



**SCIENTIFIC COMMITTEE
SEVENTEENTH REGULAR SESSION**

ELECTRONIC MEETING

11-19 August 2021

**ANNUAL REPORT TO THE COMMISSION
PART 1: INFORMATION ON FISHERIES, RESEARCH AND STATISTICS**

WCPFC-SC17-AR/CCM-12 (Rev.01)

REPUBLIC OF KOREA



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PART 1: INFORMATION ON FISHERIES, RESEARCH AND STATISTICS**

Republic of Korea

Sung Il LEE¹, Mi Kyung LEE¹, Junghyun LIM¹ and Youjung KWON¹

¹ National Institute of Fisheries Science, 216 Gijang-Haeonro, Gijang-eup, Gijang-gun, Busan 46083, Republic of Korea

2021 ANNUAL REPORT TO THE COMMISSON

Part 1. INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

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*National Institute of Fisheries Science (NIFS)
216 Gijang-Haeanro, Gijang-eup, Gijang-gun, Busan 46083, Republic of Korea*

Scientific data was provided to the Commission in accordance with the decision relating to the provision of scientific data to the Commission by 30 April 2021	YES
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1. SUMMARY

Korea has two types of fishing gears, purse seine and longline, that engage in fishing for tuna and tuna-like species in the WCPFC Convention Area. These fisheries are managed by the Distant Water Fisheries Development Act of Korea. Total catch in the WCPFC convention area by the Korean fisheries in 2020 was 279,688 mt, which accounted for 6% and 20% less than those of the average for recent 5 years (2016-2020) and of 2019, respectively. The catch of purse seine fishery with 26 vessels active was 252,314 mt in 2020, which was 7% and 20% less than those of the average for recent 5 years (2016-2020) and of 2019, respectively. The catch of longline fishery with 99 vessels active in 2020 was 27,374 mt, which was 5% greater than that of the average for recent 5 years (2016-2020) but 17% less than 2019. In purse seine fishery, skipjack catch in 2020 was 27% less, and yellowfin and bigeye catches were 38% and 53% greater than those of 2019, respectively. In longline fishery, catches of bigeye, yellowfin and albacore in 2020 were 5%, 21% and 61% less than those of 2019, respectively. Purse seine fishing efforts ranged from 5,790 to 7,525 sets during 5 recent years (2016-2020), and the number of sets in 2020 was similar to that of the average for the recent 5 years (6,749 sets). Longline fishing efforts ranged from 48,294 to 60,437 thousand hooks during 5 recent years (2016-2020), and the number of hooks in 2020 was a little bit greater than that of the average recent 5 years (55,709 thousand hooks). The logsheet coverages in 2020 were 100% for both purse seine and longline, and the observer coverage in 2020 was 3.8% for longline.

2. Tabular Annual Fisheries Information

Table 1(a). Annual catch and effort estimates for the Korean purse seine fishery by primary species in the WCPFC Convention Area, 2016-2020

Year	No. of sets	Catch (mt)				
		Total	SKJ	BET	YFT	OTH
2016	5,790	278,514	233,014	4,401	41,040	59
2017	6,796	246,849	192,922	3,235	50,675	18
2018	6,866	267,558	233,729	4,339	29,480	9
2019	7,527	314,572	279,553	2,767	32,249	3
2020	6,767	252,314	203,635	4,247	44,429	3

* Data for 2020 are preliminary.

Table 1(b). Annual catch and effort estimates for the Korean longline fishery by primary species in the WCPFC Convention Area, 2016-2020

Year	No. of hooks ($\times 10^3$)	Catch (mt)										
		Total	ALB	YFT	BET	BFT	SKJ	BLM	BUM	MLS	SWO	OTH
2016	55,238	24,201	1,481	8,054	11,018	0	166	100	2,235	89	697	363
2017	48,294	21,639	1,294	7,008	10,220	0	186	14	1,880	62	570	406
2018	58,201	24,788	1,225	6,519	13,828	0	202	39	1,740	67	791	377
2019	60,437	32,937	1,902	13,847	13,711	0	390	68	2,007	58	602	351
2020	56,374	27,374	744	10,948	13,011	0	251	39	1,389	78	554	360

* Data for 2020 are preliminary.

Table 1(c). Average annual fishing effort for 2002-2004 and annual fishing effort for subsequent years for the Korean longline fishery directed at North Pacific albacore in the North Pacific Ocean

Area	Fishery	2002-04 Average		2014		2015		2016	
		No. of vessel	Vessel days	No. of vessel	Vessel days	No. of vessel	Vessel days	No. of vessel	Vessel days
Convention area	Longline	*	1,072	*	1,184	*	852	*	943
Area	Fishery	2017		2018		2019		2020	
		No. of vessel	Vessel days	No. of vessel	Vessel days	No. of vessel	Vessel days	No. of vessel	Vessel days
Convention area	Longline	*	1,999	*	1,347	*	1,209	*	943

* Korea does not have any vessels targeting directly North Pacific albacore in the North Pacific Ocean.

Table 1(d). Annual catch and effort of southwest striped marlin by the Korean longline fishery in the south of 15°S, 2016-2020

Year	Catch (mt)	Effort (number of fishing vessels)
2016	0	0
2017	0	0
2018	0	0
2019	0	0
2020	0	0

* Korea does not have any vessels fishing for southwest striped marlin, and any southwest striped marlin catch is bycatch.

Table 1(e). Annual catch of swordfish by the Korean longline fishery in the south of 20°S, 2016-2020

Year	CMM-flagged vessels south of 20°S		Chartered vessels		Other vessels fishing within the CCM's waters south of 20°S		
	Catch (mt)	Vessel numbers	Catch (mt)	Vessel numbers	Flag	Catch (mt)	Vessel numbers
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0

* Korea does not have any vessels fishing for swordfish in the Convention Area south of 20°S, and any swordfish catch is bycatch.

Table 1(f). Annual catch and effort of south Pacific albacore by the Korean longline fishery in the south of 20°S, 2016-2020

Year	Catch (mt)	Effort (number of fishing vessels)
2016	0	0
2017	0	0
2018	0	0
2019	0	0
2020	0	0

* Korea does not have any vessels fishing for south Pacific albacore in the Convention Area south of 20°S, and any south Pacific albacore catch is bycatch.

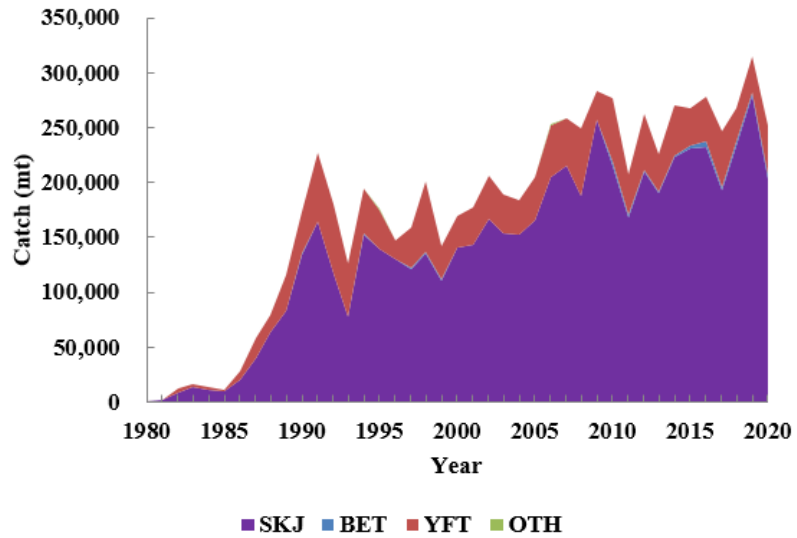


Fig. 1(a). Historical annual catch for the Korean purse seine fishery by primary species in the WCPFC Convention Area during 1980-2020.

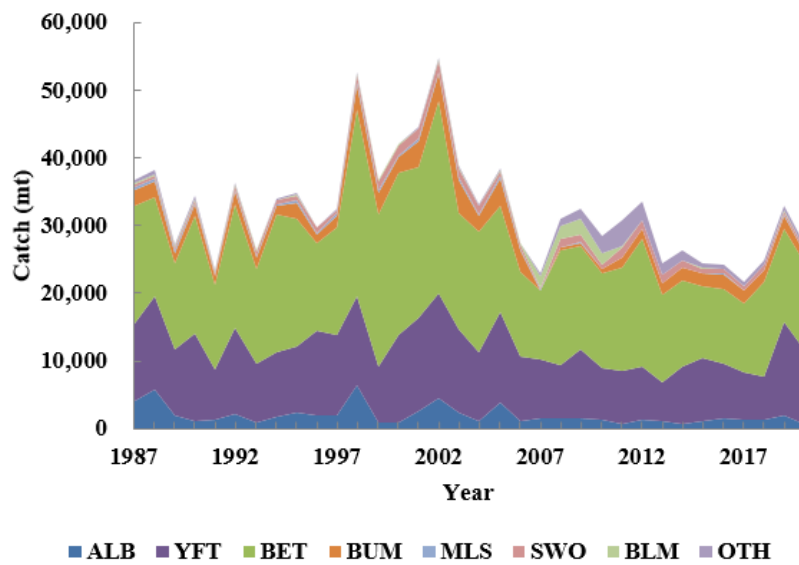


Fig. 1(b). Historical annual catch for the Korean longline fishery by primary species in the WCPFC Convention Area during 1987-2020.

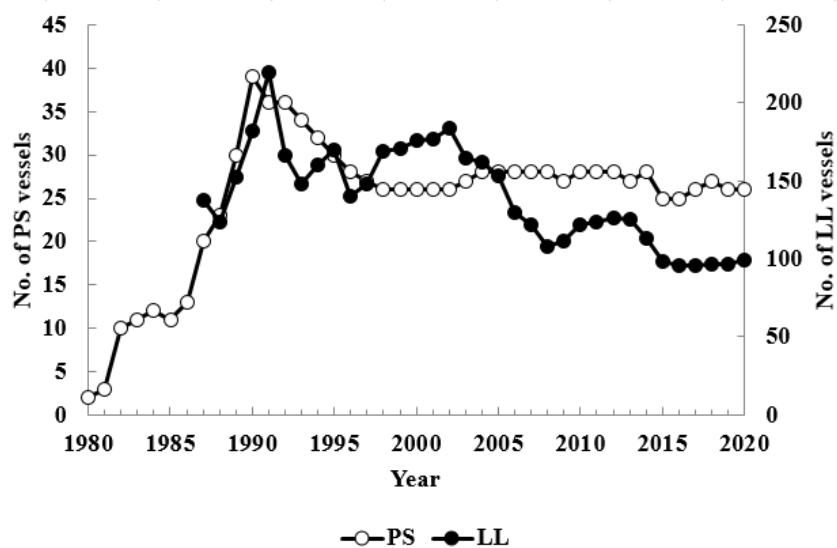


Fig. 2. Historical annual vessel numbers for the Korean tuna fisheries by gear in the WCPFC Convention Area during 1980-2020.

Table 2. Number of Korean vessels by gear and size, active in the WCPFC Convention Area, 2016-2020

Year	GRT class by gear									
	Longline					Purse seine				
	Total	0-50	51-200	201-500	500+	Total	0-500	501-1,000	1,001-1,500	1,500+
2016	96	0	1	95	0	25	0	7	14	4
2017	96	0	1	95	0	26	0	7	15	4
2018	97	0	1	96	0	27	0	6	15	6
2019	97	0	1	96	0	26	0	5	15	6
2020	99	0	1	98	0	26	0	5	15	6

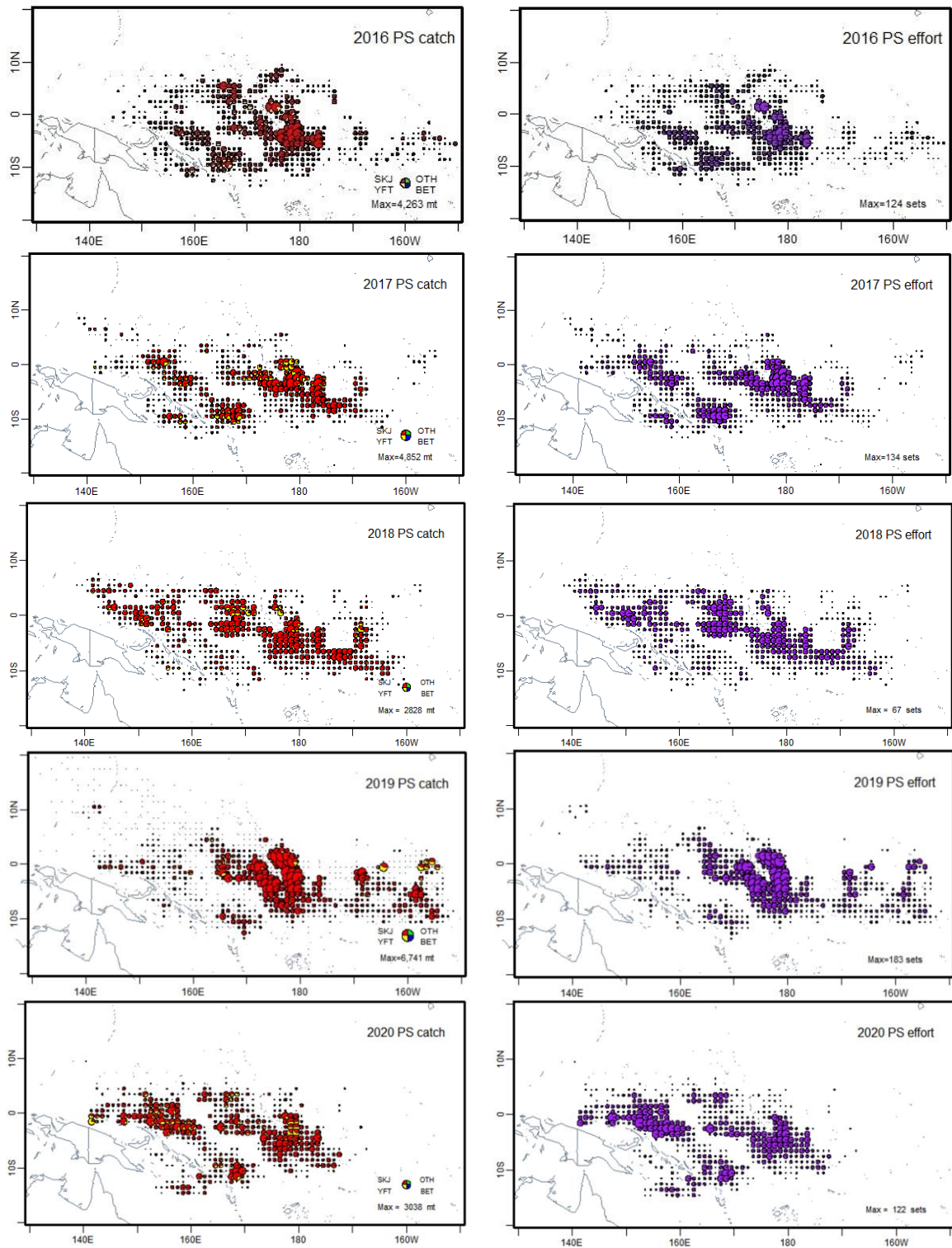


Fig. 3(a). Annual catch and effort distributions of target species by the Korean purse seine fishery active in the WCPFC Convention Area, 2016-2020.

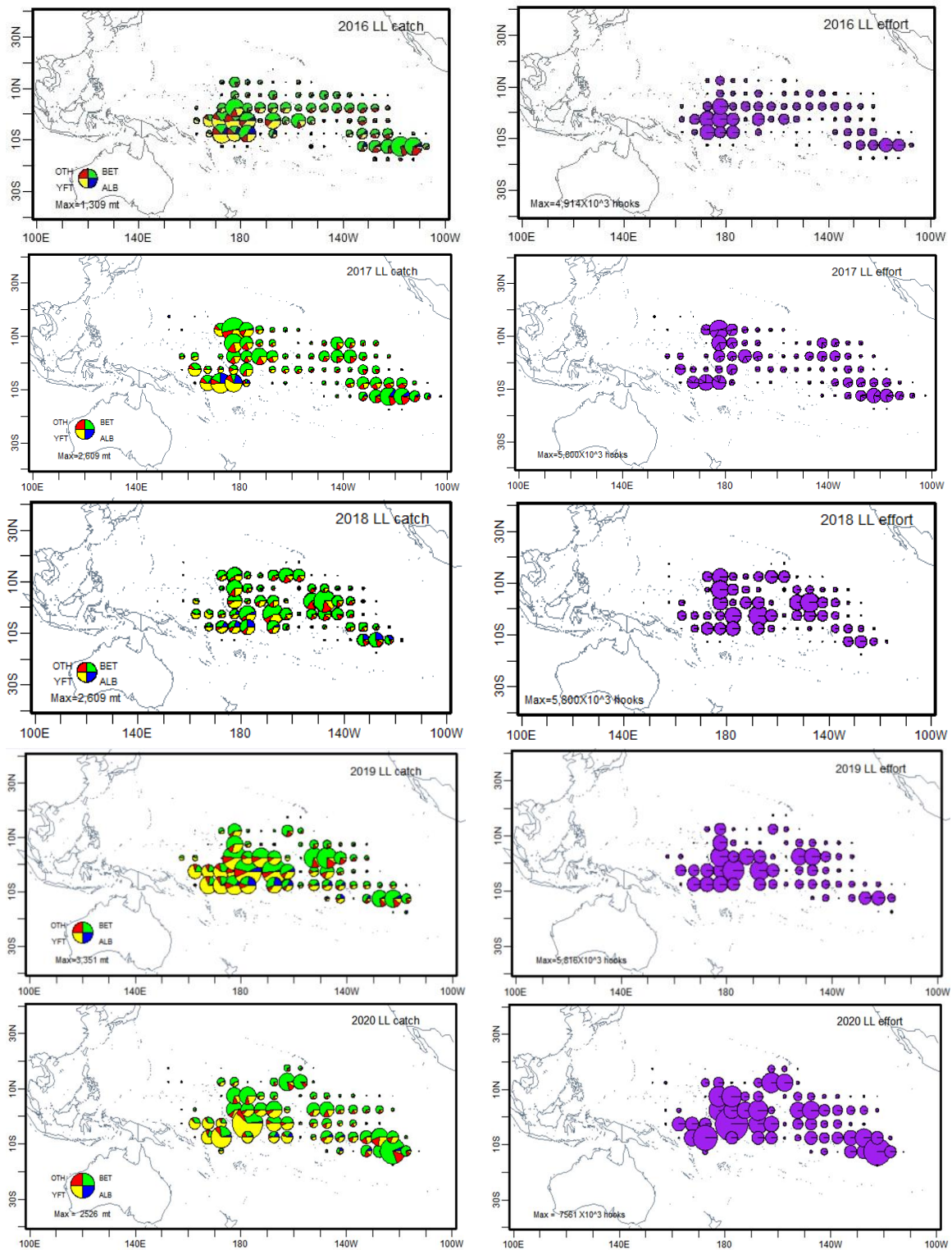


Fig. 3(b). Annual catch and effort distributions of target species by the Korean longline fishery active in the Pacific Ocean, 2016-2020.

Table 3(a). Annual estimated catch or encounter of species of special interest (seabird, turtle, marine mammals, etc.) by the Korean fisheries in the WCPFC Convention Area, 2016-2020

Fishery	Year	Number by species										
		Whale shark	Leather-back turtle	Olive ridley turtle	Logger-head turtle	Green turtle	Other marine turtles	False killer whale	Hump-back whale	Pygmy killer whale	Other whales	Sea-birds
PS	2016	D:0, A:1	-	-	-	D:0, A:1	D:1, A:7	D:0, A:1 ¹⁾	-	-	-	-
	2017	D:0, A:11	-	D:0, A:1	D:0, A:1	-	D:1, A:1	D:0, A:3 ²⁾	D:1, A:2 ³⁾	D:0, A:1 ⁴⁾	D:0, A:6 ⁵⁾	-
	2018	D:0, A:9	-	-	-	D:0, A:1	D:1, A:10	-	-	D:0, A:7 ⁶⁾	D:0, A:12 ⁷⁾	-
	2019	D:0, A:33	-	D:1, A:0	D:2, A:0	D:0, A:1	-	D:0, A:12 ⁸⁾	-	D:0, A:7 ⁹⁾	D:0, A:24 ¹⁰⁾	-
	2020	D:0, A:14	-	-	D:0, A:6	D:0, A:1	D:0, A:1	D:0, A:13 ¹¹⁾	-	-	D:0, A:7 ¹²⁾	-
LL	2016	-	D:0, A:1	D:27, A:5	-	D:9, A:1	D:3, A:1	-	-	-	-	-
	2017	-	-	-	-	-	D:0, A:3	-	-	-	-	-
	2018	-	D:1, A:0	-	-	-	-	-	-	-	-	-
	2019	-	D:1, A:2	D:1, A:0	-	-	-	-	-	-	-	D:1, A:0
	2020	-	-	D:2, A:0	-	-	-	-	-	-	-	D:1, A:0

* D and A indicate “dead” and “alive”, respectively.

** Date/Location: **1)** 16.4.23 / 4°N 154°E, **2)** 17.3.8 / 6°S 176°W, 17.3.15 / 8°S 176°E, **3)** 17.3.21 / 8°S 166°E, 17.3.18 / 8°S 166°W, 17.3.21 / 8°S 166°W, **4)** 17.11.16 / 9°S 155°E, **5)** 17.7.17 / 0°S 154°E, 17.5.16 / 2°S 175°W, **6)** 18.11.14 / 1°N175°E, 18.11.19 / 0°S179°E, 18.11.20 / 0°S179°E, 18.12.13 / 9°S155°E, 18.12.14 / 9°S155°E, 18.12.24 / 6°S152°E, **7)** 18.1.4 / 0°N153°E, 18.1.20 / 5°S153°E, 18.3.10 / 9°S157°E, 18.4.29 / 2°N144°E, 18.5.18 / 0°S146°E, 18.5.29 / 2°N156°E, 18.6.2 / 5°N144°E, 18.12.17 / 8°S154°E, 18.12.23 / 7°S176°W, **8)** 19.6.26 / 0°S172°E, 19.10.6 / 0°S177°E, 19.11.6 / 5°S176°E, 19.11.24 / 3°S173°E, **9)** 19.3.3 / 0°S143°E, 19.3.11 / 4°S156°E, 19.3.19 / 10°S168°E, 19.5.24 / 1°N175°E, 19.5.6 / 1°N177°E, **10)** 19.01.12 / 0°N144°E, 19.2.8 / 1°S169°W, 19.3.21 / 0°S165°W, 19.3.26 / 1°S151°E, 19.4.30 / 5°S179°W, 19.5.4 / 2°S170°E, 19.5.15 / 0°S172°E, 19.8.30 / 3°N161°E, 19.9.29 / 1°S179°E, 19.10.3 / 1°S177°E, 19.10.3 / 1°S177°E, 19.10.14 / 2°S177°E, 19.11.25 / 3°S173°E, 19.12.4 / 3°S174°E, 19.12.10 / 3°S174°E, 19.12.17 / 8°S154°E, 19.12.23 / 11°S159°E, **11)** 20.1.3 / 11°S168°E, 20.1.5 / 11°S168°E, 20.1.9 / 10°S168°E, 20.5.11 / 1°N147°E, **12)** 20.1.4 / 11°S168°E, 20.1.5 / 11°S168°E, 20.1.30 / 11°S167°E, 20.2.6 / 13°S158°E, 20.8.2 / 2°S155°E, 20.8.14 / 1°S154°E

Table 3(b). Effort, observed and estimated seabird captures by fishing year for Korean longline fishery in the area of 23°N - 25°S, 2016-2020

Year	Fishing effort				Observed seabird captures	
	Number of vessels	Number of hooks(X1,000)	Observed hooks(X1,000)	% hooks observed	Number	Rate
2016	96	55,238	962	1.7	0	0
2017	96	48,294	1,417	2.9	0	0
2018	97	58,201	1,919	3.3	0	0
2019	96	60,445	2,246	3.7	1	0.0004
2020	99	56,374	1,417	2.5	1	0.0007

* Korea does not have any vessels operating in the Convention Area north of 23°N and in the south of 30°S.

Table 3(c). Proportion of mitigation types¹ used by Korean longline fishery in 2020

	Combination of Mitigation Measures	Proportion of observed effort using mitigation measures			
		South of 30°S	25°S-30°S	25°S to 23°N	North of 23°N
	No mitigation measure			32.2	
Options required south of 25°S	TL+NS				
	TL+WB				
	NS+WB				
	TL+WB+NS				
	HS				
Other options 25°S-30°S	WB				
	TL				
Other options north of 23°N	SS/BC/WB/DSL				
	SS/BC/WB/(MOD or BDB)				
Provide any other combination of mitigation measures here	MOD			67.8	
	Totals			100	

¹ TL= tori line, NS= night setting, WB= weighted branch lines, SS= side setting, BC= bird curtain, BDB= blue dyed bait, DSL= deep setting line shooter, MOD= management of offal discharge, HS= hook-shielding device.

* This data comes from scientific observer data.

Table 3(d). Number of observed seabird captures in Korean longline fisheries, 2020, by species and area

Species	South of 30°S	25°S-30°S	North of 23°N	23°N-25°S	Total
Laysan Albatross				1	1
Total				1	1

Table 4(a). Annual estimates of retained and discarded catch of key sharks by the Korean longline fishery in the WPCFC Convention Area, 2016-2020

Year	Retained catch (mt) by key shark species						
	Blue shark	Thresher sharks	Hammerhead sharks	Mako sharks	Silky shark	Oceanic whitetip shark	Others
2016	<1	1	0	<1	0	0	<1
2017	<1	1	0	0	0	0	<1
2018	<1	3	0	<1	0	0	<1
2019	5	<1	<1	<1	0	0	11
2020	0	<1	<1	<1	0	0	14

* No shark catch retained by the Korean purse seine fishery.

Fishery	Year	Discard catch (number) by key shark species				
		Blue shark	Thresher sharks	Hammerhead sharks	Mako sharks	Others
Purse seine	2018	0	0	2	0	69
	2019	0	1	1	0	50
	2020	0	1	1	0	102
Longline	2018	3,121	1,839	6	263	3,695
	2019	2,640	1,063	6	183	2,479
	2020	1,688	728	3	41	1,651

* These data include all of status of “dead” and “alive”.

** See Table 4(b) for oceanic whitetip shark and silky shark.

Table 4(b). Annual number of releases of oceanic whitetip shark and silky shark by the Korean fisheries in the WPCFC Convention Area, 2016-2020

Fishery	Year	Number of releases	
		Oceanic whitetip shark	Silky shark
Purse seine	2016	D: 7, A: 96	D: 977, A: 327
	2017	D: 6, A: 1	D: 1,683, A: 332
	2018	D: 8, A: 14	D: 1,704, A: 625
	2019	D: 5, A: 1	D: 1,675, A: 767
	2020	D: 21, A: 0	D: 1,845, A: 304
Longline	2016	D: 44, A: 65	D: 897, A: 1,095
	2017	D: 48, A: 137	D: 675, A: 615
	2018	D: 19, A: 12	D: 726, A: 43
	2019	D: 32, A: 45	D: 733, A: 370
	2020	D: 13, A: 9	D: 106, A: 194

* D and A indicate “dead” and “alive”, respectively.

Table 5. Estimated annual coverage of operational catch/effort and observer data for the Korean fisheries by gear, active in the WCPFC Convention Area, 2016-2020

Year	Gear	Logsheet coverage (%)	Observer coverage (%)
2016	Purse seine	100	100
	Longline	100	6.9
2017	Purse seine	100	100
	Longline	100	4.14
2018	Purse seine	100	100
	Longline	100	6.3
2019	Purse seine	100	100
	Longline	100	7.1
2020	Purse seine	100	*
	Longline	100	3.8

* WCPFC Commission agreed to suspend the requirements for observer coverage on purse seine vessels and at-sea transshipment due to COVID-19 pandemic.

* 2020 observer coverage for Korean longline fishery

Fishery	No. of Hooks			Days Fished			Days at Sea			No. of Trips		
	Total Estimated	Observed	%	Total Estimated	Observed	%	Total Estimated	Observed	%	Total Estimated	Observed	%
Longline							32,590	1,249	3.8			

Table 6. Information on the transshipment of Korean fleets in 2020

(1) Amount (kg) of transshipped fish

a);	b) transshipped in port, transshipped at sea in areas of national jurisdiction, and transshipped beyond areas of national jurisdiction			c) transshipped inside the Convention Area and transshipped outside the Convention Area		d) caught inside the Convention Area and caught outside the Convention Area					
offloaded and received	Transshipped in port	Transshipped at sea in areas of national jurisdiction	Transshipped beyond areas of national jurisdiction	Transshipped inside the Convention Area	Transshipped outside the Convention Area	Caught inside the Convention Area	Caught outside the Convention Area				
Offloaded	0	0	16,920,266	13,425,225	3,495,041	13,590,472	3,329,794				
	45,572,314	141,356,645	597,429	161,890,388	25,636,000	187,526,388	0				
Received	265,094,466	60,079,577	13,098,023	335,183,935	3,088,131	335,622,600	2,649,466				
e) Species											
BET	YFT	SKJ	ALB	BUM	SWO	MLS	WHM	WHH	OSH	Shark fin	OTH
8,361,641	6,063,415	66,969	592,811	936,777	421,161	50,419				112	426,961
3,406,694	34,360,458	149,706,680	7,825	33,657	5,929	476	0				4,669
13,358,240	72,617,733	249,518,688	1,210,945	570,785	369,016	48,689				112	577,858
f) Product Form				g) Fishing gear							
GG	Dress	Round	Others								
14,465,885	1,626,063	729,064	99,254	Longline							
1,596,449	39,586	184,172,684	1,717,669	Purse seine							
11,154,658	1,135,363	324,981,202	1,000,843	Carrier Vessel							

(2) Number of transshipments

a)	b) transshipped in port, transshipped at sea in areas of national jurisdiction, and transshipped beyond areas of national jurisdiction			c) transshipped inside the Convention Area and transshipped outside the Convention Area		d) caught inside the Convention Area and caught outside the Convention Area		e) Fishing gear
offloaded and received;	Transshipped in port	Transshipped at sea in areas of national jurisdiction	Transshipped beyond areas of national jurisdiction	Transshipped inside the Convention Area	Transshipped outside the Convention Area	Caught inside the Convention Area	Caught outside the Convention Area	
Offloaded	0	0	111	89	22	90	21	Longline
	76	167	3	221	25	246	0	Purse seine
Received	388	121	123	604	28	607	25	Carrier Vessel

3. Background

The Korean distant water tuna longline fishery (herein “Korean tuna longline fishery”) that stepped up the first fishing in the Indian Ocean in 1957, has explored the Pacific Ocean since 1958 and the Atlantic Ocean since 1967. The high seas and the waters within coastal states in the South Pacific Ocean have been the main fishing grounds for Korean longline fishery. There was a change in the longline fishing operation types. Longline vessels used foreign ports for fishing base near the fishing grounds from the beginning but they have gradually equipped with deep freezing facilities and used home ports for fishing base since 1972. All longline vessels have based domestic ports since 1999.

The Korean distant water tuna purse seine fishery (herein “Korean tuna purse seine fishery”) was initiated by accessing into the Eastern Pacific fishing ground with 3 vessels in 1971. Helicopter-aided mass operations were introduced in 1979 for the first time, and the number of active vessels was the highest of 39 in 1990, but has decreased to 25-27 in recent years. Most of the catches are supplied to the packers for domestic consumption and are exported to foreign canneries.

These fisheries are managed by the Distant Water Fisheries Development Act put into effect on the 4 February, 2008, and the Act has been amended several times according to RFMOs’ CMM amendments. The electronic reporting (ER) system has been implemented since 1 September, 2015.

4. Flag State Reporting

4.1. Annual catch and effort

Annual catch and effort for Korean tuna fisheries by gear and primary species are shown in Table 1 and Fig. 1. The average of total catch in the western and central Pacific Ocean (WCPO) by Korean tuna fisheries was 298,149 mt in recent 5 years (2016-2020). Total catch in 2020 was 279,688 mt, which accounted for 6% and 20% less than those of the average for 5 recent years and of 2019, respectively.

The average catch of purse seine fishery was 271,961 mt during 5 recent years (2016-2020). The purse seine catch in 2020 was 252,314 mt with 26 vessels active, which was 7% and 20% less than those of the average for 5 recent years and of 2019, respectively. In purse seine fishery of 2020, the skipjack catch was 27% less, and yellowfin and bigeye catches were 38% and 53% greater than those of 2019, respectively. Purse seine fishing efforts ranged from 5,790 to 7,527 sets during the 5 recent years, and the number of sets in 2020 was similar to that of the average for recent 5 years (6,749 sets).

The average catch of longline fishery was 26,188 mt during recent 5 years (2016-2020). The longline catch in 2020 was 27,374 mt with 99 vessels active, which was 5% greater than that of the average for recent 5 years (2016-2020) but 17% less than 2019. Catches of bigeye and yellowfin caught by longline in 2020, which are target species by the Korean tuna longline fishery, were 13,011 mt and 10,948 mt, respectively. Longline fishing efforts ranged

from 48,294 to 60,437 thousand hooks during 5 recent years (2016-2020), and the number of hooks in 2020 was a little bit greater than that of average recent 5 years (55,709 thousand hooks).

Catches of north Pacific albacore, southwest striped marlin, south swordfish and south Pacific albacore are shown in Table 1.

4.2. Fleet structure

The number of vessels active by gear and size is represented in Fig. 2 and Table 2. The number of purse seine vessels, once peaked at 39 in 1990, reduced to 28 in 1996, and after that maintained around 25-28 to recent years. In 2020, the number of fishing vessels was 26, of which 5 vessels were of 501-1,000 class, 15 vessels of 1,001-1,500 class and 6 vessels of over 1,500 class. The number of longline vessels reduced from 220 in 1991 to 108 in 2008, and slightly increased and ranged from 111 to 126 thereafter. Since 2015 it has decreased to less than 100. In 2020, the number of active fishing vessels was 99, of which 1 vessel was of 51-200 class and 98 vessels of 201-500 class.

4.3. Fishing patterns

The distributions of catch and effort of target species by gear are shown in Fig. 3. Korean tuna purse seine fishery has generally been operating throughout the year in the tropical area of the WCPO between 140°E-170°W and from time to time extended to the east subject to oceanographic conditions. Purse seine fishing efforts in 2016 and 2017 mainly operated in the western and central areas. In 2018 and 2019, the efforts extended further eastward to 150°W. In 2020, they relatively concentrated on west of 165°E, and fishing area was shrunk longitudinally compared to the previous years.

Longline fishery efforts were normally higher in the central and eastern Pacific Ocean. The fishing efforts in 2016 and 2017 were extended further eastward to 105°W, while in 2018 and 2019 they were more concentrated on the central tropical area 170°E-160°W of 15°N-15°S compared to the previous years. In 2020, their fishing efforts were concentrated on the central tropical area, which was the same as 2018-2019.

4.4. Annual estimated catches of species of special interest

The species of special interest (seabird, turtle, marine mammal, etc.) encountered or bycaught incidentally by Korean purse seine and longline fisheries are presented in Table 3. The data were compiled from logsheet recorded by captain on board and collected by scientific observer programs. In 2020, 14 individuals of whale shark, 8 marine turtles, and 20 whales were encircled by purse seine nets, and 2 marine turtles and 2 seabirds were bycaught by longline fishery, respectively. All these species were encountered with purse seine nets or bycaught incidentally by longline, and they were released promptly under the guideline for safety release of each species. Especially, when marine mammals including whale shark were observed during fishing operation of purse seine, the vessels stopped rolling net until they had been released safely. All Korean fishing vessels operated in the areas between 20°N and 20°S (Fig. 3), and there was each one seabird captured for 2019 and 2020, respectively (Table 3).

4.5. Annual estimated catches of non-target, associated and dependent

The shark species caught by longline fishery are presented in Table 4(a). These data were compiled from logsheet recorded by captain onboard. As key shark species, the catches in 2020 were less than 1 mt for thresher sharks, hammerhead sharks and mako sharks, and 14 mt for other sharks, respectively. In accordance with CMM 2011-04 and 2013-08, the number of releases of oceanic whitetip shark and silky shark are presented in Table 4(b). All these species bycaught were released promptly in a manner that results in as little harm to individual as possible.

4.6. Estimated annual coverage of catch and effort and observer data

Estimated annual coverages of logsheet (catch and effort data) and observer data are shown in Table 5. The coverage of logsheet data has been 100% for both purse seine and longline fisheries since 2013. The observer coverage in 2020 was 3.8% for longline. However, in 2020 there were problems in dispatching scientific observers on board due to COVID-19 pandemic.

5. Coastal State Reporting

N/A

6. Onshore developments

Korea consistently promotes investment plans on land facility in the coastal states where its distant waters fleets are operating.

7. Future Prospects of the fishery

The fleet power of purse seine and longline is expected to keep the current level, and production seems to be affected by fisheries resources trend in the oceans, conservation and management measures of RFMOs and permission policy of the coastal states. Meanwhile recognizing that demand at international and domestic market is increasing on production caught from responsible and sustainable fishing activity, Korea strives to strengthen on MCS, scientific survey and education relating to bycatch for fishermen.

8. Status of tuna fishery data collection systems

8.1. Logsheet data collection and verification

Catch statistics of Korean distant water fisheries are obtained from two sources of data reporting. The Korea Overseas Fisheries Association (KOFA) collects monthly catch by gear and species from the Korean tuna industries, and the National Institute of Fisheries Science

(NIFS) collects operational effort and catch data through the Electronic Reporting (ER) system. In accordance with data reporting and submission requirement by the RFMOs, necessary improvements have been continuously made in data coverage, accuracy and verification through cross-checking between NIFS and KOFA. Since 1st September 2015, the Act on Fisheries Information and Data Reporting has obliged fishers of distant-water fisheries to report fishing information to the NIFS in real time through the Electronic Reporting (ER) system. This system continuously be reviewed and updated to include data reporting and collection requirements recently adopted by tuna RFMOs regarding ecologically important species, discard/release and bycatch mitigation, etc. The coverage of data reporting by the ER is 100%.

8.2. Observer programme

The scientific observer program of distant-water fisheries of Korea was started in 2002. The National Institute of Fisheries Science (NIFS) is responsible for implementing and developing the program. The basic requirement for observers is college graduated with the major field of nature science or fisheries high school graduated with at least 1-year experience on board and 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 collecting/reporting method for fishing activities. During the training program they have two kinds of test. First is the test for a technical term of fisheries and biology, and the other is the test for species identification. The person who scored 70% overall in the two tests and attended 100% of the course timetable can be qualified for a scientific observer and deployed on board. Korea has a total of 61 scientific observers at present.

8.3. Port sampling programme

In Korea, there are 4 domestic landing ports for tunas caught in WCPO, which are Busan, Masan, Tonyeong and Mokpo, all located along the southern coast of Korea, nearby the landing port, there are 5 canneries owned by 4 companies in which about 100,000 tons of tunas from WCPO are landing.

The National Institute of Fisheries Science (NIFS) used to conduct biological sampling in the domestic cannery from 1997 to 2006. A preliminary study for species identification from the catch of purse seine was conducted in a cannery of Korea in 2011 and the result was provided to the WCPFC SC7 (ST-IP-09).

8.4. Unloading/Transshipment

In accordance with Article 13 of the Distant Water Fisheries Development Act, all distant water fishermen shall comply with procedures and regulations established by Regional Fisheries Management Organizations. Therefore, all transshipments by Korean vessels fishing all high migratory fish stocks covered by the WCPFC Convention take place in accordance with WCPFC CMM 2009-06. Also, vessel operators are encouraged to assist the WCPFC

ROP observers in having full access to both the unloading and the receiving vessels to verify that the transhipped quantities of fish are consistent with other information available to observers. After the completion of transshipment, the transshipment declaration is subject to verification against fishing vessel's monthly catch report, logsheets and observer reports (if available). The information on the transshipment of Korean fleets in 2020 is summarized in Table 6.

9. Research activities covering target and non-target species

Korea carried out a sea trial to mitigate bycatch of seabird in the Korean tuna longline fisheries with BirdLife International, 2013-2016, and conducted a project in the Indian Ocean for developing FAD to the extent possible minimize the capture of small bigeye and yellowfin and to reduce the entanglement of bycatch, 2016-2018.