The fishing vessel used no.3.8 tuna hooks.

Longline setting began at around 8:30am in the morning and finished by noon and after about 3 hours of soaking, the longline was hauled until the following morning by 7:30am. Twenty three haulings were immediately begun where the settings were finished and three haulings were done at the starting point of setting. Total of the 88,825 hooks were observed by the on-board observer.

Catches sampled by the observer were 40.9mt of tuna and billfishes, of which bigeye tuna was the dominant tuna species accounting for 41.0% of the total catch in weight, followed by yellowfin tuna of 15.9mt (38.8%), and albacore of 2.2mt (5.4%). Billfishes incidentally caught were blue marlin (12.3%) and swordfish (1.5%) (Table 2).

A total of 22 bycatch species (542 in number) were observed during the trip, among which billfishes, sharks, escolar and lancetfish were most common and some other fish species were also observed. (Table 3).

Length frequency data for the sampled tunas were collected. The fork length of bigeye tuna ranged from 43cm to 187cm (mean 135.1cm) and that of yellowfin tuna ranged from 95cm to 165cm (mean 129.0cm). On the other hand the fork length of albacore ranged from 80cm to 110cm (mean 95.7cm) and that of skipjack tuna ranged from 66cm to 88cm (mean (74.6cm) with dominant small-sized fish (Fig. 4 ).

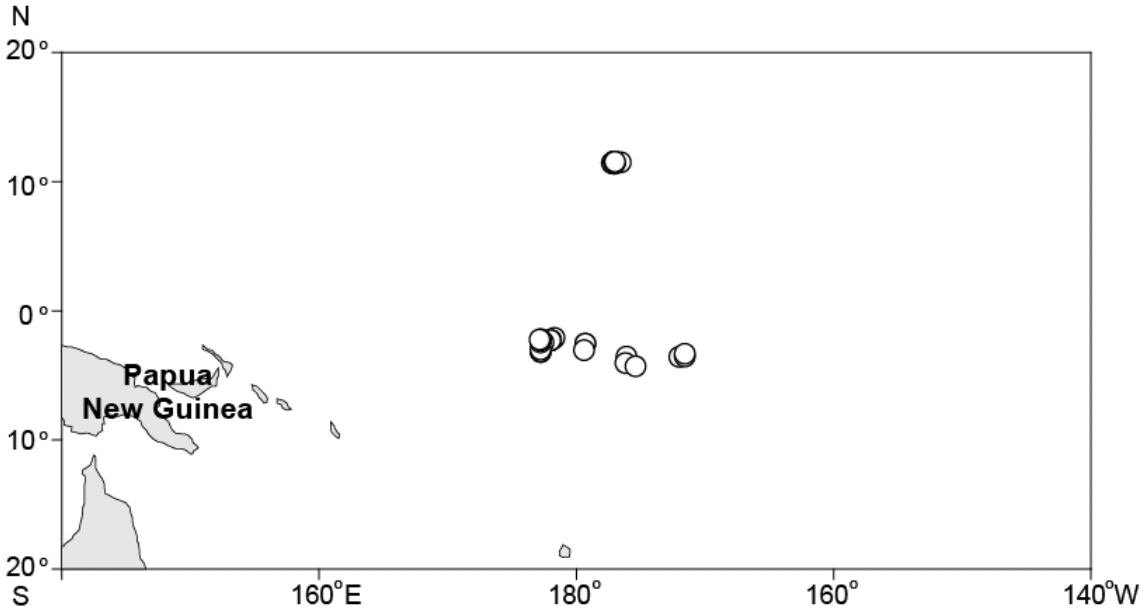


Fig. 3. Longline observation points.

Table 2. Catch and CPUE of tunas and billfishes in the Pacific Ocean

| Species | Catch | | | | CPUE | |
|---|---|---|---|---|---|---|
| | No. | Ratio (%, no.) | Weight (kg) | Ratio (%, weight) | No./100hooks | kg/100hooks |
| Bigeye tuna | 349 | 31.8 | 16,757 | 41.0 | 0.393 | 18.865 |
| Yellowfin tuna | 461 | 42.0 | 15,867 | 38.8 | 0.519 | 17.863 |
| Albacore | 143 | 13.0 | 2,218 | 5.4 | 0.161 | 2.497 |
| Blue marlin | 85 | 7.7 | 5,042 | 12.3 | 0.096 | 5.676 |
| Skipjack tuna | 31 | 2.8 | 242 | 0.6 | 0.035 | 0.272 |
| Swordfish | 16 | 1.5 | 611 | 1.5 | 0.018 | 0.688 |
| Shortbill spearfish | 8 | 0.7 | 82 | 0.2 | 0.009 | 0.092 |
| Striped marlin | 3 | 0.3 | 63 | 0.2 | 0.003 | 0.071 |
| Indo-Pacific sailfish | 1 | 0.1 | 20 | 0.0 | 0.001 | 0.023 |
| Total | 1,097 | 100.0 | 40,902 | 100.0 | | |

Table 3. List of bycatch species in the Pacific Ocean

| Species | No. of fish | Ratio (%) | Species | No. of fish | Ratio (%) |
|---|---|---|---|---|---|
| Blue shark | 122 | 22.5 | Great baracuda | 6 | 1.1 |
| Snake mackerel | 109 | 20.1 | Oilfish | 6 | 1.1 |
| Lancet fish | 63 | 11.6 | Longfin mako | 5 | 0.9 |
| Stingray | 50 | 9.2 | Pomfret | 4 | 0.7 |
| Wahoo | 48 | 8.9 | Mako shark | 2 | 0.4 |
| Bigeye thresher | 47 | 8.7 | Common dolphin | 1 | 0.2 |
| Escolar | 43 | 7.9 | Manta ray | 1 | 0.2 |
| Sickle pomfret | 17 | 3.1 | Rainbow runner | 1 | 0.2 |
| Dolphin fish | 12 | 2.2 | Slender sunfish | 1 | 0.2 |
| Galapagos shark | 12 | 2.2 | Other species | 1 | 0.2 |
| Ocean whitetip shark | 10 | 1.8 | Total | 542 | 100.0 |
| Crocodile shark | 9 | 1.7 | | | |

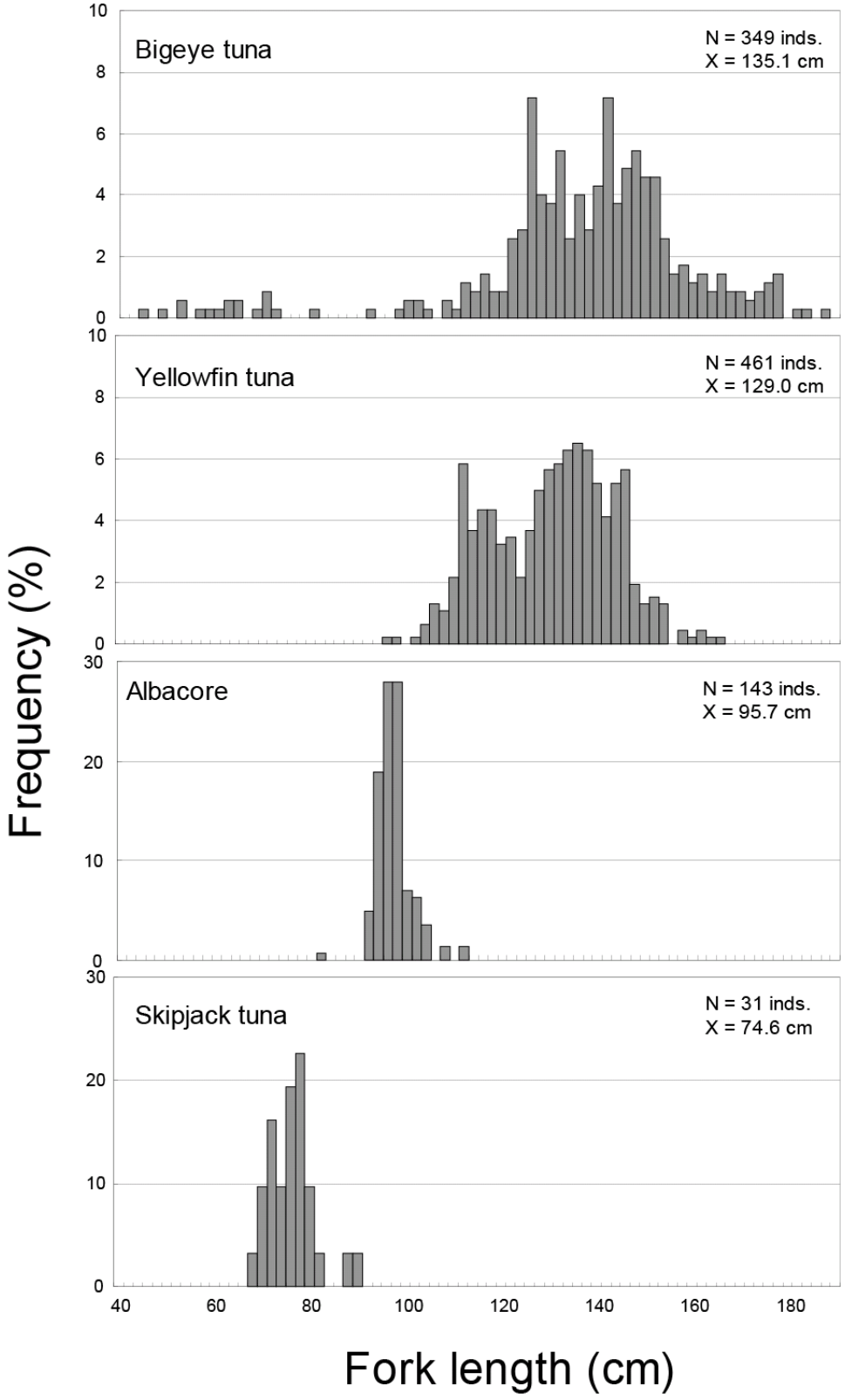


Fig. 4. Frequencies of fork length of tunas in the Pacific Ocean.