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NATIONAL REPORT OF THE REPUBLIC OF KOREA (TUNA AND TUNA-LIKE FISHERIES IN THE NORTH PACIFIC OCEAN IN 2025)[1]

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Summary

Korean distant water tuna and tuna-like fisheries in the Pacific Ocean consist of both longline and purse seine fishery. There were 90 active longline vessels and 22 active purse seine vessels in 2025. The number of longline vessels remained below 100 since 2015, and the number of purse seine vessels remained the same as the previous year. The two types of Korean fisheries harvested 34,642 t of tuna and tuna-like species in the North Pacific Ocean in 2025. The total catch of the longline fishery was 17,850 t, a 25% decrease over 2024, and the purse seine fishery harvested 16,792 t, a 40% decrease year-to-year. The longline fishery mainly targeted yellowfin and bigeye tunas, whose catch accounted for 49.1% and 40.7% of the total catch in 2025. The dominant species of the purse seine fishery was skipjack tuna (88.0%), followed by yellowfin tuna (7.0%) and bigeye tuna (5.0%). Compared to 2024, the catch proportions of yellowfin tuna and bigeye tuna increased, with the proportion of bigeye tuna showing a notable rise from 0.3% to 5.0%. Pacific bluefin tuna (PBF) is harvested by some coastal and offshore fisheries in the Korean waters. The offshore large purse seine fishery operates in the waters surrounding Jeju Island. In 2025, the PBF catch of the offshore purse seine fishery was 570 t, which accounted for 57.1% over the total catch. The PBF catch of the set net fishery was 437 t, which accounted for 43.2% over the total catch, and trawl fishery caught 4 t in 2025. In 2025, the catch of large PBF (30kg or greater) accounted for 85% of the total catch.

1. Introduction

Korean distant water tuna and tuna-like fisheries in the Pacific Ocean consist of a longline fishery and a purse seine fishery. The tuna longline fishery (hereinafter referred to as 'longline fishery') commenced its first fishing in the Indian Ocean in 1957, explored the Pacific Ocean in 1958, and expanded to the Atlantic Ocean in 1967. The number of active vessels peaked at 220 in 1991 and has decreased thereafter.

The tuna purse seine fishery (hereinafter 'purse seine fishery') started in 1971 with 3 purse seine vessels in the Eastern Pacific Ocean (EPO). It has developed into a fishery with helicopter-aided mass operations in 1979 for the first time. The number of active vessels peaked at 39 in 1990, sharply declined to 27-28 by the early 1990s, and maintained around 23-28 in the recent decade.

Korean distant water fisheries must operate under the *Distant Water Fisheries Development Act*, which came into effect on 4 February 2008. An electronic reporting (ER) system started its operation since 1 September 2015, and all Korean distant water fishing vessels must report their catch information in real time using this system. The catch and effort data reported via the ER system are monitored and managed by the National Institute of Fisheries Science (NIFS).

Pacific bluefin tuna (PBF) has been caught by domestic fleets in the Korean waters, mostly by offshore large purse seine fishery (hereinafter 'offshore purse seine fishery') which targets pelagic species such as mackerels by operating in the Korean waters. A Ministerial Directive on the conservation and management of the PBF stock came into effect on 26 May 2011 with an aim of monitoring and managing the fisheries associated with PBF. The directive has been amended several times, and the latest amendment was put into force in 2026. The Ministerial Directive specifies the annual PBF catch limit by fishery and province, and further improvements have been made in the catch reporting system as well.

This document provides information on catch and effort of the Korean distant water tuna and tuna-like fisheries and on PBF catch of the Korean domestic fisheries.

2. Fisheries

2.1 Distant water fisheries

2.1.1 Fleet structure

Table 1 and Fig. 1 describe the annual number of active Korean vessels in the Pacific Ocean by fishery type and vessel size. The number of purse seine vessels peaked at 39 in 1990, declined to 28 by 1996, and maintained at 23-28 thereafter. In 2025, as was in the previous year, 22 vessels were active, of which 2 vessels were in 501-1,000 GRT, 8 vessels were in 1,001-1,500 GRT, and 12 vessels were over 1,500 GRT. The number of longline vessels was at 220 in 1991 but declined to 108 by 2008 and showed a slight increase up to 126 by 2012. The number further declined and remained below 100 since 2015 and recorded 90 in 2025, of which one vessel was in 51-200 GRT, and 93 vessels were in 201-500 GRT.

2.1.2 Fishing pattern

Figs. 2 and 3 illustrate the catch and effort distributions of the purse seine and longline fisheries in the Western and Central Pacific Ocean (WCPO) over the last five years. In general, the purse seine fishery operated mainly in the tropical WCPO between 140°E and 150°W throughout the year, with its fishing grounds frequently extending eastward depending on oceanographic conditions. In 2025, the purse seine catch distribution showed a broader and more dispersed spatial pattern compared with 2024, including a westward expansion toward the central Pacific and a slight northward shift around the equatorial region (Fig. 2). Similarly, the longline effort distribution in 2025 exhibited a more eastward-shifted and spatially concentrated pattern near the equatorial region compared with the relatively widespread distribution observed in 2024 (Fig. 3).

2.1.3 Annual catch and effort

Annual catch and effort by Korean distant water tuna fisheries in the North Pacific Ocean are shown in Tables 2 and 3.

The fishing effort (no. of hooks) of the longline fishery was 33,352,351 hooks in 2025, representing a 10% decrease compared to 2024, but it remained at a level similar to the five-year average (Table 2). The total fishing effort (no. of sets) of the purse seine fishery was 2,697 sets in 2025, i.e., a 2% decrease over the effort in 2024 and a 19% increase over the average of 5 recent years (2,267 sets), respectively (Table 3). The total catch of the longline fishery in the North Pacific Ocean was 17,850 t in 2025, a 25% decrease compared to that in 2024, but it remained at a level similar to the five-year average (18,171) (Table 2 and Fig. 4). The total catch of the purse seine fishery was 16,792 t, which is a 39% decrease compared to that in 2024 and a 66% decrease compared to the five-year average (49,678 t) (Table 3 and Fig. 5).

As for the catch composition of the longline fishery in 2025, yellowfin, bigeye tuna, and swordfish accounted for 49.1%, 40.7%, and 3.0% in the total catch, respectively (Fig. 4). For the purse seine fishery, skipjack, yellowfin, and bigeye tunas accounted for 88.0%, 7.0 %, and 5.0% in the total catch, respectively (Fig. 5).

2.2 PBF catch by coastal fisheries

2.2.1 Fleet structure

PBF is mainly caught by the offshore purse seine fishery targeting mackerels in the Korean waters. Due to the strategy set out by the government to control the fishing capacity of this fishery for the conservation and management of major commercial pelagic species, the number of vessels in the offshore purse seine fishery has decreased from 32 vessels in 2002 to 24 vessels in 2012, and the number has been quite stable thereafter. In 2025, there were 18 vessels which were authorized to catch PBF. The catch by the set net fishery, which are located along the coast of the East Sea, were getting higher (Table 4).

2.2.2 Fishing pattern

In 2025, most PBF catch were made by the offshore purse seine fishery around the eastern and southern part of Jeju Island from February to April, which shows a similar fishing pattern to the previous years (Fig. 6). Also, the catch of the set net fishery located along the north of 36°N in the East Sea has largely increased since 2019.

2.2.3 Annual catch and effort

The annual PBF catch by fishery are presented in Table 4 and Fig. 7. The total catch of PBF was the highest with 2,601 t in 2003 and has shown a decreasing trend with annual fluctuations thereafter. In 2025, the PBF catch of the offshore purse seine fishery was 570 t, which accounted for 57.1% over the total catch. The PBF catch of the set net fishery was 437 t, which accounted for 43.2% over the total catch, and trawl fishery caught 4 t in 2025.

Fig. 8 shows the PBF catch by size (large and small) from 2002 to 2025 and the catch composition by fishery and size in 2025. Large PBF (30 kg or greater) has been caught in the Korean waters since 2008, and the catch of large PBFs in 2016 was around 469 t, accounting for over 46% in the total catch. In 2025, the proportion of large PBFs in the total PBF catch was around 85%. Large PBFs were mostly caught by the offshore purse seine fishery operating in the southern waters around Jeju Island between February and April. However, in 2025, large PBFs were caught by both purse seine and set net fisheries from June to July.

In 2025, length data of PBF were collected from both purse seine and set net fisheries. The mean fork length of PBFs caught by the purse seine fishery was 158.2 cm, which was larger than that recorded in 2024. Similarly, the mean fork length of PBFs caught by the set net fishery was 61.0 cm, exceeding the mean value of 52.2 cm observed in 2024. Furthermore, individuals exceeding 180 cm in fork length were also recorded in the set net fishery in 2025 (Fig. 9).

3. Data collection system

3.1 Distant water fisheries

National Institute of Fisheries Science (NIFS) is responsible for the collection and management of the Korean distant water fisheries data. In accordance with data reporting and submission requirement by the RFMOs, necessary improvements have been made in data coverage, accuracy, and verification through cross-checking among relevant organizations and agencies. Since 1 September 2015, the *Distant Water Fisheries Development Act* has obliged fishers of distant water fisheries to report fishing information to NIFS in real time through the electronic reporting (ER) system. Continuous efforts are being made to review and update the system to include data reporting and collection requirements newly adopted by the tuna RFMOs.

3.2 Observer program

A scientific observer program for the Korean distant water fisheries started in 2002. A qualified person for the application for observers is a college graduate, majored in natural science, or fisheries high school graduate with a minimum 1-year experience on board and certificate of qualification to deck officer. Observer candidates who passed the paper review (including medical check-up) and oral interview must take a three-weeks training program. The observer training program includes basic seafaring safety, operation of navigation devices, biological information on target and non-target species, and data collection and reporting methods for fishing activities. The trainees must take two tests during the training, one designed to assess the trainee's proficiency in the technical terms for fisheries and biology, and the other to assess the trainee's species identification skills. Trainees must score a minimum 70/100 points for both tests with 100 % attendance to pass the course and be assigned to an on-board duty. Korea has a total of 61 scientific observers up to date.

3.3 PBF catch of coastal fisheries

To estimate the Korean historical PBF catch, we used the imported products information recorded by Japan in 1982-1999 and information on the export to Japanese markets provided by Korean Offshore Large Purse Seine Fisheries Cooperatives for 2000-2004. Since 2005, PBF catch information has been collected through the monthly sales check reported by Busan Cooperative Fish Market and National Federation of Fisheries Cooperative. All PBF catch information obtained through the sales check are monitored and managed by NIFS.

4. Research

4.1 PBF close-kin program

NIFS has been analyzing PBF tissue samples since 2016, mostly from those caught by the offshore purse seine fishery for the close-kin program (Table 5). The samples were analyzed to develop genetic markers including Microsatellite (MS) markers (2018) and Single

Nucleotide Polymorphism (SNP) markers (2019-2021). Because there is no standard for the PBF close-kin program, NIFS has been only collecting PBF tissue samples from 2022.

4.2 PBF eggs and larvae monitoring

To identify spawning grounds of fish species in Korean waters, extensive surveys of fish eggs and larvae have been conducted since 2017. From 2017 to 2020, surveys were carried out over a broad spatial range encompassing Korean waters. Subsequently, from 2021 to 2022, sampling efforts were focused on the waters around Jeju Island and the East Sea, where a high diversity of fish eggs and larvae had been observed. Since 2023, surveys have been conducted from May to July in waters extending from south of Jeju Island to the Kuroshio Current-influenced regions, including Ulleungdo and Dokdo (Fig. 10). Larval Pacific bluefin tuna are morphologically similar to other scombrid species, making species-level identification based solely on external morphology difficult. Therefore, molecular analysis was conducted following morphological identification to ensure accurate species determination. As a result, a 419 bp fragment of the mitochondrial cytochrome oxidase subunit I (COI) gene was obtained. Intraspecific genetic distances within *Thunnus orientalis* ranged from 0 to 0.2%, whereas interspecific distances between *T. orientalis* and *Thunnus albacares*, *T. obesus*, and *T. alalunga* ranged from 1.7–1.9%, 2.0–2.7%, and 4.7–5.0%, respectively. These clear genetic differences confirmed that molecular analysis enabled reliable identification of Pacific bluefin tuna larvae (Fig. 11). Based on Bongo net sampling, Pacific bluefin tuna eggs were first collected in waters near Dokdo in 2021, while larvae were initially recorded from the eastern coastal waters of Jeju Island. Thereafter, both eggs and larvae of Pacific bluefin tuna have been continuously observed in Korean coastal waters through 2025. In particular, compared with the results from 2021, samples collected in 2025 exhibited an expanded spatial distribution and an increasing trend in abundance (Fig. 12). Although direct interannual comparisons are limited due to differences in sampling stations and survey periods among years, the number of stations where Pacific bluefin tuna eggs were collected increased markedly to 24 stations in 2023, compared with only one station in 2022. Similarly, the number of stations where larvae were collected increased to 23 stations in 2025, compared with six stations in 2024. In addition, substantial increases were observed in the number of individuals collected per station between 2021 and 2025. Egg density increased from 34 inds./1,000 m^3 in 2021 to 5,195 inds./1,000 m^3 in 2025, while larval density increased from 15 inds./1,000 m^3 to 1,316 inds./1,000 m^3. These results suggest that spawning grounds of Pacific bluefin tuna have been consistently formed in the waters around Jeju Island and the East Sea since 2021, with both the spatial extent of spawning grounds and the number of participating individuals increasing over time. Results from MOCNESS sampling conducted from the surface to 110 m depth revealed that Pacific bluefin tuna eggs were distributed primarily in the surface–10, 20–30, 30–40, and 60–80 m depth layers (Fig. 13). The highest egg density was observed in the surface–10 m layer, reaching 5.0 inds./1,000 m^3 (74.9%), whereas substantially lower densities were recorded in the remaining depth layers. Larvae were distributed from the surface to 30 m depth layer, with the highest density observed in the 10–20 m depth layer, reaching 230.0 inds./1,000 m^3 (86.0%).

Table 1. The number of active vessels in the Korean distant water tuna fisheries in the Pacific Ocean, 2008-2025

Year	GRT class by fishery									
	Longline					Purse seine				
	Total	0-50	51-200	201-500	500+	Total	0-500	501-1000	1001-1500	1500+
2008	108	-	-	108	-	28	-	15	12	1
2009	111	-	-	111	-	27	-	13	11	3
2010	122	-	-	122	-	28	-	13	13	3
2011	124	-	-	124	-	28	-	12	11	5
2012	126	-	-	126	-	28	-	12	11	5
2013	125	-	1	124	-	27	-	12	10	5
2014	113	-	1	112	-	28	-	10	13	5
2015	98	-	1	97	-	25	-	7	13	5
2016	96	-	1	95	-	25	-	7	14	4
2017	96	-	1	95	-	26	-	7	15	4
2018	96	-	1	95	-	26	-	6	15	5
2019	96	-	1	95	-	26	-	6	15	5
2020	99	-	1	98	-	23	-	2	15	6
2021	94	-	-	94	-	23	-	2	15	6
2022	94	-	-	94	-	22	-	2	8	12
2023	96	-	1	95	-	22	-	2	8	12
2024	94	-	1	93	-	22	-	2	8	12
2025	90	-	1	93	-	22		2	8	12

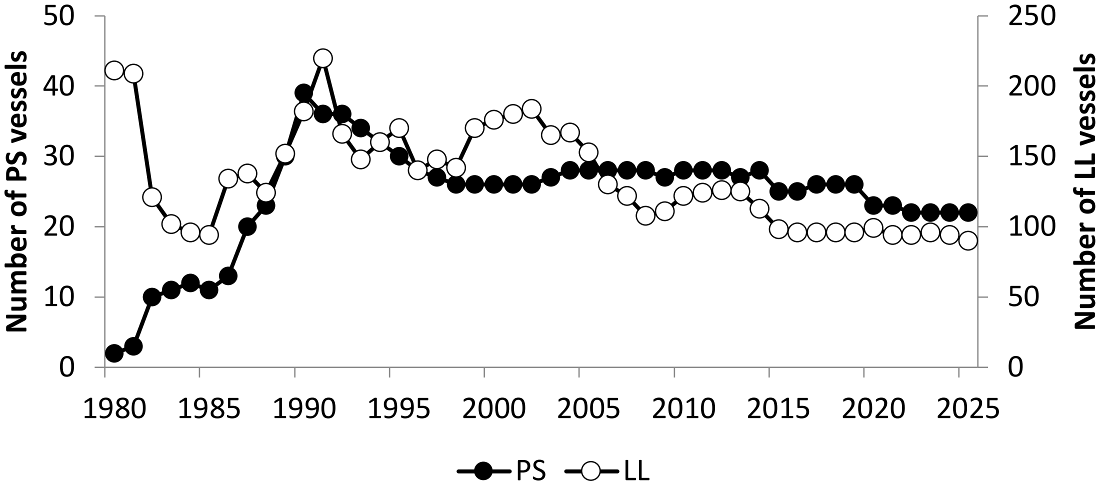


Fig. 1. Historical number of active fishing vessels of the Korean distant water tuna fisheries operated in the Pacific Ocean, 1980-2025.

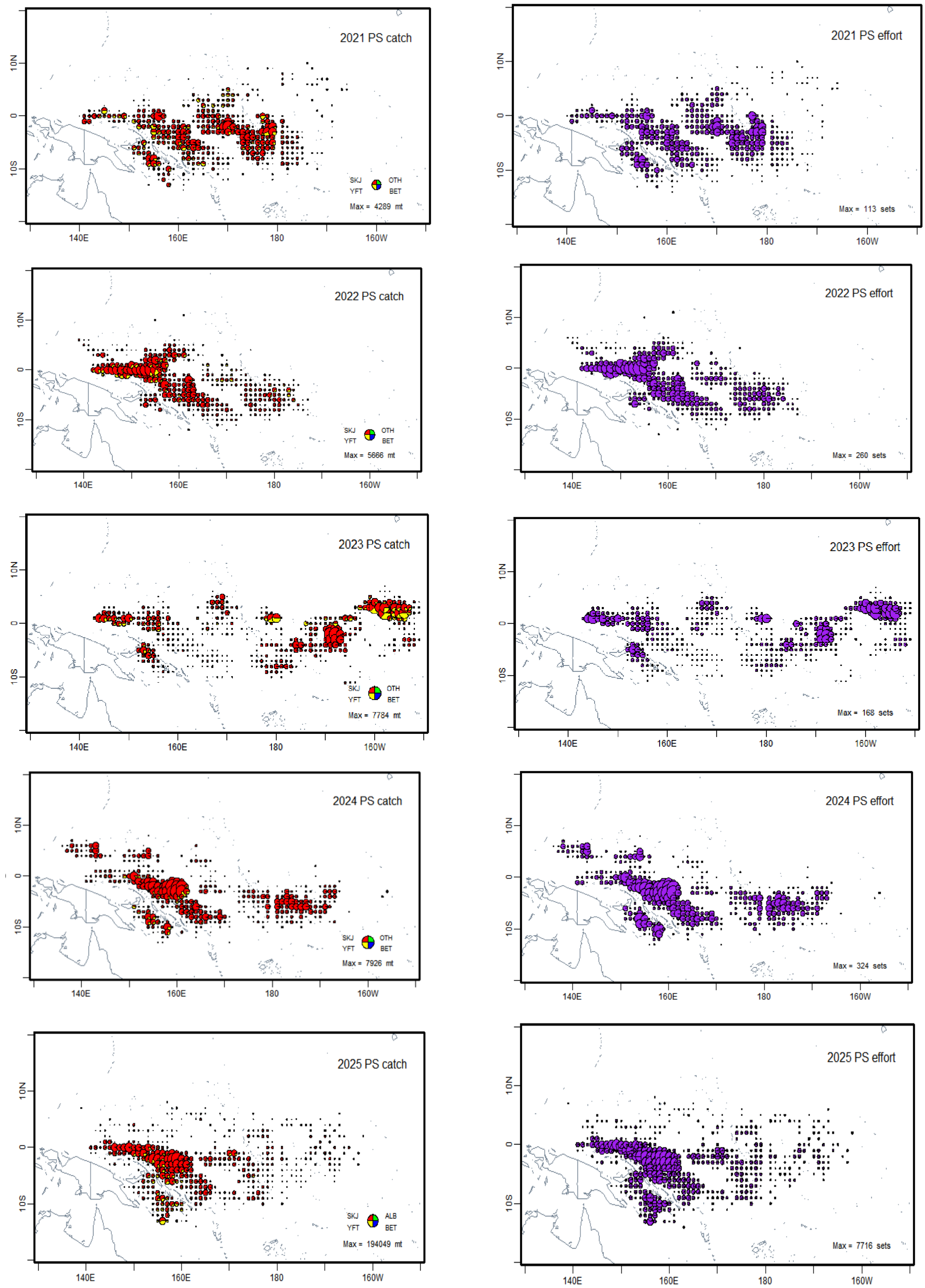


Fig. 2. Distributions of catch (left) and effort (right) of the Korean distant water tuna purse seine fishery operated in the Pacific Ocean, 2020-2025.

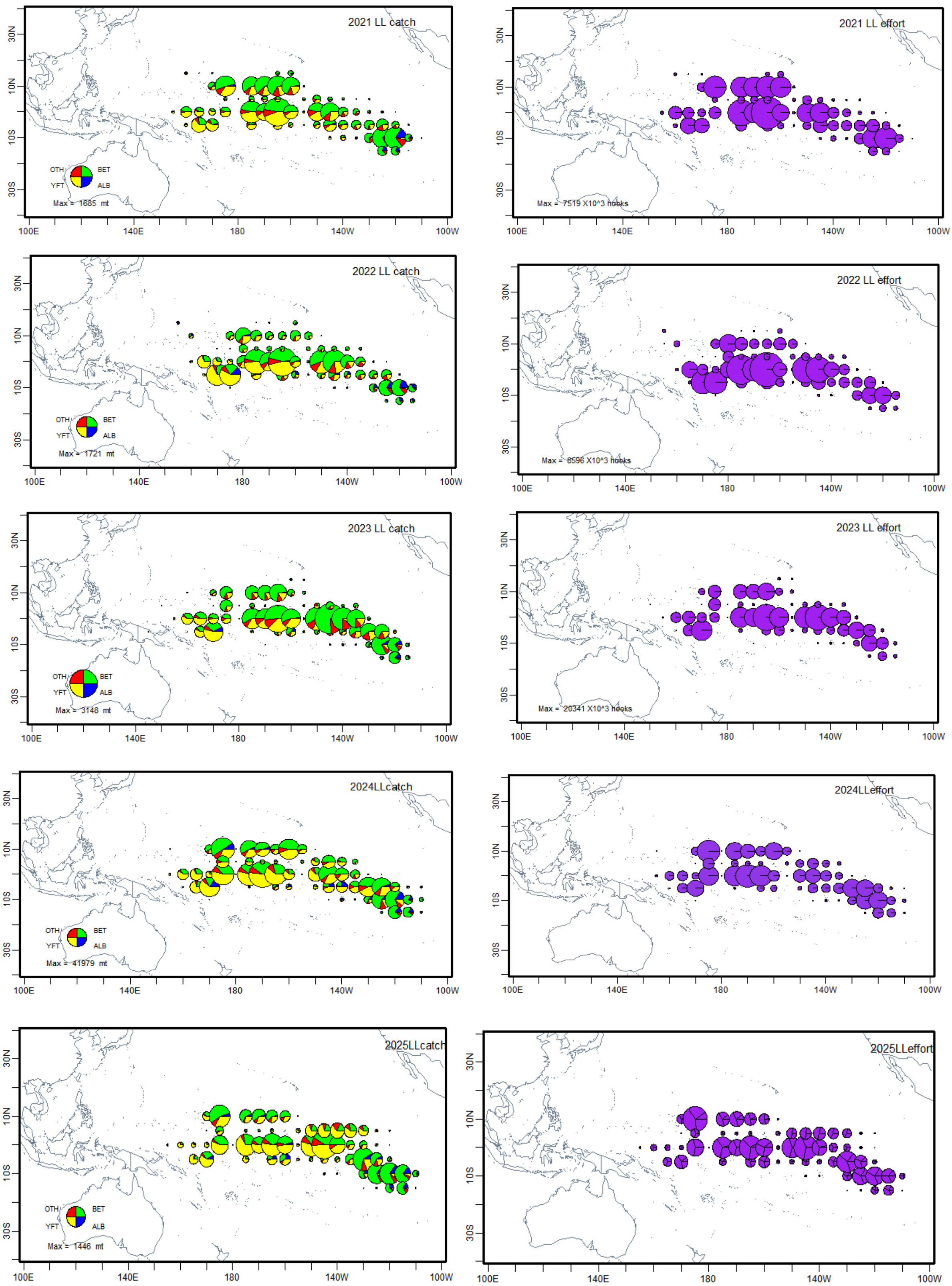
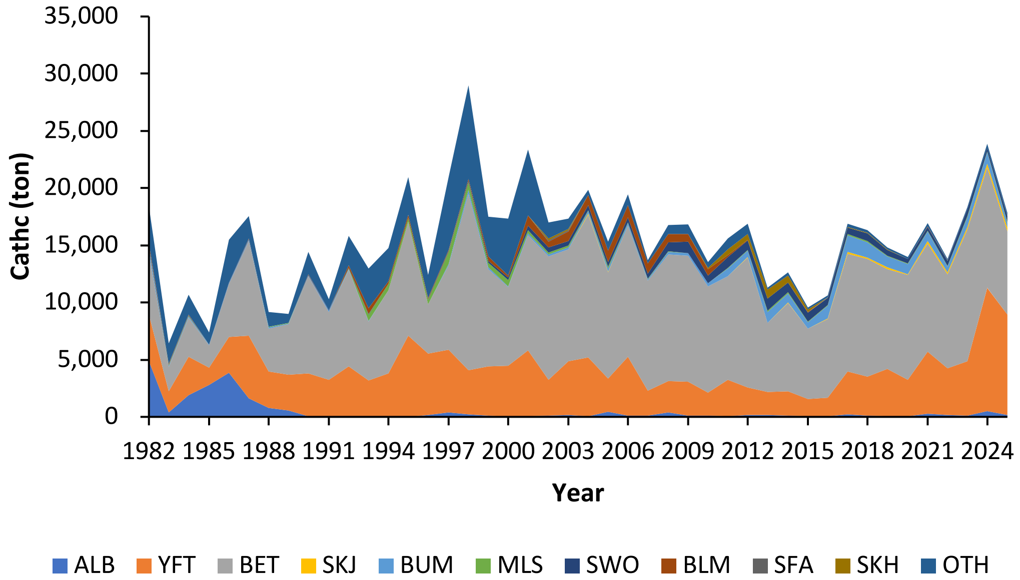


Fig. 3. Distributions of catch (left) and effort (right) of the Korean distant water tuna longline fishery operated in the Pacific Ocean, 2020-2025.

Table 2. Fishing effort (1,000 hooks) and catch (t) of the Korean distant water tuna longline fishery in the North Pacific Ocean, 2002-2025

Year	Hooks (X1000)	ALB	YFT	BET	SKJ	BUM	MLS	SWO	BLM	SFA	SKH	OTH	Total
2002	16,478	112	3,137	10,786	0	152	188	439	479	123	185	1,400	17,001
2003	21,431	146	4,741	9,739	6	159	206	381	819	129	95	931	17,352
2004	18,746	78	5,144	12,453	101	227	75	410	919	1	8	404	19,819
2005	14,955	420	2,958	9,257	35	304	136	404	997	0	10	820	15,340
2006	18,259	135	5,096	11,494	0	217	56	465	1,063	0	0	941	19,468
2007	15,441	137	2,175	9,606	0	121	47	453	887	0	1	291	13,718
2008	16,466	400	2,730	11,075	0	220	30	795	748	0	4	741	16,742
2009	13,286	95	2,992	10,979	0	224	23	994	654	0	13	878	16,852
2010	14,729	107	2,011	9,303	0	257	18	663	570	0	69	532	13,531
2011	16,654	78	3,146	9,047	0	684	48	962	159	1	546	941	15,614
2012	15,553	157	2,398	11,385	8	587	34	856	57	1	499	876	16,859
2013	13,780	173	1,988	6,041	22	963	65	1,071	41	2	735	204	11,306
2014	11,646	116	2,102	7,735	50	801	82	829	31	3	610	256	13,208
2015	8,022	38	1,520	6,132	41	531	44	776	82	2	250	115	9,531
2016	26,241	56	1,626	6,871	73	1,116	61	582	30	11	9	158	10,593
2017	36,780	202	3,775	10,303	147	1,453	81	583	17	13	31	262	16,867
2018	38,352	101	3,426	10,286	99	1,373	70	664	35	10	37	230	16,332
2019	29,011	65	4,106	8,758	141	981	48	468	28	8	37	149	14,789
2020	30,428	56	3,169	9,157	102	848	74	392	18	4	10	141	13,971
2021	33,325	275	5,398	9,471	209	854	82	335	11	0	2	311	16,950
2022	28,652	173	4,056	8,217	178	520	66	447	3	8	1	162	13,832
2023	33,309	113	4,734	11,547	205	868	90	590	10	13	0	189	18,359
2024	37,191	474	10,797	10,526	341	997	63	337	0	25	0	306	23,866
2025	33,352	170	8,762	7,270	368	384	95	528	0	14	0	259	17,850

* ALB : Albacore tuna, YFT : Yellowfin tuna, BET : Bigeye tuna, SKJ : Skipjack tuna, BUM : Blue marlin, MLS : Striped marlin, SWO : Swordfish, BLM : Black marlin, SFA : Indo-Pacific sailfish, SKH : Sharks, OTH : Others.



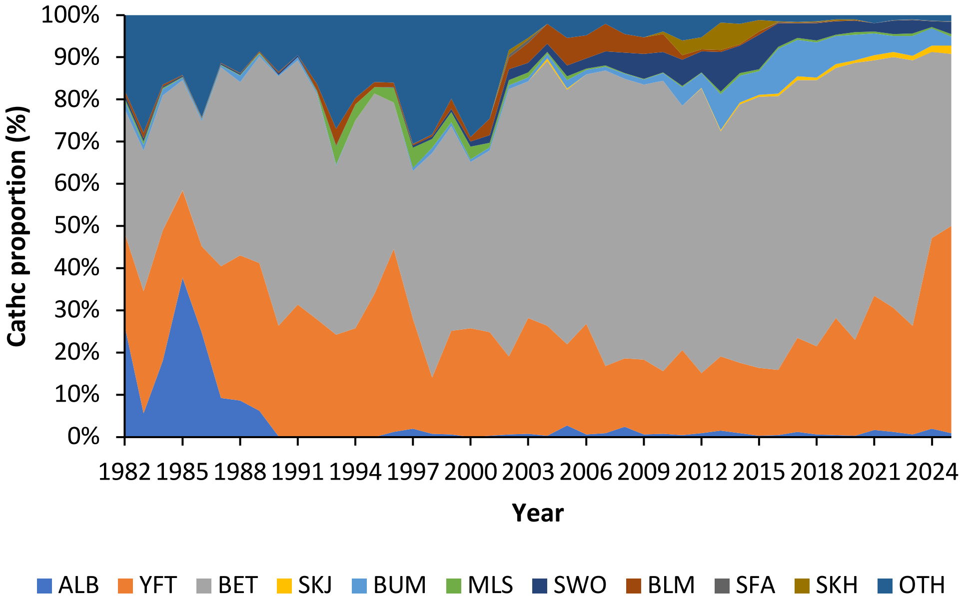
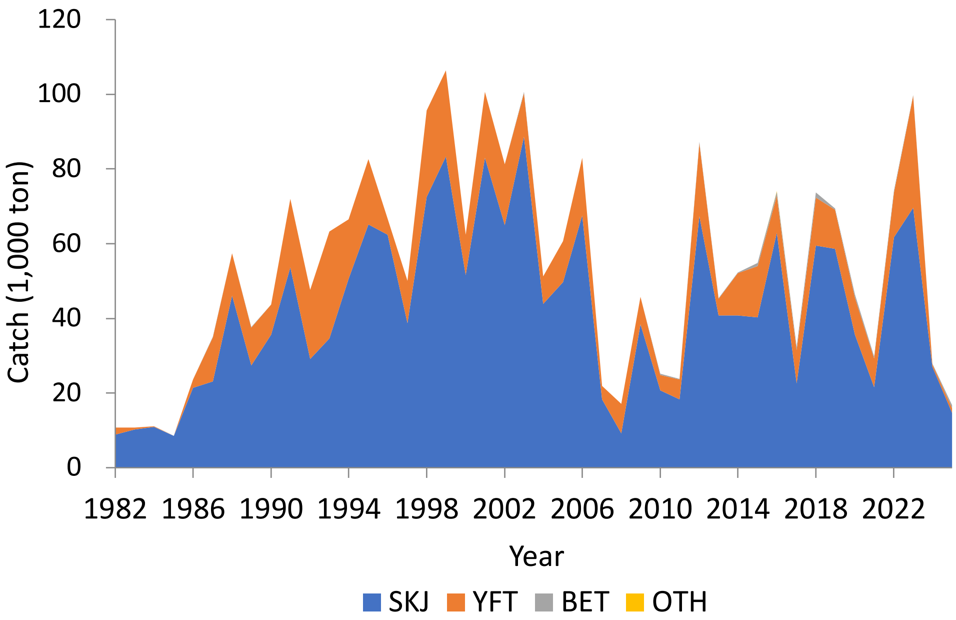


Fig. 4. Historical catches (top) and the catch proportion (bottom) by major species caught by the Korean distant water tuna longline fishery in the North Pacific Ocean, 1982-2025.

Table 3. Fishing effort (no. of sets) and catch (t) of the Korean distant water tuna purse seine fishery in the North Pacific Ocean, 2002-2025

Year	Effort (sets)	Catch (t)				Total
		SKJ	BET	YFT	OTH	
2002	2,537	64,897	0	16,389	0	81,286
2003	2,876	88,654	319	11,714	0	100,687
2004	1,633	43,797	48	7,426	0	51,271
2005	1,035	49,724	0	11,027	0	60,751
2006	510	67,564	13	15,394	0	82,970
2007	543	18,270	0	3,585	0	21,855
2008	490	9,233	4	7,842	0	17,079
2009	1,237	38,436	15	7,232	0	45,683
2010	727	20,751	374	4,020	0	25,145
2011	770	18,331	216	5,256	0	23,803
2012	2,402	67,448	404	19,467	1	87,320
2013	1,644	40,809	232	4,344	0	45,386
2014	1,732	40,690	265	11,343	0	52,298
2015	1,296	40,195	739	13,859	0	54,793
2016	2,379	62,849	1,025	10,088	31	73,993
2017	863	22,672	858	8,829	2	32,361
2018	2,141	59,479	1,327	12,838	1	73,645
2019	1,507	58,574	398	10,425	1	69,397
2020	1,145	35,698	847	9,959	<1	46,504
2021	1,118	21,497	573	7,742	0	29,812
2022	3,600	61,619	381	12,160	0	74,161
2023	2,774	69,543	211	30,000	0	99,754
2024	2,697	27,003	77	790	0	27,870
2025	341	14,779	844	1,169	0	16,792

* SKJ : Skipjack tuna, BET : Bigeye tuna, YFT : Yellowfin tuna, OTH : Others.



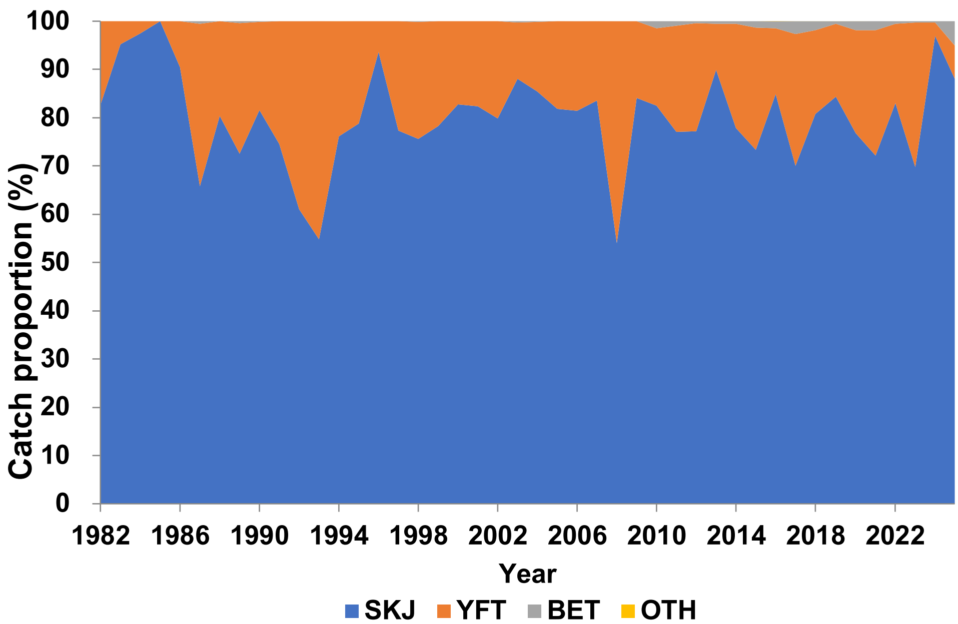


Fig. 5. Historical catches (top) and the catch proportion (bottom) by major species caught by the Korean distant water tuna purse seine fishery in the North Pacific Ocean, 1982-2025.

Table 4. Annual catch (t) of Pacific bluefin tuna by fishery, and the number of active vessels of the offshore large purse seine fishery in the Korean waters, 2002-2025

Year	No of OLPS vessels	Catch (t)				
		OLPS*	Set net	Troll	Trawl	Total
2002	32	932	0	0	1	933
2003	29	2,601	0	0	0	2,601
2004	29	773	0	0	0	773
2005	29	1,318	0	0	9	1,327
2006	29	1,012	0	0	3	1,015
2007	29	1,281	0	0	4	1,285
2008	29	1,866	0	0	10	1,876
2009	27	936	0	0	4	940
2010	25	1,196	0	0	16	1,212
2011	25	670	0	0	14	685
2012	24	1,421	0	1	2	1,424
2013	24	604	1	0	0	605
2014	24	1,305	6	0	0	1,311
2015	24	676	1	0	0	677
2016	24	1,024	3	0	2	1,029
2017	24	734	3	0	6	743
2018	24	523	7	0	5	535
2019	23	542	36	0	3	581
2020	18	567	35	0	3	605
2021	19	422	84	0	< 0.5	509
2022	19	654	221	0	6.4	881
2023	19	448	215	0	5	668
2024	19	439	307	0	23	768
2025	18	570	437	0	4	1,011

* OLPS: Offshore large purse seine fishery

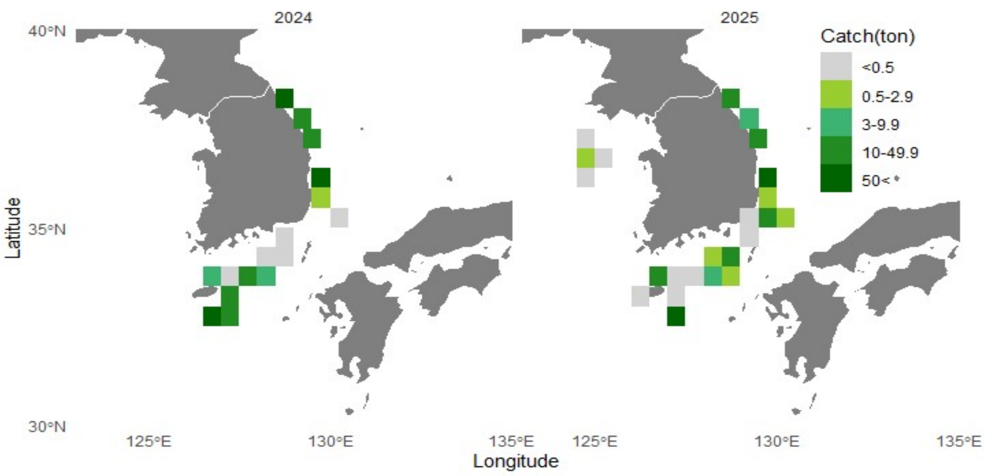


Fig. 6. Catch distribution of Pacific bluefin tuna caught by the Korean coastal and offshore fisheries, 2024-2025.

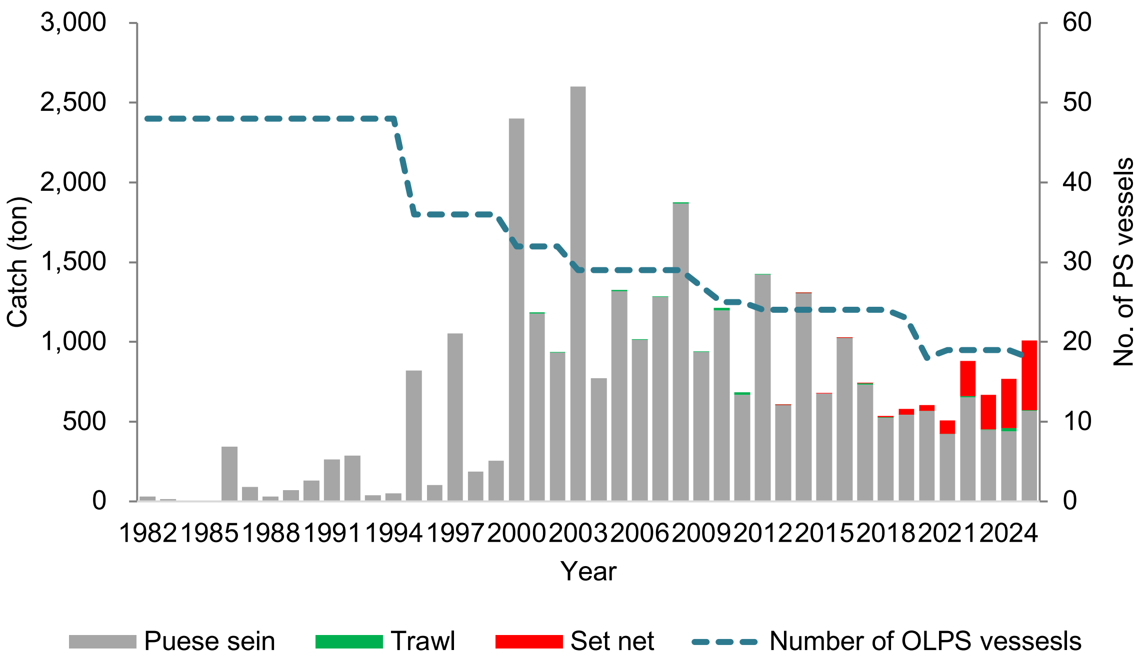
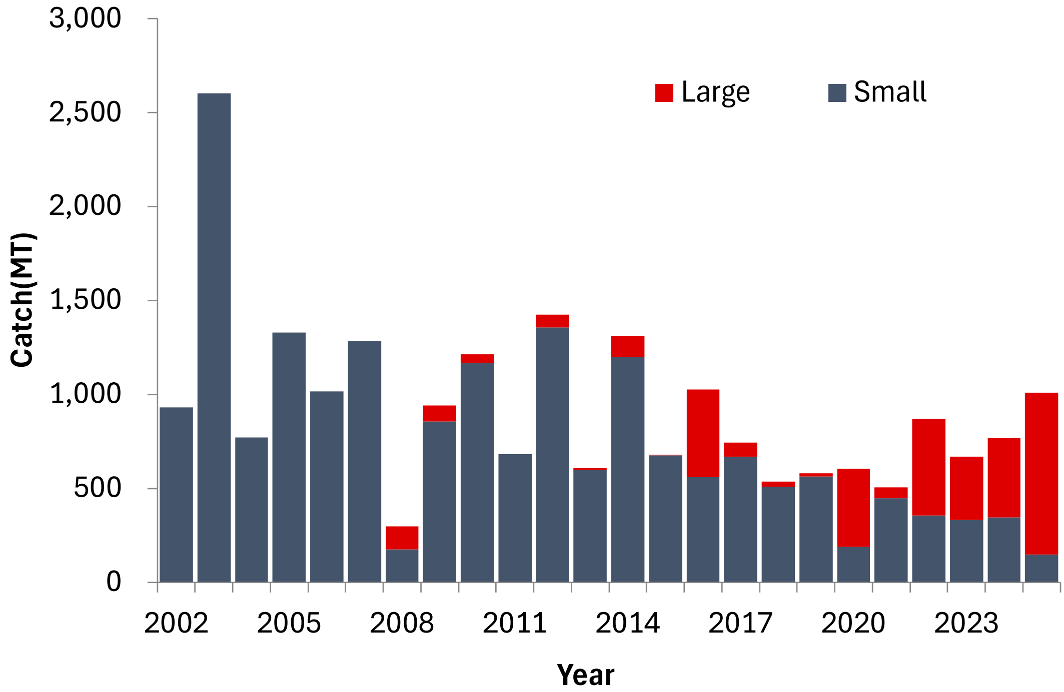


Fig. 7. Historical catch of Pacific bluefin tuna by fishery, and the number of active vessels of the offshore large purse seine fishery in the Korean waters, 1982-2025.



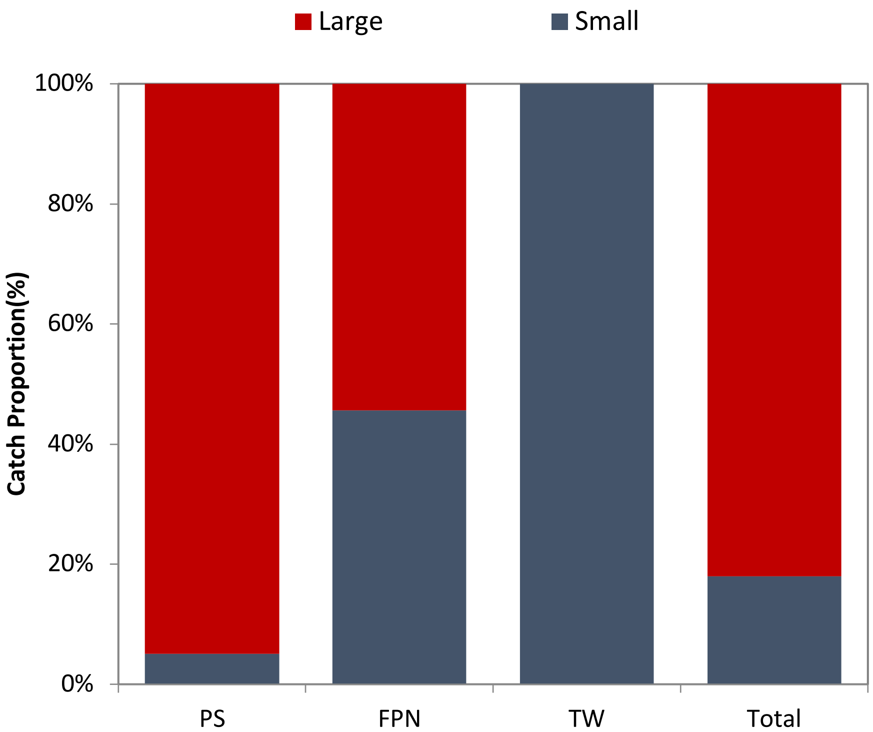
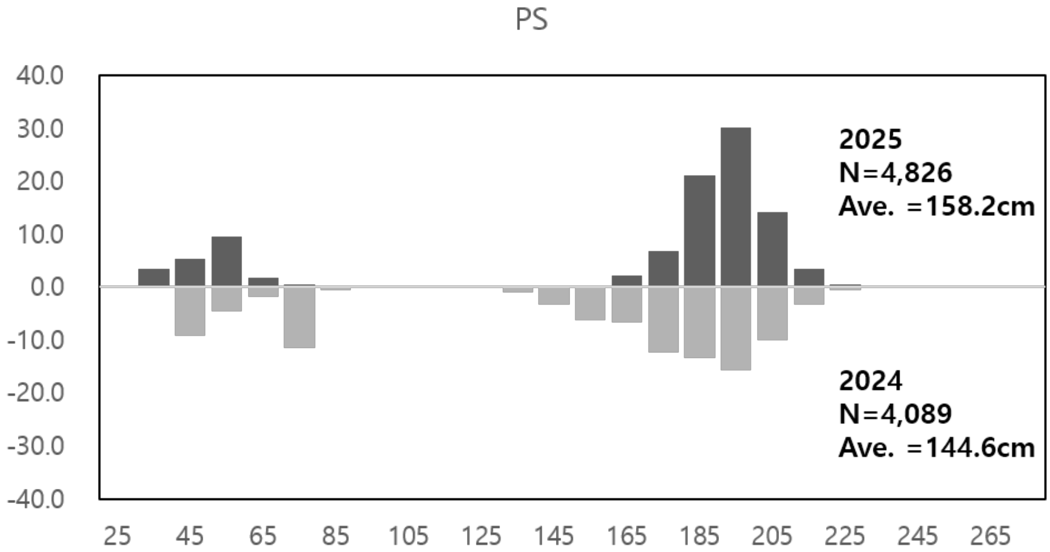


Fig. 8. Catch of Pacific bluefin tuna by size from 2002 to 2025 (top) and the catch proportion by fishery and size in 2025 (bottom).



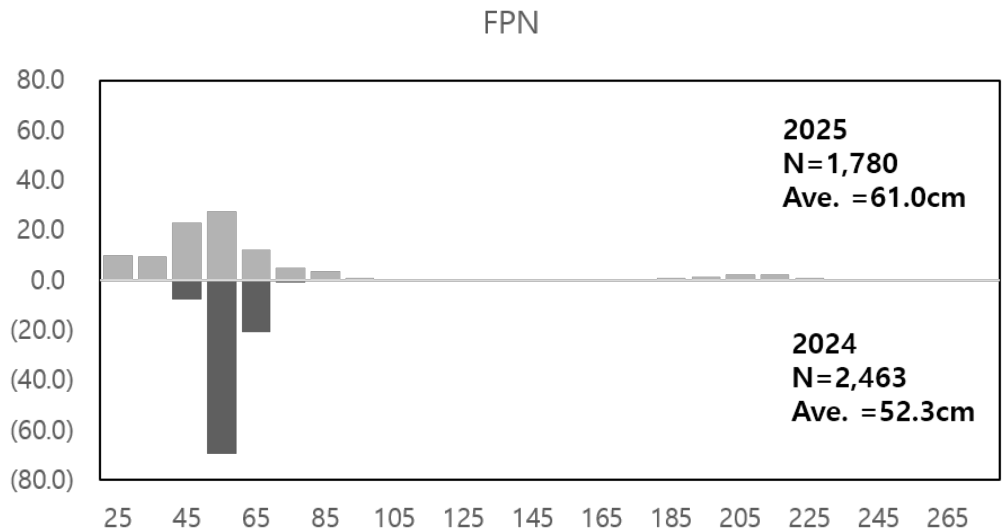


Fig. 9. Length frequency of Pacific bluefin tuna caught by the Korean offshore large purse seine fishery in 2024 and 2025 (top: purse seine, bottom: set net).

Table 5. Summary of the number of samples and range of fork length (FL) by year for the close-kin mark-recapture

Year	Number of samples	Range of FL (cm)
2016	1,045	32.2-179.0
2017	348	35.5-89.5
2018	249	36.0-162.8
2019	313	33.9-109.6
2020	182	35.4-135.5
2021	410	52.0-123.8
2022	361	30.9-77.1
2023	608	38.3-79.3
2024	6,993	18.9-261.0
2025	310	25.1-208.0

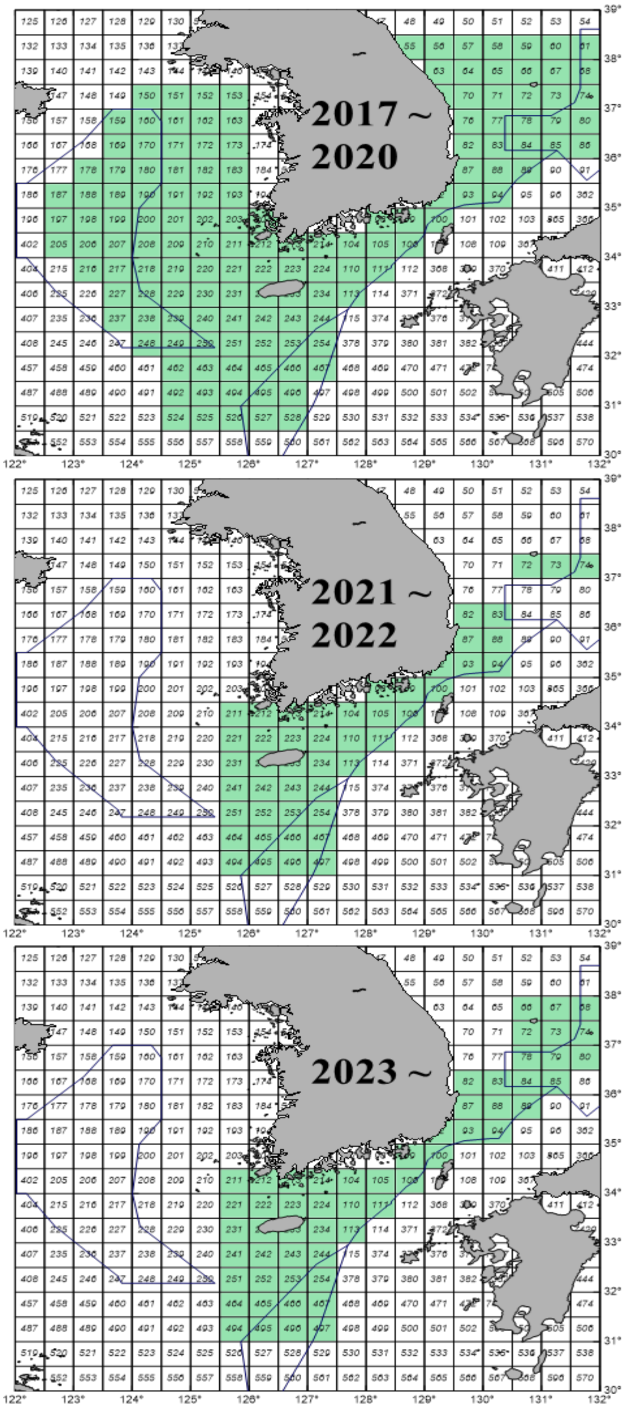


Fig. 10. Schematic overview of the three paradigms based on survey time points (2017-2020, 2021-2022, and 2023 survey station).

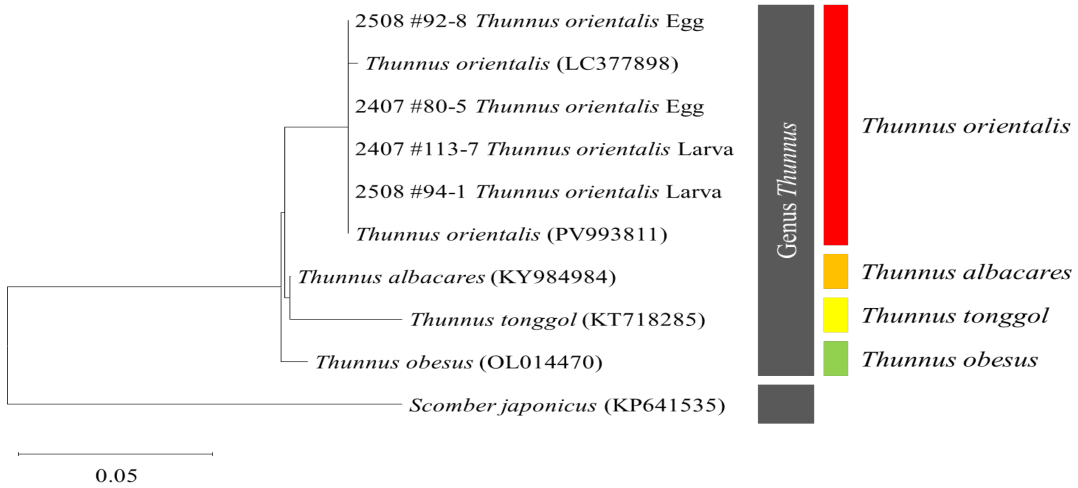


Fig. 11. A neighbor-joining tree based on partial mtDNA COI region using *Thunnus orientalis*, showing the relationships among four species of *Thunnus* and one outgroup (*Scomber japonicus*). Numbers at branches indicate bootstrap probabilities in 10,000 bootstrap replications. Scale bar equals 0.05 of Tamura and Nei's distance (1993) with K2 parameter model. COI, cytochrome c oxidase subunit I.

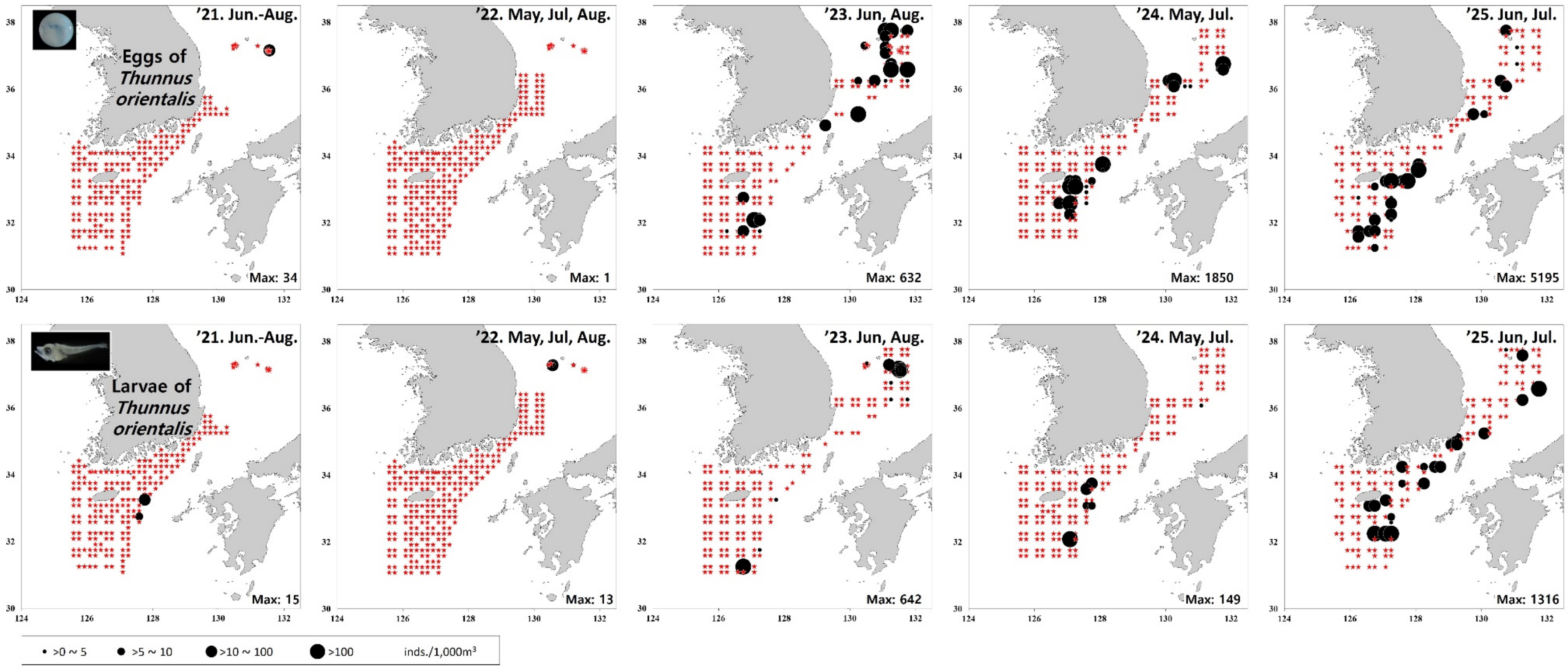


Fig. 12. Spatial distribution of Pacific bluefin tuna (*Thunnus orientalis*) eggs and larvae from 2021 to 2025.

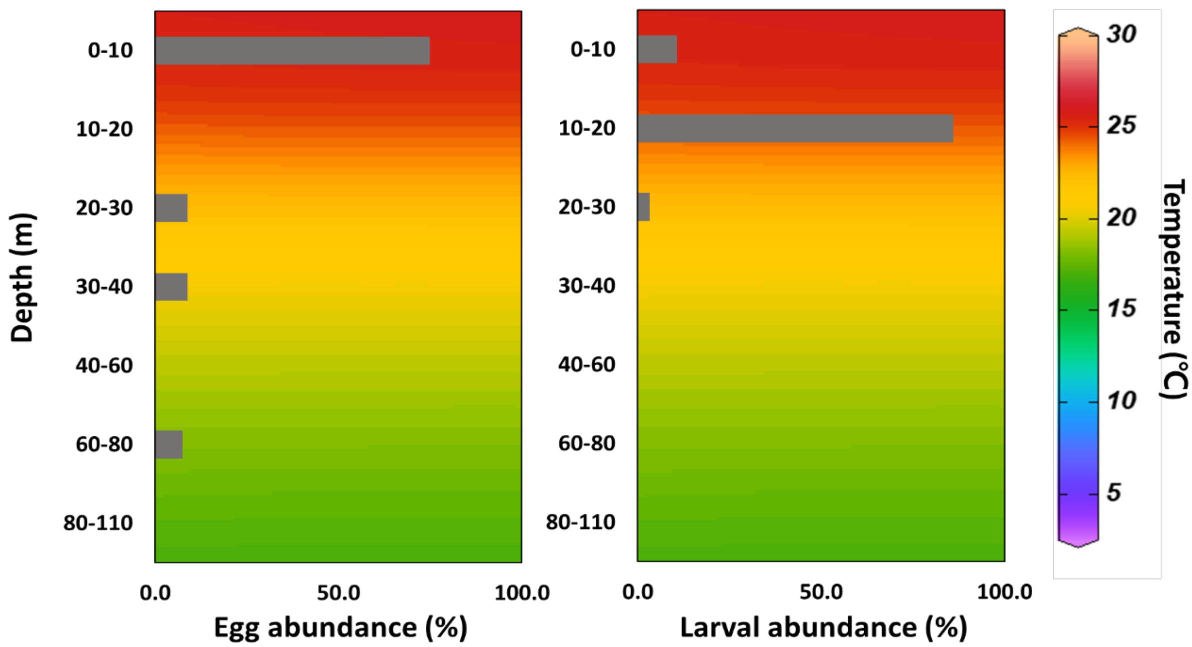


Fig. 13. Relative abundance (%) of Pacific bluefin tuna (*Thunnus orientalis*) eggs and larvae across seven depth layers, collected using MOCNESS (multiple opening/closing net and environmental sensing system) at eight stations in July 2025.