



**SCIENTIFIC COMMITTEE
NINETEENTH REGULAR SESSION**

Koror, Palau
16 - 24 August 2023

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

WCPFC-SC19-AR/CCM-23

CHINESE TAIPEI

National Report

Tuna Fisheries Status Report of Chinese Taipei in the Western and Central Pacific Region

Fisheries Agency, Council of Agriculture and
Overseas Fisheries Development Council

August*, 2023

This paper is prepared for the 19th online meeting of the WCPFC Scientific Committee, from 16 to 24 August, 2023. Document should not to be cited without permission of the authors.

<i>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 2023</i>	Yes
---	-----

Summary

Three Taiwanese tuna fishing fleets are currently operating in the WCPFC Convention Area, namely large-scale tuna longline fleet (LTLL), distant-water purse seine fleet (DWPS) and small-scale tuna longline fleet (STLL). In 2022, the total catches of main tuna and tuna-like species for these three fleets were 19,095 MT for LTLL, 210,878 MT for DWPS and 28,145 MT for STLL, respectively. In 2022, 54 observers were deployed on our tuna longline fishing vessels operating in the Pacific Ocean.

1. Annual fisheries' information

The Pacific Ocean is the earliest fishing ground for Taiwanese tuna fisheries. Currently, there are three tuna fishing fleets operating in the WCPFC Convention Area: large scale tuna longliners (LTLL), distant-water purse seiners (DWPS) and small-scale tuna longliners (STLL). All LTLL and DWPS vessels operate outside the EEZ of Taiwan; most of the STLL vessels operate in the EEZ of Taiwan with some operate on the high seas or in the PICS' EEZ through relevant agreements.

1.1 Fleet structure

Table 1 shows the numbers of active fishing vessel of LTLL, DWPS and STLL fleets in recent five years (2018-2022) in the WCPFC Convention Area.

1.1.1 LTLL

The LTLL vessels refer to those vessels larger than 100 GRT, and most of them operate in the high sea areas. The numbers of active fishing vessels of LTLL ranged between 75 and 108 with an average of 85 in the last 5 years. The number of active LTLL fishing vessels was 108 in 2022.

1.1.2 DWPS

Tuna purse seine fishery was introduced into Taiwan in 1982 and has become one of our major fishing fleet operating in WCPO. In 1992 the fleet reached its peak of 45 vessels, and reduced to 42 due to an adjustment of business strategy of some companies. The number of fleet further reduced to 34 authorized in 2004 which was maintained at this level ever since. There were 26 active purse seiners operating in the WCPFC Convention Area in 2022.

1.1.3 STLL

The STLL fleet operates both within and beyond the EEZ of Taiwan. In 2022, there were 608 STLL fishing vessels operating in the WCPFC Convention Area.

1.2 Annual Catch in the WCPFC Convention Area

1.2.1 LTLL

The catch of primary species caught by LTLL fishery over the last 5 years (2018-2022) in the WCPFC Convention Area is shown in Table 2. The distribution of species composition of LTLL in recent 5 years (2018-2022) is shown in Figure 1. Composition ratio of primary species of our LTLL fishery in the WCPFC Convention area in recent 5 years is shown in Figure 2, and it observed that the dominant species of catch were albacore (39%), followed by bigeye tuna (30%) and yellowfin tuna (16%).

1.2.2 DWPS

The catch of primary species in the WCPFC Convention Area during 2018-2022 is shown in Table 3. Skipjack remained the most dominant species, accounting for about 83% of the total catch, followed by yellowfin tuna and bigeye tuna, which accounts for 14% and 3% of the total catch respectively (Figure 3). Composition ratio of primary species in recent 5 years (2018-2022) is shown in Figure 4.

1.2.3 STLL

The total catch of primary species caught by STLL fleet in 2022 was 28,145 MT with yellowfin tuna accounting 44% of the total catch. Other major catches were albacore (23%), bigeye tuna (14%) and billfish (11%). The total catch of primary species of STLL from 2018 to 2022 in WCPFC Convention Area is shown in Table 4. Composition ratio of species during 2018-2022 is shown in Figure 5.

1.3 Fishing Patterns

1.3.1 Longline vessels

The distribution of fishing effort for LTLL and STLL in recent 5 years (2018-2022) are shown in Figure 6 and 7 separately.

1.3.2 DWPS

The DWPS vessels mainly operate in the tropical waters close to the equator area targeting skipjack. The distribution of fishing effort in recent 5 years (2018-2022) is shown in Figure 7. In the years where El Niño phenomena occur, and the fish tends to move more eastwards and the fishing activities follow the pattern of this movement. In contrary, in years of La Niña, fish schools tend to concentrate more in the western part of the Pacific, and the fishing activities move likewise.

1.4 Estimated total catches of non-target, associated and dependent species

In 2021, our observers had recorded 121 sea turtles (83 Olive ridley turtles, 6 Leatherback turtles, 1 Flatback turtle, 23 Loggerhead turtles, 3 Green turtles, 1 Kemp's ridley turtle and 4 unidentified turtles), 60 seabirds (58 Laysan albatross, 1 Black-browed albatross and 1 Black-footed albatross) and 3 Marine Mammals (1 Spinner dolphin, 1 Pantropical spotted dolphin and 1 False killer whale) hooked with sightings of 12,568 seabirds and 211 cetaceans. In 2022, our observers had recorded 67 sea turtles (54 Olive ridley turtles, 5 Leatherback turtles, 1 Hawksbill turtle, 4 Loggerhead turtles, and 3 Green turtles), 93 seabirds (1 Antipodean albatross, 24 Black-footed albatross, 64 Laysan albatross, 1 Wandering albatross, 1 Grey petrel, 1 Great shearwater and 1 Boobies and gannets nei) and 13 cetaceans (5 False-killer whales, 1 Bottlenose dolphin, 1 Beaked whales nei and 6 Dolphins nei) hooked with sightings of 10,003 seabirds and 289 cetaceans. Because some observation trips of 2022 extended to 2023, the observer data of 2022 is still in preliminary for data not being retrieved completely. As for the information on cetaceans and whale sharks encircled by our purse seiners is related in section 3.4 of this report.

1.5 Trends in the fishery and future prospects of the fishery

In view of conservation of tuna species, it is the policy of the government to maintain the size of its fleets to a level that is commensurate with the availability of fishing possibilities. The government will continue implementing the policy of limited entry in tuna fisheries.

2. Research and statistic

2.1 Summary of observer programs

The number of observers deployed on LTLL, STLL and DWPS fleets in Pacific Ocean during 2018-2022 is shown in Table 5. In accordance with the government's policy in establishing an observer program and supporting the increase of observers, in 2012 the observer program was extended to the STLL fleets. Total number of observers deployed on longline vessels in 2022 was 54, including 21 observers for LTLL vessels and 33 observers for STLL vessels respectively.

Our observer program had received interim authorization in 2009 and received full authorization after auditing in November 2011 and October 2017, respectively. The forms used in our observer program are fully conformed to the standards set by WCPFC which include the fishing activities, catch number and weight, species identification, bycatch species and status. In addition, length frequency of major species and the sighting and incidental catch of ecological species were recorded, and biological samplings were collected for biological research.

2.2 Research activities

For the purpose of improving stock assessment of highly migratory species in the Pacific Ocean, government of Taiwan has commissioned scientists to conduct a series of researches in 2022 as follows :

- Study on abundance index and HS/MS elements for WCPO tropical tunas.
- A study on the elements of the harvest strategy/management strategy developments of the south Pacific albacore tuna and the biology and stock assessment of Pacific blue marlin.
- Stock status and NDF assessment of sharks in the Pacific Ocean.
- The impacts of mitigation measures on the bycatch species in Taiwanese distant water vessels.

The scientific papers presented at recent Pacific Ocean RFMOs meetings during 2022 to 2023 were as follows:

- A Preliminary Stock Synthesis Model Conducted for the WCNPO Striped Marlin based on the growth parameters of SWPO striped marlin. (ISC/22/BILLWG-01/Presentations/01)
- Catch, length composition, and standardized CPUE of the North Pacific albacore caught by the Taiwanese distant-water longline fisheries in North Pacific Ocean from 1995-2020. (ISC/22/ALBWG-01/03)

The scientific papers published on scientific journal during 2022 to 2023 were as follows:

- Joung, S. J., Z. Y. Hsu, K. Y. Su and K. M. Liu*. 2022. Age and Growth of the Spot-Tail Shark, *Carcharhinus sorrah*, in the Taiwan Strait. *Journal of Marine Science and Engineering* 10(3), 413. doi: 10.3390/jmse10030413 (SCI)
- Tsai, W. P.* and C. H. Huang. 2022. Data-limited approach to the management and conservation of the pelagic thresher shark in the Northwest Pacific. *Conservation Science and Practice*, 2022, e12682. (SCI)
- Liu, K. M.* , R. H. Huang and, K. Y. Su. 2022. Assessment of the impact on pelagic fishes by the Taiwanese small-scale longline fishery in the western North Pacific using ecological risk assessment. *Animals* 12: 2124. doi: 10.3390/ani12162124. (SCI)
- Huynh, H. H., Hung, C. Y., and W. P. Tsai*. 2022. Demographic Analysis of Shortfin Mako Shark (*Isurus oxyrinchus*) in the South Pacific Ocean. *Animals*, 12 (2022) 3229.

- Wu, Y. L., Lan, K. W., Evans, K., Chang, Y. J., Chan, J. W. (2022) Effects of decadal climate variability on spatiotemporal distribution of Indo-Pacific yellowfin tuna population. *Scientific Reports*, 12: 13715.
- Ijima, H., Minte-Vera, C., Chang, Y.J., Ochi, D., Tsuda, Y., Jusup, M. (2023) Inferring the ecology of north-Pacific albacore tuna from catch-and-effort data. *Scientific Reports*, 13: 8742.
- Francis, M. P., W. S. Lyon, S. C. Clarke, B. Finucci, M. R. Hutchinson, S. E. Campana, M. K. Musy, K. M. Schaefer, S. D. Hoyl, T. Peatman, D. Bernal, K. Bigelow, J. Carlson, R. Coelho, C. Heberer, D. Itano, E. Jones, B. Leroy, K. M. Liu, H. Murua, F. Poisson, P. Rogers, C. Sanchez, Y. Semba, T. Sippel, N. Smith. Post-release survival of shortfin mako (*Isurus oxyrinchus*) and silky (*Carcharhinus falciformis*) sharks released from surface longlines in the Pacific Ocean. *Aquatic Conservation: Marine and Freshwater Ecosystems* (Accepted) (SCI).
- Ng, S. L., K. M. Liu, and S. J. Joung*. Occurrence of the milk-eye catshark *Apristurus nakayai* (*Carcharhiniformes: Pentanchidae*) from the South China Sea. *Zootaxa* (Accepted) (SCI).

2.3 Statistics data collection system

To collect fishery data complete and in a real time manner, Taiwan implemented electronic logbook reporting on LTLL and DWPS fleets in 2014, and on STLL fleet in 2015, and now all fishing vessels operating outside the EEZ of Taiwan are required to report their fishing data via e-logbook daily.

The operator or the captain of any fishing vessel intending to land or transship has been mandatory to fill in the Landing/Transshipment Notice and submit it to the competent authority for approval. Moreover, after the completion of landing or transshipment, the operator or the captain are mandatory to submit the Landing/Transshipment Declaration to the competent authority so that the competent authority could verify the catches with e-logbook data and other relevant data, so as to ensure the catches are legal and traceable.

2.4 Data coverage of catches, effort and size data for all species

2.4.1 Longline fisheries

All tuna longliners have been reporting their fishery data through e-logbook, and the catch and effort data is compiled from e-logbook data. The size data, length and weight of individual catch, of all species is also compiled from the first 30 fish caught for each setting recorded on e-logbook. A port-sampling program conducted in domestic ports aims at collecting the size data of tuna and tuna-like species. The observer program has been collecting size data for all species. These data have already been used in scientific purposes and reported to WCPFC.

2.4.2 DWPS fishery

The iFIMS e-logbook data is compiled into catch and effort data of our purse seine fleet. The sizing data of Thai canneries has been collected for estimating the catch composition of skipjack, bigeye tuna and yellowfin tuna. Length data was collected from fishing vessels' reporting.

3. Implementation of Conservation and Management Measure

3.1 CMM 2009-03

In accordance with CMM 2009-03, the number of the fishing vessels for swordfish in the Convention Area south of 20°S was limited to the number in any year

during 2000-2005, and the catch of swordfish caught in the Convention Area south of 20°S is limited to the amount caught in any year during the period 2000-2006. The information mentioned above is shown in Table 6 and updated to 2022.

3.2 CMM 2015-05 (replace CMM 2007-01)

In order to estimate observer coverage rates on longline vessels fishing according CMM 2007-01 and in accordance with the decision of WCPFC11, Table 7 provides the information of observer coverage rate estimates for LTLL and STLL of 2022.

3.3 CMM 2009-06

In accordance with CMM 2009-06, CCMs shall report on all transshipment activities (including transshipment activities that occur in ports or EEZs) in Part 1 of its Annual Report. Table 8 shows the information of transshipment activities of our fishing fleets in 2022.

3.4 CMM 2011-03 and CMM 2012-04

In accordance with CMM 2011-03 and CMM 2012-04, CCMs shall advise in their Part 1 Annual Report of any instances in which cetaceans and whale sharks have been encircled by the purse seine nets of their flagged vessels, respectively. Table 9 shows detailed information on cetaceans and whale shark encircled during operation reported in 2022 by fishing masters of our purse seine fleet.

3.5 CMM 2018-03

In accordance with CMM 2018-03, CCMs shall annually provide to the Commission, in Part 1 of their annual reports, all available information on interactions with seabirds reported or collected by observers to enable the estimation of seabird mortality in all fisheries to which the Convention applies. All Taiwanese longliners operating in the area south of 30°S are required to deploy at least two of the following seabird mitigation measures, namely tori lines, weighted branch lines and night setting with minimum deck lighting. For Taiwanese longliners larger than 24m operating in the Convention area north of 23°N are required to employ tori lines and one of the following seabird mitigation measures, namely tori lines, weighted branch lines night setting with minimum deck lighting, line shooter or management of offal discharge. In addition, all Taiwanese longliners operating in the area between 25°S to 30°S are required to deploy a tori line as seabird mitigation measure since January 1, 2020. Furthermore, fishing vessels are required to carry de-hookers and line cutters on board for the purpose of releasing seabirds alive. The information regarding interactions with seabirds are shown in Tables 10-19.

3.6 CMM 2006-04

In accordance with CMM 2006-04, CCMs shall report annually to the Commission the catch levels of their fishing vessels that have taken striped marlin as a bycatch as well as the number and catch levels of vessels fishing for striped marlin in the Convention Area south of 15°S. The bycatch of striped marlin in the Convention area south of 15°s during the period 2018-2022 is shown in Table 20. None of our fishing vessel targets on striped marlin.

3.7 CMM 2015-02

In accordance with CMM 2015-02, CCMs shall report annually to the Commission the annual catch levels taken by each of their fishing vessels that has taken

South Pacific albacore, as well as the number of vessels actively fishing for South Pacific albacore, in the Convention area south of 20°S. Catch by vessel shall be reported according to the following species groups: albacore tuna, bigeye tuna, yellowfin tuna, swordfish, other billfish, and sharks. The information required for this measure has been provided through Annual Report Part 2.

3.8 CMM 2019-03 (replace CMM 2005-03)

In accordance with CMM 2019-03, all CCMs shall report annually to the WCPFC Commission all catches of albacore north of the equator and all fishing effort north of the equator in fisheries directed at albacore. In 2022, the total catch of north Pacific albacore made by our fishing fleets was 4,856 MT with 4,024 MT in the north Convention area. There were 25 LTLL vessels directed at north Pacific albacore with 2,283 fishing days in the north Pacific Ocean, and with 1,792 days deployed in the north Convention area. The annual fishing efforts of LTLL vessels directed at North Pacific albacore for 2018-2022 was provided through Annual Report Part 2.

3.9 CMM 2022-02

In accordance with CMM 2022-02, all CCMs shall report annually to the WCPFC Commission all catches of North Pacific swordfish in the area (defined as Convention area north of 20°N) and all fishing effort in those fisheries. The required information is provided in table 21 and was submitted to the Northern Committee. In 2022, the total catch of north Pacific swordfish made by our fishing fleets were 682 MT which includes 279 MT by 227 coastal artisanal longline vessels and 403 MT with 10,522 fishing days by Longline vessels.

Table 1. The number of active fishing vessel by fishery in the WCPFC Convention Area during 2018-2022.

Year	LTLL	DWPS	STLL
2018	75	27	843
2019	75	30	723
2020	82	28	710
2021	85	29	787
2022	108	26	608

Table 2. The catch (in MT, round weight) of major tuna and tuna-like species of LTLL fishery in the WCPFC Convention Area during 2018-2022.

Year	N-ALB	S-ALB	BET	YFT	SWO	MLS	BUM	BLM	SKJ	TOTAL
2018	1,326	4,143	4,371	2,213	1,798	164	634	43	91	14,783
2019	1,074	4,082	4,961	2,826	1,554	169	556	3	131	15,356
2020	1,081	4,860	4,138	1,685	1,576	182	307	2	98	13,929
2021	1,755	2,622	3,652	1,898	1,217	191	335	3	174	11,847
2022*	2,201	5,660	5,591	3,187	1,588	216	452	7	193	19,095

* Preliminary estimate

Table 3. The catch (in MT, round weight) of major tuna species of DWPS fishery in the WCPFC Convention Area during 2018-2022.

Year	SKJ	YFT	BET	Total
2018	160,599	28,427	4,656	193,682
2019	201,731	33,761	3,584	239,076
2020	123,154	23,533	3,684	150,371
2021	179,187	25,110	11,057	215,354
2022*	176,368	26,703	7,807	210,878

* Preliminary estimate

Table 4. The catch (in MT, round weight) of major tuna and tuna-like species of the STLL fishery in WCPFC Convention Area during 2018-2022.

Year	ALB	BET	YFT	PBF	SWO	BILL**	TOTAL
2018	9,989	4,698	13,837	381	1,654	4,813	35,372
2019	11,581	3,887	14,898	491	1,774	5,037	37,668
2020	11,111	3,005	8,527	1,150	1,654	3,333	28,780
2021	6,708	3,663	9,408	1,478	866	3,000	25,123
2022*	6,387	3,899	12,279	1,496	907	3,177	28,145

* Preliminary estimate

** BILL: striped marlin, blue marlin, black marlin, and other billfish

Table 5. The number of observers deployed on LTLL, STLL and DWPS fisheries in the Pacific Ocean during 2018-2022.

	LTLL	STLL	DWPS*
2018	11	63	-
2019	14	32	-
2020	14	42	-
2021	19	35	-
2022	21	33	-

* All DWPS fishing vessels deployed PIC observer on board with coverage reaches 100%, except suspension period of requirement for purse seine observer coverage in response to COVID-19.

Table 6. The catch of swordfish and the number of the tuna longline fishing vessels operating in the area of south of 20°S during 2000-2022.

Year	Catch (MT)	Number of fishing vessel	
		Seasonal Target	Bycatch
2000	54	10	58
2001	208	10	58
2002	233	10	59
2003	248	12	72
2004	466	8	56
2005	202	6	59
2006	198	4	53
2007	217	3	46
2008	61	0	53
2009	133	7	46
2010	105	4	40
2011	98	3	66
2012	119	0	57
2013	140	0	62
2014	105	0	52
2015	116	0	45
2016	124	0	44
2017	231	0	56
2018	307	0	67
2019	249	0	56
2020	330	0	84
2021	99	0	43
2022*	111	0	42

* Preliminary estimate

Table 7. The estimate of observer coverage rate for Taiwanese longline fisheries in 2022.

CCM Fleet	Fishery	No. of Hooks			Days Fished			Days at Sea			No. of Trips			See NOTEs
		Total estimated	Observer	%	Total estimated	Observer	%	Total estimated	Observer	%	Total estimated	Observer	%	
Chinese Taipei	LTLL							19,540	3,071	15.72%				
	STLL							76,447	6,098	7.98%				

Table 8. The summary of transshipment operations by fishery of 2022: (1) the total quantities, by weight (M.T.); (2) the number of transshipments.

(1)

Offloaded and received	Transhipped in port, transhipped at sea in areas of national jurisdiction, and transhipped beyond areas of national jurisdiction	Transhipped inside the Convention Area and transhipped outside the Convention Area	Caught inside the Convention Area and caught outside the Convention Area	Product Form	Fishing gear	Species								
						BET	ALB	YFT	SKJ	SWO	BUM	MLS	SKX	OTH
offloaded	beyond EEZs	inside	inside	Frozen	Longliner	3,033	1,764	4,903	93	321	429	34	361	384
offloaded	beyond EEZs	inside	both	Frozen	Longliner	3,014	1,976	1,070	39	596	173	53	320	580
offloaded	beyond EEZs	inside	outside	Frozen	Longliner	9	16	0	0	0	0	0	0	1
offloaded	beyond EEZs	outside	inside	Frozen	Longliner	98	1	22	0	32	0	1	2	12
offloaded	beyond EEZs	outside	both	Frozen	Longliner	789	52	168	5	556	32	19	59	109
offloaded	inside EEZs	inside	inside	Frozen	Purse seiner	11	0	235	5,539	0	0	0	0	0
offloaded	in port	inside	inside	Frozen	Purse seiner	3,867	0	25,001	179,679	0	0	0	0	0
offloaded	in port	inside	inside	Frozen	Longliner	574	9	3,172	0	32	188	1	19	249
offloaded	in port	inside	both	Frozen	Longliner	22	1	92	0	1	10	1	5	8
offloaded	in port	inside	outside	Frozen	Longliner	0	0	0	0	0	0	0	0	0
received	beyond EEZs	inside	inside	Frozen	Longliner	1,417	990	3,874	69	151	344	24	294	299
received	beyond EEZs	inside	both	Frozen	Longliner	364	928	313	26	269	114	25	197	369
received	beyond EEZs	inside	outside	Frozen	Longliner	9	16	0	0	0	0	0	0	1
received	beyond EEZs	outside	inside	Frozen	Longliner	0	1	0	0	22	0	1	2	12
received	beyond EEZs	outside	both	Frozen	Longliner	5	51	6	4	382	28	11	43	102
received	in port	inside	inside	Frozen	Longliner	574	9	3,172	0	32	188	1	19	249
received	in port	inside	both	Frozen	Longliner	22	1	92	0	1	10	1	5	8
received	in port	inside	outside	Frozen	Longliner	0	0	0	0	0	0	0	0	0

(2)

Offloaded and received	Transhipped in port, transhipped at sea in areas of national jurisdiction, and transhipped beyond areas of national jurisdiction	Transhipped inside the Convention Area and transhipped outside the Convention Area	Caught inside the Convention Area and caught outside the Convention Area	Fishing gear	Number of Transshipments
offloaded	beyond EEZs	inside	inside	Longliner	434
offloaded	beyond EEZs	inside	both	Longliner	186
offloaded	beyond EEZs	inside	outside	Longliner	1
offloaded	beyond EEZs	outside	inside	Longliner	4
offloaded	beyond EEZs	outside	both	Longliner	38
offloaded	inside EEZs	inside	inside	Purse seiner	7
offloaded	in port	inside	inside	Purse seiner	294
offloaded	in port	inside	inside	Longliner	101
offloaded	in port	inside	both	Longliner	3
offloaded	in port	inside	outside	Longliner	0
received	beyond EEZs	inside	inside	Longliner	321
received	beyond EEZs	inside	both	Longliner	81
received	beyond EEZs	inside	outside	Longliner	1
received	beyond EEZs	outside	inside	Longliner	2
received	beyond EEZs	outside	both	Longliner	13
received	in port	inside	inside	Longliner	101
received	in port	inside	both	Longliner	3
received	in port	inside	outside	Longliner	0

Table 9. The summary on cetaceans/whale sharks encircled incidentally in purse seine fishing operation in 2022.

Date	Longitude	Latitude	Species	Number	Reason	Measure for ensure safe release	Status on release
2022-02-12	E157°49'	S04°06'	Dolphins nei	2	not deliberately encircled	stop hauling	Alive1
2022-02-25	E166°40'	N03°29'	Whale shark	1	not deliberately encircled	stop hauling and operating	Alive1
2022-04-17	E155°37'	S02°23'	False killer whale	6	not deliberately encircled	stop operating	Alive1
2022-05-08	E158°26'	S01°48'	Whale shark	2	not deliberately encircled	stop hauling and operating	Alive1
2022-05-27	E152°25'	S01°51'	Whale shark	1	not deliberately encircled	stop operating	Alive1
2022-05-31	E167°29'	S02°50'	Whale shark	1	not deliberately encircled	stop hauling and operating	Alive1
2022-07-24	E156°51'	S05°59'	Aquatic mammals nei	1	not deliberately encircled	stop operating	Alive1
2022-09-07	E160°36'	S03°08'	Whale shark	1	not deliberately encircled	stop hauling and operating	Alive1
2022-10-09	E176°22'	N04°35'	Whale shark	1	not deliberately encircled	stop hauling	Alive1
2022-12-16	E151°57'	N00°31'	Bryde's whale	1	not deliberately encircled	stop hauling	Alive1
2022-12-22	E153°19'	S02°06'	Bottlenose dolphin	2	not deliberately encircled	stop operating	Alive1
2022-12-28	E153°26'	S02°46'	Spotted dolphins nei	2	not deliberately encircled	stop operating	Alive1
2022-02-12	E157°49'	S04°06'	Dolphins nei	2	not deliberately encircled	stop hauling	Alive1

Table 10. Effort, observed and estimated seabird captures of longline fishery in the area of south of 30°S during 2018-2022.

Year	Fishing effort				Observed seabird hooked	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Rate
2018	44	6,507,969	232,382	3.6%	0	0.000
2019	41	9,577,026	575,433	6.0%	7	0.012
2020	58	10,171,657	661,591	6.5%	4	0.006
2021	32	4,852,414	305,557	6.3%	0	0.000
2022*	21	5,393,630	578,181	10.7%	3	0.005

* Preliminary

Table 11. Effort, observed and estimated seabird captures of longline fishery in the area of 25°S - 30°S during 2018-2022.

Year	Fishing effort				Observed seabird hooked	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Rate
2018	61	11,982,174	610,145	5.1%	5	0.008
2019	45	6,636,576	828,365	12.5%	11	0.013
2020	99	15,392,455	1,503,987	9.8%	0	0.000
2021	38	4,671,972	308,049	6.6%	1	0.003
2022*	27	3,775,512	98,397	2.6%	0	0.000

* Preliminary

Table 12. Effort, observed and estimated seabird captures of longline fishery in the area of north of 23°N during 2018-2022.

Year	Fishing effort				Observed seabird hooked	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Rate
2018	521	26,173,362	1,662,153	6.4%	5	0.003
2019	603	31,792,234	830,129	2.6%	2	0.002
2020	205	28,842,954	1,527,417	5.3%	46	0.030
2021	109	16,723,505	868,928	5.2%	59	0.068
2022*	122	18,134,154	953,753	5.3%	88	0.092

* Preliminary

Table 13. Effort, observed and estimated seabird captures of longline fishery in the area of 23°N - 25°S during 2018-2022.

Year	Fishing effort				Observed seabird hooked	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Rate
2018	809	136,875,068	9,011,089	6.6%	4	0.000
2019	755	133,657,853	7,042,816	5.3%	1	0.000
2020	488	107,115,471	5,001,143	4.7%	0	0.000
2021	392	107,274,154	7,441,465	6.9%	0	0.000
2022*	394	122,650,563	7,210,727	5.9%	4	0.001

* Preliminary

Table 14. Proportion of mitigation types used by longline fishery in 2018.

	Combination of Mitigation Measures*	Proportion of observed effort using mitigation measures			
		South of 30°S	25°S - 30°S	25°S - 23°N	North of 23°N
	No mitigation measures	0.0%	0.0%	0.0%	0.0%
Options required south of 25°S	TL + NS	0.0%	0.0%	0.0%	0.0%
	TL + WB	10.4%	1.0%	0.0%	0.8%
	NS + WB	0.0%	81.5%	69.6%	29.3%
	TL + WB + NS	83.1%	2.6%	0.0%	57.5%
	HS				
Other options 25°S-30°S	WB	0.0%	14.9%	30.4%	1.5%
	TL	0.0%	0.0%	0.0%	0.0%
Other options north of 23°N	SS/BC/WB/DSLS				
	SS/BC/WB/(MOD or BDB)				
Provide any other combination of mitigation measures here	TL+TL	6.5%	0.0%	0.0%	10.9%
	NS	0.0%	0.0%	0.0%	0.0%
Totals		100.0%	100.0%	100.0%	100.0%

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

Table 15. Proportion of mitigation types used by longline fishery in 2019.

	Combination of Mitigation Measures*	Proportion of observed effort using mitigation measures			
		South of 30°S	25°S - 30°S	25°S - 23°N	North of 23°N
	No mitigation measures	0.0%	0.0%	0.0%	0.0%
Options required south of 25°S	TL + NS	0.0%	0.0%	0.0%	0.0%
	TL + WB	7.9%	7.3%	0.6%	1.8%
	NS + WB	0.3%	16.2%	71.8%	46.4%
	TL + WB + NS	63.1%	53.8%	1.2%	40.2%
	HS				
Other options 25°S-30°S	WB	0.0%	5.6%	26.4%	5.5%
	TL	0.0%	0.0%	0.0%	0.0%
Other options north of 23°N	SS/BC/WB/DSLS				
	SS/BC/WB/(MOD or BDB)				
Provide any other combination of mitigation measures here	TL+TL	28.7%	17.1%	0.0%	6.1%
	NS	0.0%	0.0%	0.0%	0.0%
	Totals	100.0%	100.0%	100.0%	100.0%

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

Table 16. Proportion of mitigation types used by 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 - 23°N	North of 23°N
	No mitigation measures	0.0%	0.0%	0.0%	0.0%
Options required south of 25°S	TL + NS	0.0%	0.0%	0.0%	0.0%
	TL + WB	2.2%	4.5%	0.4%	5.5%
	NS + WB	5.0%	29.9%	82.4%	30.2%
	TL + WB + NS	49.3%	43.1%	0.9%	52.6%
	HS				
Other options 25°S-30°S	WB	2.0%	9.5%	16.2%	2.8%
	TL	0.0%	0.0%	0.0%	0.0%
Other options north of 23°N	SS/BC/WB/DSLS				
	SS/BC/WB/(MOD or BDB)				
Provide any other combination of mitigation measures here	TL+TL	41.5%	13.0%	0.1%	8.9%
	NS	0.0%	0.0%	0.0%	0.0%
	Totals	100.0%	100.0%	100.0%	100.0%

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

Table 17. Proportion of mitigation types used by longline fishery in 2021.

	Combination of Mitigation Measures*	Proportion of observed effort using mitigation measures			
		South of 30°S	25°S - 30°S	25°S - 23°N	North of 23°N
	No mitigation measures	0.0%	0.0%	0.0%	0.0%
Options required south of 25°S	TL + NS	0.0%	0.0%	0.0%	0.0%
	TL + WB	8.7%	11.3%	0.2%	2.9%
	NS + WB	2.7%	16.9%	70.2%	19.6%
	TL + WB + NS	87.9%	69.4%	0.7%	58.3%
	HS				
Other options 25°S-30°S	WB	0.7%	2.5%	28.9%	0.3%
	TL	0.0%	0.0%	0.0%	0.0%
Other options north of 23°N	SS/BC/WB/DSLS				
	SS/BC/WB/(MOD or BDB)				
Provide any other combination of mitigation measures here	TL+TL	0.0%	0.0%	0.0%	18.8%
	NS	0.0%	0.0%	0.0%	0.0%
	Totals	100.0%	100.0%	100.0%	100.0%

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

Table 18. Proportion of mitigation types used by longline fishery in 2022.

	Combination of Mitigation Measures*	Proportion of observed effort using mitigation measures			
		South of 30°S	25°S - 30°S	25°S - 23°N	North of 23°N
	No mitigation measures	0.0%	0.0%	0.0%	0.0%
Options required south of 25°S	TL + NS	0.0%	0.0%	0.0%	0.0%
	TL + WB	0.8%	0.0%	0.0%	2.6%
	NS + WB	11.5%	2.5%	76.0%	0.0%
	TL + WB + NS	35.5%	47.5%	0.0%	79.9%
	HS				
Other options 25°S-30°S	WB	16.0%	2.5%	24.0%	0.2%
	TL	0.0%	0.0%	0.0%	0.0%
Other options north of 23°N	SS/BC/WB/DSLS				
	SS/BC/WB/(MOD or BDB)				
Provide any other combination of mitigation measures here	TL+TL	36.3%	47.5%	0.0%	17.3%
	NS	0.0%	0.0%	0.0%	0.0%
	Totals	100.0%	100.0%	100.0%	100.0%

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

Table 19. Number of observed seabird captures of tuna longline fishery by species and by area during 2018-2022. (* Preliminary)

Year	Species	South of 30°S	25°S - 30°S	North of 23°N	23°N - 25°S	Total
2018	Laysan albatross	0	0	3	3	6
	Salvin's albatross	0	5	0	0	5
	Black-footed Albatross	0	0	2	1	3
	Total	0	5	5	4	14
2019	Antipodean Albatross	0	2	0	0	2
	Black-Browed Albatross	1	1	0	0	2
	Black-footed Albatross	0	0	1	0	1
	Buller' S Albatross	0	3	0	0	3
	Campbell Albatross	1	1	0	0	2
	Grey Headed Albatross	1	0	0	0	1
	Laysan Albatross	0	0	1	0	1
	Parasitic Jaeger	0	1	0	0	1
	Shy Albatross	1	0	0	0	1
	Wandering Albatross	3	1	0	0	4
	Wedge-Tailed Shearwater	0	1	0	0	1
	Westland Petrel	0	0	0	1	1
	White-chinned Petrel	0	1	0	0	1
	Total	7	11	2	1	21
2020	Black-footed albatross	0	0	9	0	9
	Laysan albatross	0	0	36	0	36
	Northern royal albatross	1	0	0	0	1
	Petrels nei	0	0	1	0	1
	Wandering albatross	2	0	0	0	2
	Westland petrel	1	0	0	0	1
	Total	4	0	46	0	50
2021	Black-browed albatross	0	1	0	0	1
	Black-footed albatross	0	0	1	0	1
	Laysan albatross	0	0	58	0	58
	Total	0	1	59	0	60
2022*	Antipodean albatross	1	0	0	0	1
	Black-footed albatross	0	0	24	0	24
	Boobies and gannets nei	0	0	0	1	1
	Great shearwater	0	0	0	1	1
	Grey petrel	1	0	0	0	1
	Laysan albatross	0	0	64	0	64
	Wandering albatross	1	0	0	0	1
	Total	3	0	88	2	93

Table 20. The catch of striped marlin of tuna longline fisheries in the area of south of 15°S during 2018-2022.

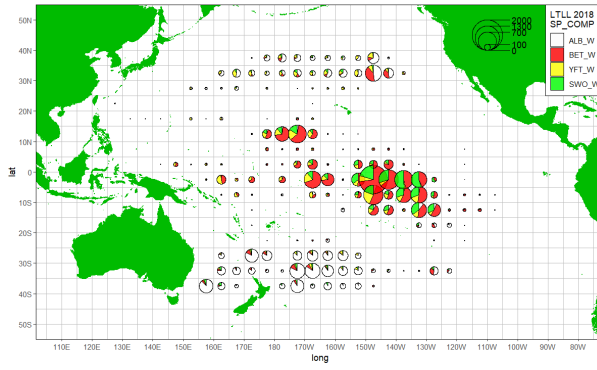
Year	Catch (MT)
2018	154
2019	207
2020	306
2021	154
2022*	149

* Preliminary estimate

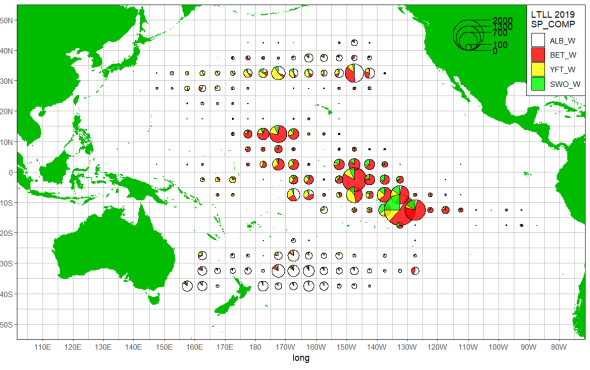
Table 21. Average annual fishing effort for 2008-2010 and annual fishing effort for subsequent years for fisheries taking North Pacific swordfish for the previous 3-years.

Area	Fishery (gear type)	2008-2010 Average			2022		
		Catch (t)	No. of vessels	Fishing days ¹	Catch (t)	No. of vessels	Fishing days
CA north of 20°N (The area)	Setnet	31					
	Gillnet (not specified)	6					
	Harpoon	37					
	Costal artisanal longline	610	673		279	227	
	Longline	611	633	30,031	403	190	10,522
	Total	1,295			682		

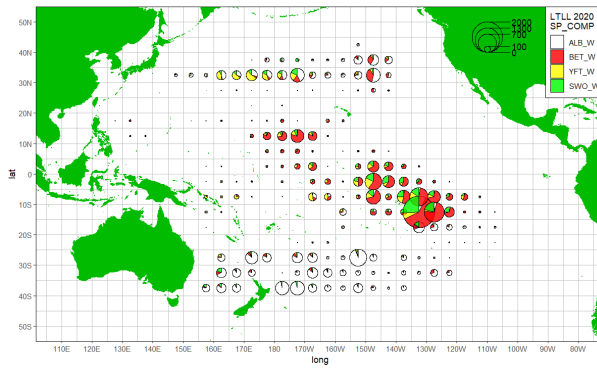
2018



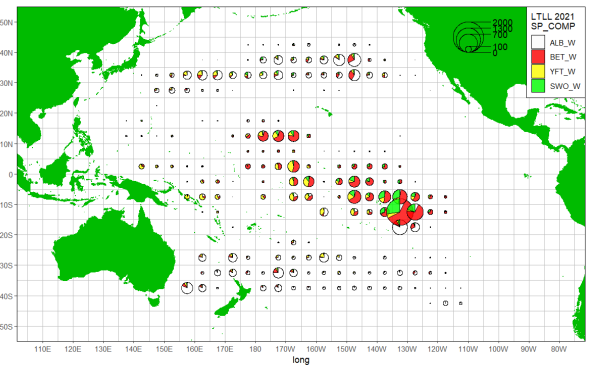
2019



2020



2021



2022

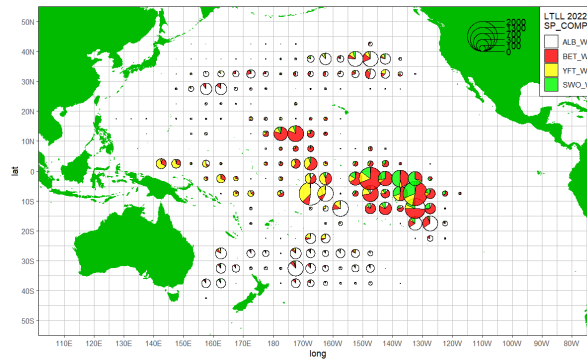


Figure 1. The catch composition distributions of tuna and tuna-like species of LTLL during 2018-2022. The figures of 2021 and 2022 are still in preliminary.

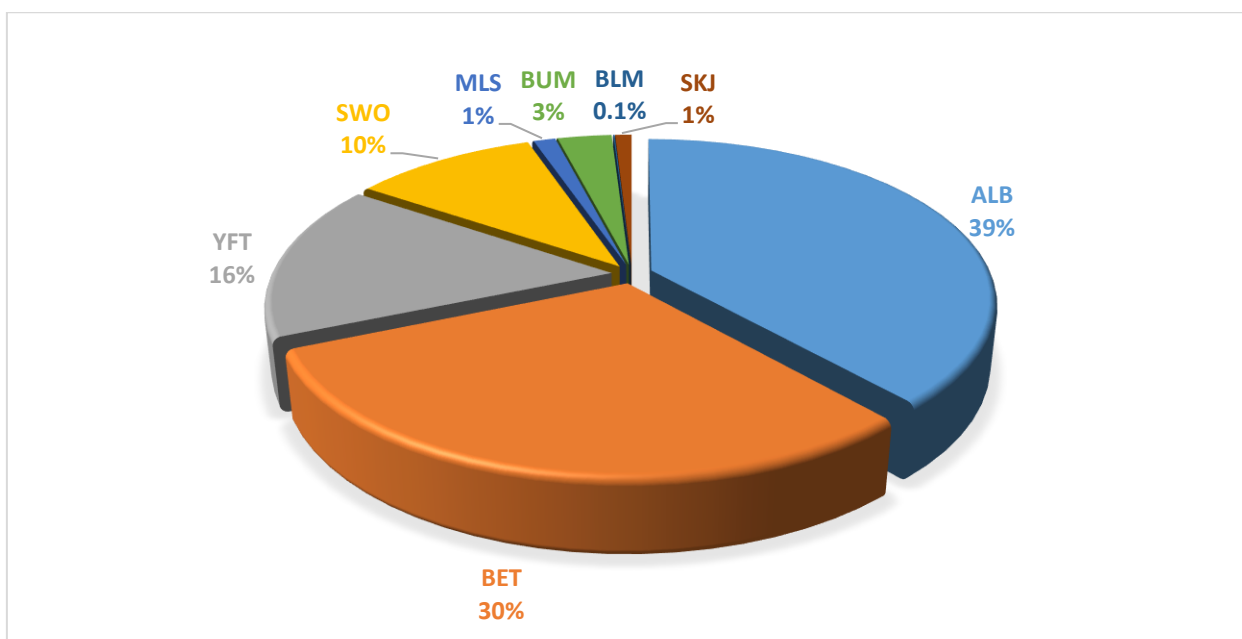


Figure 2. The catch composition of major tuna and tuna-like species for LTLL fishery in the WCPFC Convention area during 2018-2022.

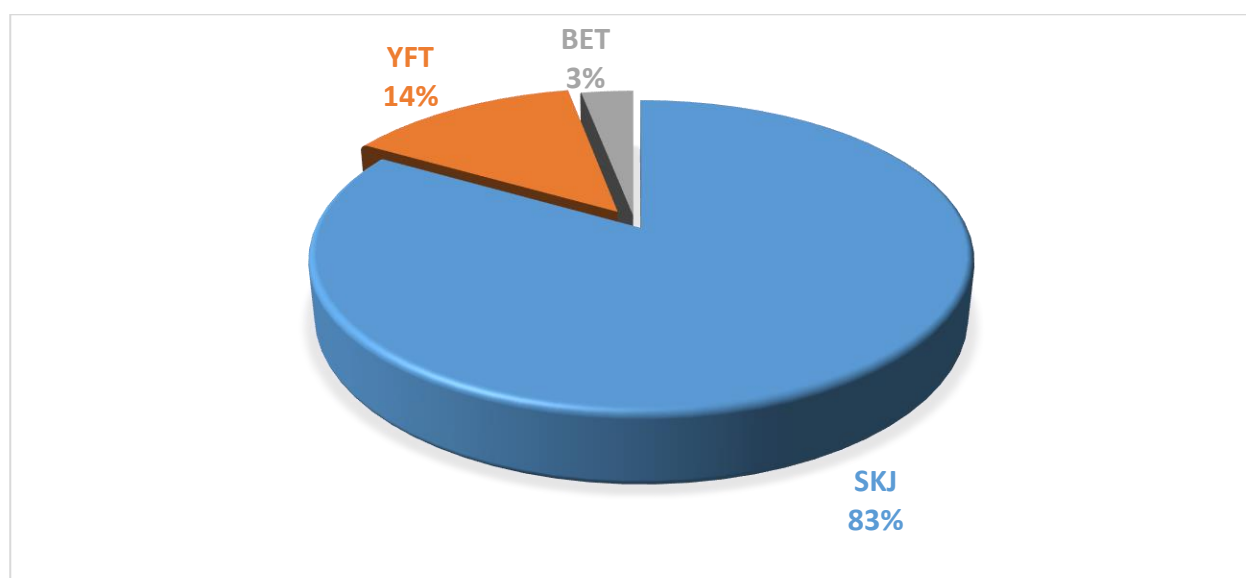


Figure 3. The catch composition of major tuna species for DWPS fishery in the WCPFC Convention area during 2018-2022.

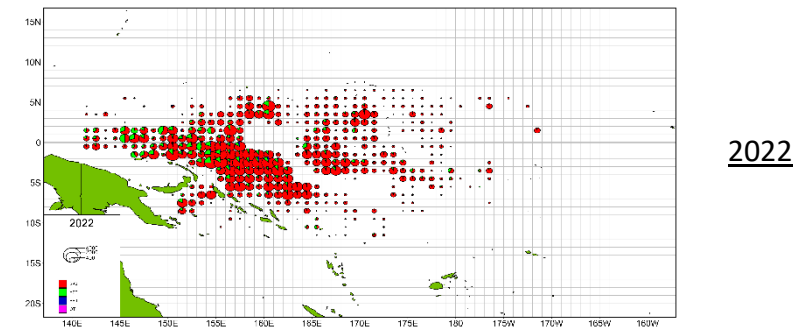
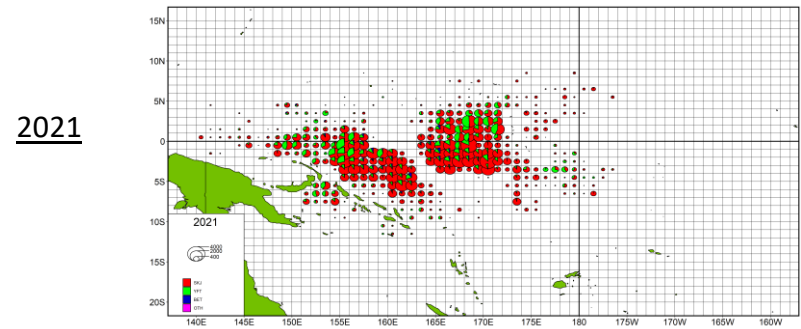
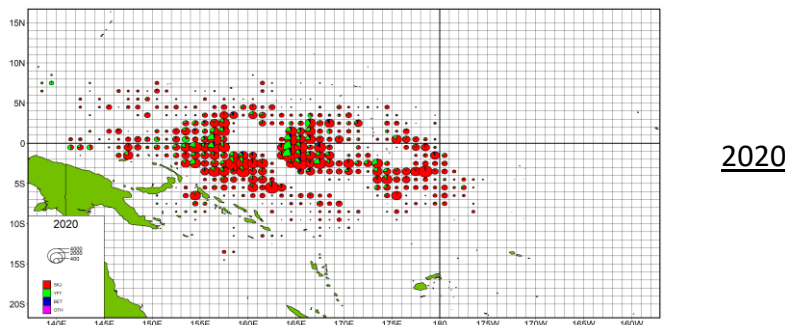
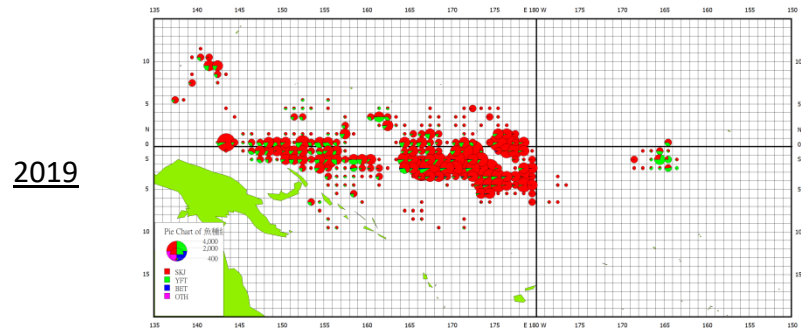
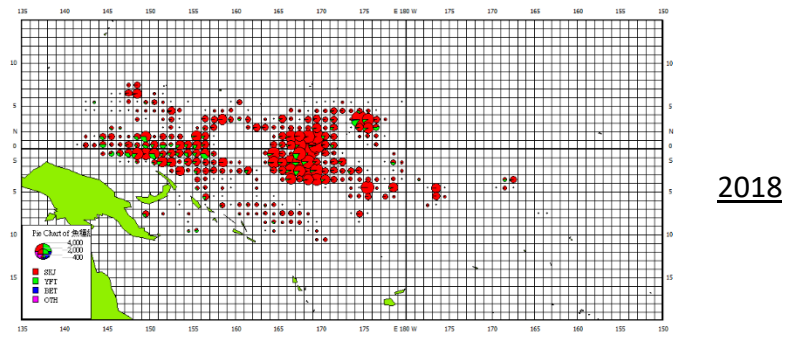


Figure 4. The catch composition distributions of DWPS fleet during 2018-2022.

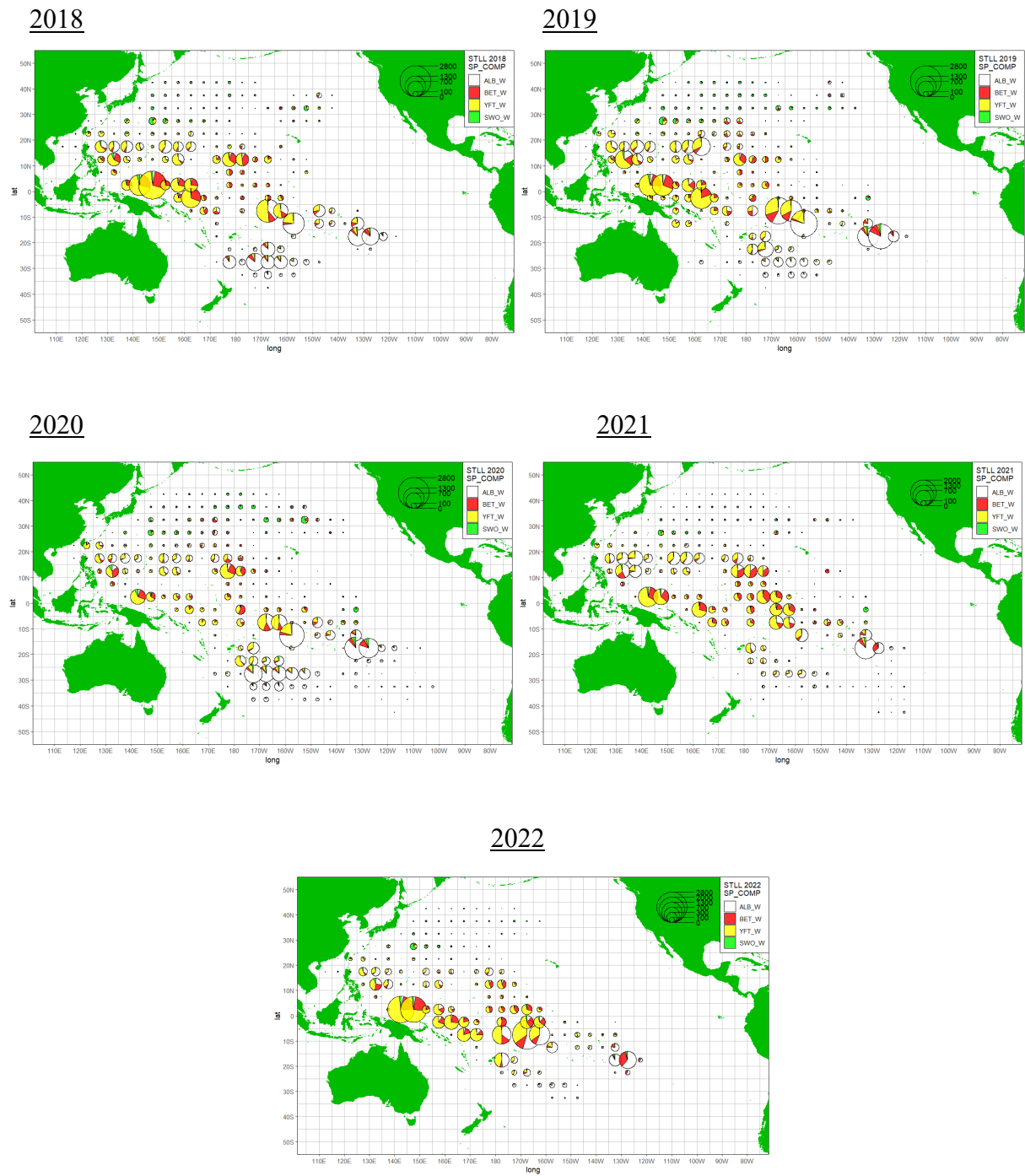
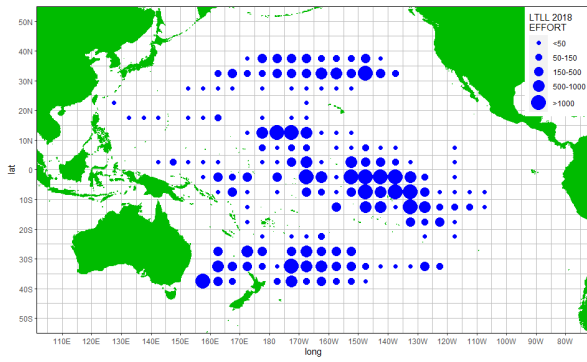
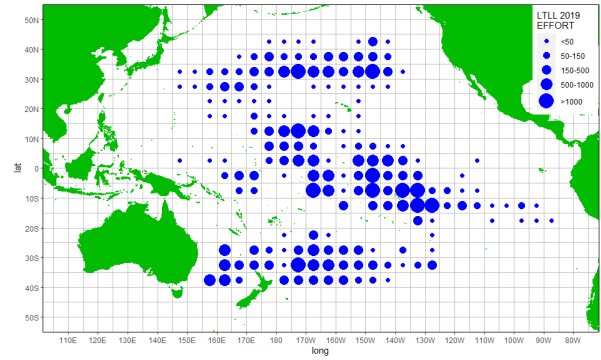


Figure 5. The catch composition distributions of tuna and tuna-like species of STLL during 2018-2022. The figures of 2021 and 2022 are still in preliminary.

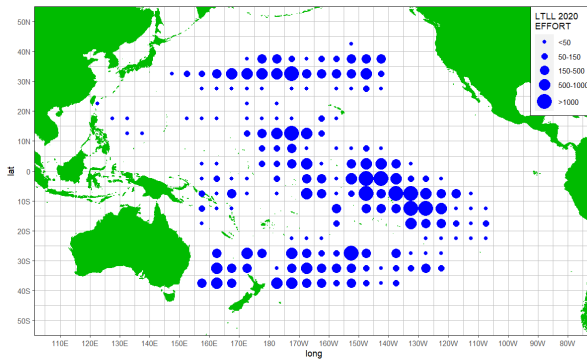
2018



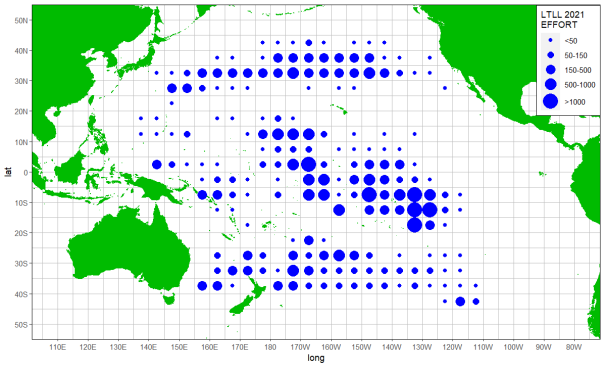
2019



2020



2021



2022

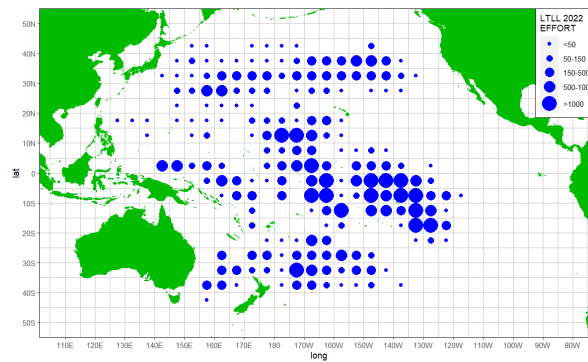
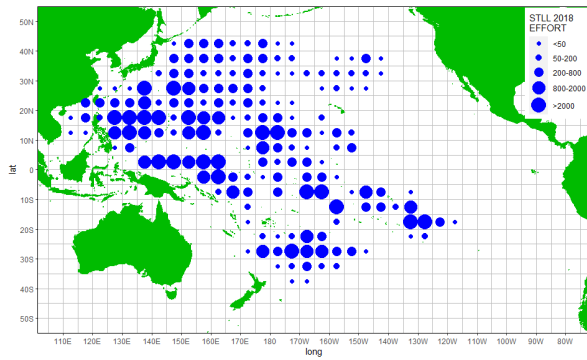
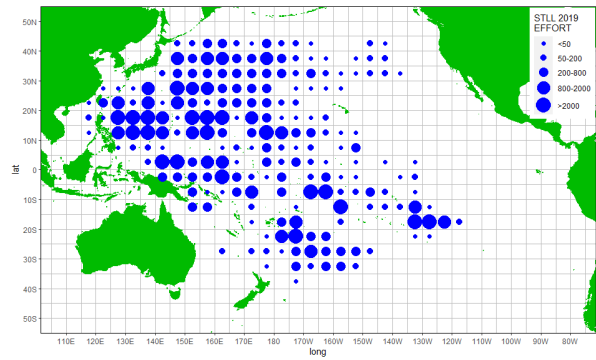


Figure 6. The fishing effort distributions of LTL during 2018-2022. The figures of 2021 and 2022 are still in preliminary.

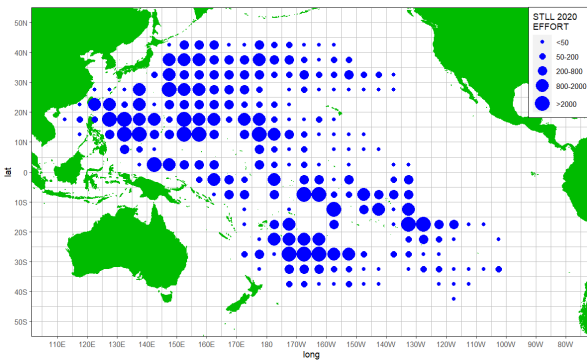
2018



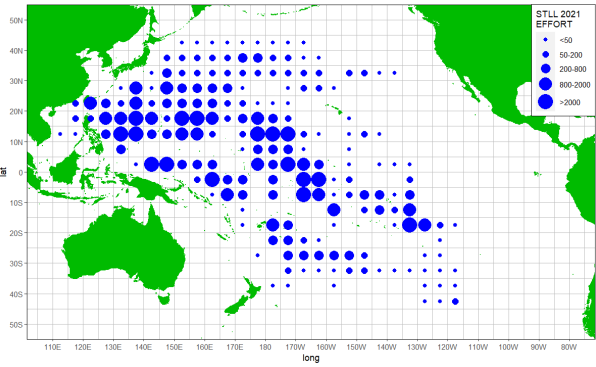
2019



2020



2021



2022

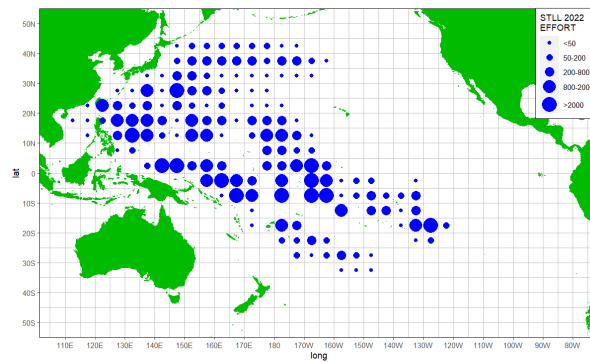
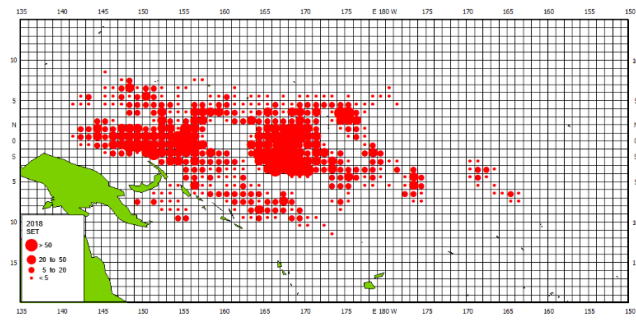
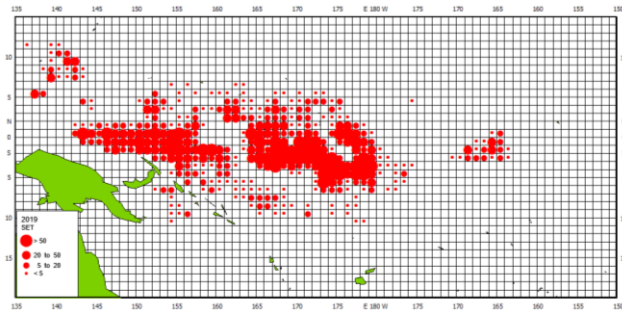


Figure 7. The fishing effort distributions of STLL during 2018-2022. The figures of 2021 and 2022 are still in preliminary.

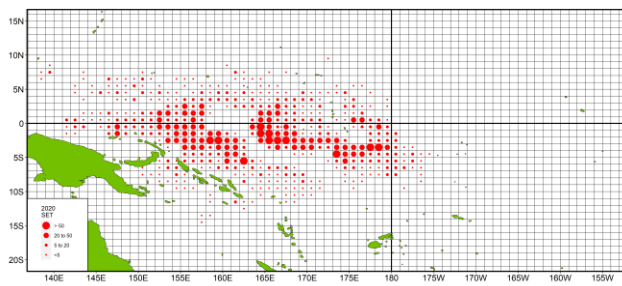


2018

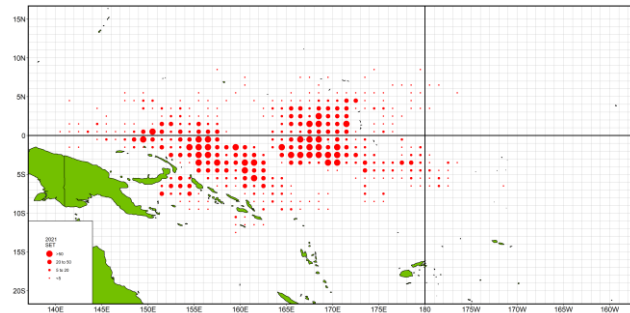
2019



2020



2021



2022

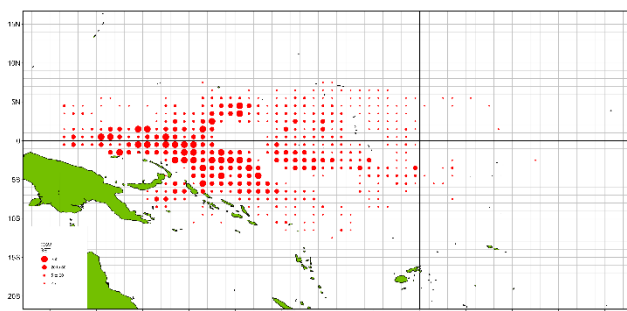


Figure 8. The fishing effort distributions of DWPS fleet during 2018-2022.