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

WCPFC-SC18-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*, 2022

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<p><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 2022</i></p>	<p>Yes</p>
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Summary

Three Taiwanese tuna fishing fleets are currently operating in the WCPFC Convention Area, namely large scale tuna longline fleet (LTLL, previous named FTLL), distant-water purse seine fleet (DWPS) and small scale tuna longline fleet (STLL, previous named CTLL). In 2020, the total catches of main tuna and tuna-like species for these three fleets were 11,847 MT for LTLL, 215,354 MT for DWPS and 25,123 MT for STLL, respectively. In 2021, 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 (2017-2021) 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 85 with an average of 79 in the last 5 years. The number of active LTLL fishing vessels was 85 in 2021.

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 29 active purse seiners operating in the WCPFC Convention Area in 2021.

1.1.3 STLL

The STLL fleet operates both within and beyond the EEZ of Taiwan. Some STLL fishing vessels with freezing capacity extend their fishing grounds with similar operations as that of the LTLL fleet. In 2021, there were 787 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 (2017-2021) in the WCPFC Convention Area is shown in Table 2. The distribution of species composition of LTLL in recent 5 years (2017-2021) 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 (38%), followed by bigeye tuna (29%) and yellowfin tuna (16%).

1.2.2 DWPS

The catch of primary species in the WCPFC Convention Area during 2017-2021 is shown in Table 3. Skipjack remained the most dominant species, accounting for about 82% of the total catch, followed by yellowfin tuna and bigeye tuna, which accounts for 15% and 3% of the total catch respectively (Figure 3). Composition ratio of primary species in recent 5 years (2017-2021) is shown in Figure 4.

1.2.3 STLL

The total catch of primary species caught by STLL fleet in 2021 was 25,123 MT with yellowfin tuna accounting 37% of the total catch. Other major catches were albacore (27%), bigeye tuna (15%) and billfish (12%). The total catch of primary species of STLL from 2017 to 2021 in WCPFC Convention Area is shown in Table 4. Composition ratio of species during 2017-2021 is shown in Figure 5.

1.3 Fishing Patterns

1.3.1 LTLL

The LTLL fleet can be divided into two subgroups in accordance with their targeting species, namely bigeye tuna targeting longline fleet operating mainly in tropical area (between 15°N and 15°S), and albacore targeting longline fleet operating in subtropical and temperate waters. The fleet targeting bigeye tuna usually conducts a year round operation with transshipping catch, refueling and receiving supplies at sea. Those fishing for albacore usually enter fishing ports in the Pacific Ocean twice a year for catch landing, refueling and supply receiving. The distribution of fishing effort in recent 5 years (2017-2021) is shown in Figure 6.

1.3.2 DWPS

The DWPS vessels mainly operate in the tropical waters close to the equator area targeting skipjack. Since most of the fishing grounds are located in the EEZs of PICs, these vessels acquire fishing permits through access agreements with PICs, including PNG, FSM, Nauru, Marshall Islands, Solomon Islands, Tuvalu and Kiribati.

In early 1980s, logs were used as fish aggregation objects and sets were made on schools associated with these floating objects. This practice continued throughout the 80s and early 90s. Successful exploitation on free-swimming schools in mid 1990s has made free school setting becoming the most prevailing fishing method and it observed that there were 66.8% sets were deployed on free school in 2021. The distribution of fishing effort in recent 5 years (2017-2021) 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.

1.3.3 STLL

Most of STLL based at domestic or foreign ports mainly target YFT for fresh tuna sashimi markets, while some target billfish or albacore. Flake ice is commonly used as coolant on the STLL vessels, while some equip with freezer to store catch in frozen form. The distribution of fishing effort in recent 5 years (2017-2021) is shown in Figure 8.

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

In 2020, our observers had recorded 30 sea turtles (5 Olive ridley turtles, 1 Kemp's

ridley turtle, 1 Hawksbill turtle, 16 Loggerhead turtles, 3 Green turtles and 4 unidentified turtles) and 46 seabirds (1 Northern royal albatross, 2 Wandering albatross, 33 Laysan albatross, 8 Black-footed albatross, 1 Westland petrel, and 1 other petrel) hooked with sightings of 20,351 seabirds and 111 cetaceans. In 2021, our observers had recorded 108 sea turtles (77 Olive ridley turtles, 3 Leatherback turtles, 1 Flatback turtle, 22 Loggerhead turtles, 2 Green turtles and 3 unidentified turtles), 10 seabirds (9 Laysan albatross and 1 Black-browed albatross) and 1 Marine Mammal (Spinner dolphin) hooked with sightings of 1,803 seabirds and 115 cetaceans. Because some observation trips of 2021 extended to 2022, the observer data of 2021 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 3.7 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 LTL, STLL and DWPS fleets in Pacific Ocean during 2017-2021 is shown in Table 6. 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 2021 was 54, including 19 observers for LTL vessels and 35 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 2021 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 2021 to 2022 were as follows:

- Updated standardized CPUE and historical catch estimate of the shortfin mako

- shark caught by Taiwanese large-scale tuna longline fishery in the North Pacific Ocean. (ISC/21/SHARKWG-1/01)
- Updated size composition of shortfin mako shark caught by the Taiwanese tuna longline fishery in the North Pacific Ocean. (ISC/21/SHARKWG-1/02)
 - Movement ecology of swordfish (*Xiphias gladius*) in the northwestern Pacific Ocean using electronic tags and stable isotope analysis. (ISC/21/BILLWG-01/06 rev1)
 - Size pattern and relative CPUE of Taiwanese PBF fisheries using delta-generalized linear mixed models (GLMM) and vector-auto-regressive spatiotemporal model (VAST). (ISC/21/PBFWG-1/03)
 - Preliminary base-case models in stock synthesis 3.30 for consideration in the 2021 Pacific blue marlin (*Makaira nigricans*) stock assessment. (ISC/21/BILLWG-02/01)
 - CPUE standardization of stripe marlin caught by Taiwanese distant-water longline fishery in the Western and Central North Pacific Ocean during 1995 – 2020. (ISC/21/BILLWG-03/02)
 - Catch, size and distribution pattern of the blue shark caught by the Taiwanese small-scale longline fishery in the North Pacific. (ISC/21/SHARKWG-02/12)
 - Size and spatial distribution of the blue shark, *Prionace glauca*, caught by the Taiwanese large-scale longline fishery in the North Pacific Ocean. (ISC/21/SHARKWG-02/13)
 - Updated standardized CPUE and catch estimation of the blue shark caught by the Taiwanese large scale tuna longline fishery in the North Pacific Ocean. (ISC/21/SHARKWG-02/14)
 - Catch and size data of striped marlin (*Kajikia audax*) by the Taiwanese fisheries in the Western and Central North Pacific Ocean during 1958-2020. (ISC/21/BILLWG-03/05)
 - 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)

The scientific papers published on scientific journal during 2021 to 2022 were as follows:

- Hsu, J., Chang, Y.J. *, Kitakado, T., Kai, M., Li, B., Hashimoto, M., Hsieh, C.H., Kulik, V., Park, K.J. (2021) Evaluating the spatiotemporal dynamics of Pacific saury in the Northwestern Pacific Ocean by using a geostatistical modelling approach. *Fisheries Research*, 235, 105821.
- Huang, C.-C., S.-K. Chang*, S.-W. Shyue. 2021. Sustain or phase out: transformation of Taiwan's management scheme on distant water tuna longline fisheries. *Marine Policy*, 123: 104297. doi:10.1016/j.marpol.2020.104297
- Liu, K. M. *, C. B. Wu, S. J. Joung, W. P. Tsai, and K. Y. Su. 2021. Multi-model approach on growth estimation and association with life history trait for elasmobranchs. *Frontiers in Marine Science*, 2021, 8, 591692. (SCI).
- Pacoureau, N. *, C. L. Rigby, P. M. Kyne, R. Sherley*, Henning Winker, J. C. Carlson, S. V. Fordham, R. Borreto, D. Fernando, M. Francis, R. W. Jabado, K. B. Herman, K. M. Liu, A. Marshall, R. Pollom, E. Romanov, C. A. Simpfendorfer, J. S. Yin, H. K. Kindsvater and N. K. Dulvy. (2021) Half a century of decline in oceanic pelagic sharks and rays. *Nature* 589: 567-571. doi.org/10.1038/s41586-020-03173-9 (SCI)
- Ju Y. R., C. F. Chen, C. W. Chen, M. H. Wang, S. J. Joung, C. J. Yu, K. M. Liu, W.

- P. Tsai, S. Y. V. Liu and, C. D. Dong*. 2021. Profile and consumption risk assessment of trace elements in megamouth sharks (*Megachasma pelagios*) captured from the Pacific Ocean to the east of Taiwan. *Environmental Pollution*, 269 (2021) 116161. (SCI)
- Chang, Y.J.*, Hsu, J., Lai, P.K., Lan, K.W., Tsai, W.P. (2021) Evaluation of the impacts of climate change on albacore distribution in the South Pacific Ocean by using ensemble forecast. *Frontiers in Marine Science*, 8, 731950. (SCI)
 - Hsu Y. J., W. P. Tsai, W. C. Chiang, C. C. Huang, H. W. Chien and MS. Lee*. 2021. Incidence of plastic ingestion by the shortfin mako, *Isurus oxyrinchus*, off the northeast coast of Taiwan. *Marine Pollution Bulletin*, 172 (2021) 112820. (SCI)
 - 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)

2.3 Statistics data collection system

To collect fishery data complete and in a real time manner, Taiwan implemented electronic logbook reporting on LTL 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 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 2021, the total catch of north Pacific

albacore made by our fishing fleets was 5,953 MT with 5,430 MT in the north Convention area. There were 25 LTLL vessels directed at north Pacific albacore with 2,070 fishing days in the north Pacific Ocean, and with 1,708 days deployed in the north Convention area. The annual fishing efforts of LTLL vessels directed at North Pacific albacore for 2017-2021 provided was provided through Annual Report Part 2.

3.2 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 2017-2021 is shown in Table 6. None of our fishing vessel targets on striped marlin.

3.3 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 2021.

3.4 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 8 and updated to 2021.

3.5 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 9 shows the information of transshipment activities of our fishing fleets in 2021.

3.6 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 10 shows detailed information on cetaceans and whale shark encircled during operation reported in 2021 by fishing masters of our purse seine fleet.

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 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 11-20.

Table 1. The number of active fishing vessel by fishery in the WCPFC Convention Area during 2017-2021.

Year	LTL	DWPS	STLL
2017	82	28	1,079
2018	75	27	843
2019	75	30	723
2020	82	28	710
2021	85	29	787

Table 2. The catch (in MT, round weight) of major tuna and tuna-like species of LTL fishery in the WCPFC Convention Area during 2017-2021.

Year	N-ALB	S-ALB	BET	YFT	SWO	MLS	BUM	BLM	SKJ	TOTAL
2016	1,697	5,834	4,707	4,230	1,904	260	1,456	5	165	20,258
2017	1,520	6,313	4,440	3,809	2,015	224	915	11	303	19,550
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

* Preliminary estimate

Table 3. The catch (in MT, round weight) of major tuna species of DWPS fishery in the WCPFC Convention Area during 2017-2021.

Year	SKJ	YFT	BET	Total
2017	126,960	35,345	4,934	167,239
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	21,5354

* 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 2017-2021.

Year	ALB	BET	YFT	PBF	SWO	BILL**	TOTAL
2017	10,711	5,232	19,147	415	1,778	5,472	42,755
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

* 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 2017-2021.

	LTLL	STLL	DWPS*
2017	18	51	-
2018	11	63	-
2019	14	32	-
2020	14	42	-
2021	19	35	-

* In accordance with CMM 2008-01, all our DWPS fishing vessels have to be deployed PIC observer on board and the observer coverage reaches 100%.

Table 6. The catch of striped marlin of tuna longline fisheries in the area of south of 15°S during 2017-2021.

Year	Catch (MT)
2017	142
2018	154
2019	207
2020	306
2021*	154

* Preliminary estimate

Table 7. The estimate of observer coverage rate for Taiwanese longline fisheries in 2021.

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	LTL							17,508	2,685	15.34%				
	STLL							59,742	5,928	9.92%				

Table 8. The catch of swordfish and the number of the tuna longline fishing vessels operating in the area of south of 20°S during 2000-2021.

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

* Preliminary estimate

Table 9. The summary of transshipment operations by fishery of 2021: (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	2,384	2,196	3,419	136	344	509	68	392	530
offloaded	beyond EEZs	inside	both	Frozen	Longliner	2,024	2,900	973	35	509	261	94	264	630
offloaded	beyond EEZs	inside	outside	Frozen	Longliner	52	98	13	1	2	0	2	1	3
offloaded	beyond EEZs	outside	inside	Frozen	Longliner	19	0	8	0	14	0	2	0	0
offloaded	beyond EEZs	outside	both	Frozen	Longliner	513	121	46	6	184	3	11	0	62
offloaded	inside EEZs	inside	inside	Frozen	Purse seiner	457	0	5,607	22,977	0	0	0	0	0
offloaded	in port	inside	inside	Frozen	Purse seiner	4,674	0	28,358	147,298	0	0	0	0	0
offloaded	in port	inside	inside	Frozen	Longliner	227	17	1,167	1	18	136	0	26	158
offloaded	in port	inside	both	Frozen	Longliner	537	0	88	0	0	2	0	0	4
offloaded	in port	inside	outside	Frozen	Longliner	0	0	0	0	0	0	0	0	0
received	beyond EEZs	inside	inside	Frozen	Longliner	892	690	2,248	77	174	335	30	237	347
received	beyond EEZs	inside	both	Frozen	Longliner	236	234	277	13	172	61	17	92	175
received	beyond EEZs	inside	outside	Frozen	Longliner	0	0	0	0	0	0	0	0	0
received	beyond EEZs	outside	inside	Frozen	Longliner	0	0	0	0	0	0	0	0	0
received	beyond EEZs	outside	both	Frozen	Longliner	0	0	0	0	0	0	0	0	0
received	in port	inside	inside	Frozen	Longliner	227	17	1,167	1	18	136	0	26	4
received	in port	inside	both	Frozen	Longliner	0	0	0	0	0	2	0	0	0
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	373
offloaded	beyond EEZs	inside	both	Longliner	180
offloaded	beyond EEZs	inside	outside	Longliner	5
offloaded	beyond EEZs	outside	inside	Longliner	1
offloaded	beyond EEZs	outside	both	Longliner	13
offloaded	inside EEZs	inside	inside	Purse seiner	37
offloaded	in port	inside	inside	Purse seiner	264
offloaded	in port	inside	inside	Longliner	49
offloaded	in port	inside	both	Longliner	6
offloaded	in port	inside	outside	Longliner	0
received	beyond EEZs	inside	inside	Longliner	207
received	beyond EEZs	inside	both	Longliner	35
received	beyond EEZs	inside	outside	Longliner	0
received	beyond EEZs	outside	inside	Longliner	0
received	beyond EEZs	outside	both	Longliner	0
received	in port	inside	inside	Longliner	49
received	in port	inside	both	Longliner	1
received	in port	inside	outside	Longliner	0

Table 10. The summary on cetaceans/whale sharks encircled incidentally in purse seine fishing operation in 2021.

Date	Longitude	Latitude	Species	Number	Reason	Measure for ensure safe release	Status on release
2021-02-13	E156°01'	S09°00'	Whale shark	1	not deliberately encircled	stop operating	Alive
2021-02-28	E158°55'	S01°29'	Pantropical spotted dolphin	1	not deliberately encircled	stop hauling and operating	Alive
2021-04-05	E150°01'	N00°19'	Dolphins nei	3	not deliberately encircled	stop hauling and operating	Dead
2021-07-02	E169°59'	S02°02'	Whale shark	1	not deliberately encircled	stop operating	Alive
2021-08-20	E166°43'	N03°00'	Whale shark	1	not deliberately encircled	stop hauling and operating	Alive
2021-09-26	E162°25'	S04°01'	Whale shark	2	not deliberately encircled	stop operating	Alive
2021-10-11	E148°57'	N00°25'	Whale shark	1	not deliberately encircled	stop hauling and operating	Alive
2021-10-26	E154°19'	S05°42'	Bryde's whale	1	not deliberately encircled	stop hauling	Dead
2021-11-20	E155°40'	S01°46'	Whale shark	1	not deliberately encircled	stop operating	Alive
2021-11-30	E162°13'	S11°28'	Whale shark	1	not deliberately encircled	stop operating	Alive
2021-12-12	E165°17'	S00°26'	Whale shark	2	not deliberately encircled	stop hauling and operating	Alive
2021-12-14	E165°21'	S00°20'	Whale shark	1	not deliberately encircled	stop hauling and operating	Alive
2021-12-27	E156°23'	S03°14'	Whale shark	1	not deliberately encircled	stop operating	Alive

Table 11. Effort, observed and estimated seabird captures of longline fishery in the area of south of 30°S during 2017-2021.

Year	Fishing effort				Observed seabird hooked	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Rate
2017	30	5,619,981	111,998	2.0%	1	0.009
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	506,887	5.0%	4	0.008
2021*	32	4,852,414	18,889	0.4%	0	0.000

* Preliminary

Table 12. Effort, observed and estimated seabird captures of longline fishery in the area of 25°S - 30°S during 2017-2021.

Year	Fishing effort				Observed seabird hooked	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Rate
2017	53	9,608,376	539,831	5.6%	0	0.000
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	250,869	5.4%	1	0.004

* Preliminary

Table 13. Effort, observed and estimated seabird captures of longline fishery in the area of north of 23°N during 2017-2021.

Year	Fishing effort				Observed seabird hooked	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Rate
2017	493	21,305,415	795,342	3.7%	2	0.003
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	1,372,846	4.8%	42	0.031
2021*	109	16,723,505	219,124	1.3%	9	0.041

* Preliminary

Table 14. Effort, observed and estimated seabird captures of longline fishery in the area of 23°N - 25°S during 2017-2021.

Year	Fishing effort				Observed seabird hooked	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Rate
2017	844	168,219,294	7,603,286	4.5%	2	0.000
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	4,004,026	3.7%	0	0.000
2021*	392	107,274,154	4,275,551	4.0%	0	0.000

* Preliminary

Table 15. Proportion of mitigation types used by longline fishery in 2017.

	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%	2.5%	9.3%	8.2%
Options required south of 25°S	TL + NS	20.9%	20.6%	1.2%	17.6%
	TL + WB	5.5%	0.5%	0.0%	4.3%
	NS + WB	4.7%	0.5%	8.4%	4.3%
	TL + WB + NS	4.7%	0.5%	0.0%	4.3%
	HS				
Other options 25°S-30°S	WB	5.5%	0.5%	10.5%	4.3%
	TL	22.0%	23.5%	1.8%	24.4%
Other options north of 230N	SS/BC/WB/DSLS				
	SS/BC/WB/(MOD or BDB)				
Provide any other combination of mitigation measures here	TL+TL	15.7%	11.6%	0.3%	7.9%
	NS	21.0%	39.8%	68.5%	24.7%
	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 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 17. 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 18. 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	2.0%	4.5%	0.5%	5.7%
	NS + WB	7.1%	29.9%	83.5%	33.4%
	TL + WB + NS	50.0%	43.1%	1.1%	49.7%
	HS				
Other options 25°S-30°S	WB	2.9%	9.5%	14.8%	3.0%
	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	38.0%	13.0%	0.1%	8.2%
	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. 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	0.0%	9.8%	0.4%	0.4%
	NS + WB	40.0%	20.3%	72.4%	36.1%
	TL + WB + NS	50.0%	66.9%	1.2%	44.5%
	HS				
Other options 25°S-30°S	WB	10.0%	3.0%	26.0%	0.9%
	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%	18.1%
	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 20. Number of observed seabird captures of tuna longline fishery by species and by area during 2017-2021.

Year	Species	South of 30°S	25°S - 30°S	North of 23°N	23°N - 25°S	Total
2017	Black-footed albatross	0	0	0	2	2
	Campbell albatross	1	0	0	0	1
	Laysan albatross	0	0	2	0	2
	Total	1	0	2	2	5
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	8	0	8
	Laysan Albatross	0	0	33	0	33
	Northern royal Albatross	1	0	0	0	1
	Other Petrel	0	0	1	0	1
	Wandering Albatross	2	0	0	0	2
	Westland Petrel	1	0	0	0	1
	Total	4	0	42	0	46
2021*	Black-Browed Albatross	0	1	0	0	1
	Laysan Albatross	0	0	9	0	9
	Total	0	1	9	0	10

* Preliminary

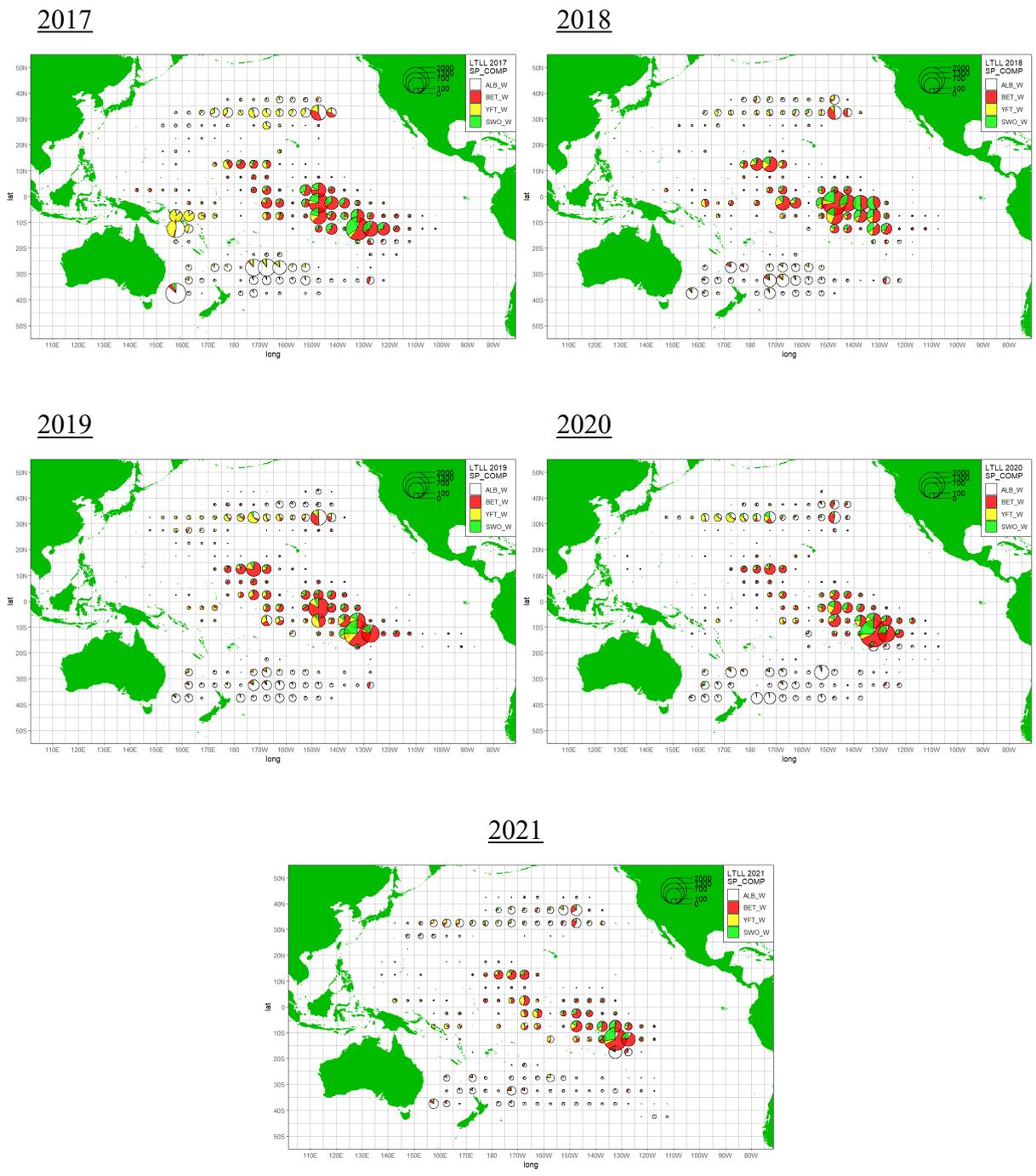


Figure 1. The catch composition distributions of tuna and tuna-like species of LTLF fishery during 2017-2021. The figures of 2020 and 2021 are still in preliminary.



Figure 2. The catch composition of major tuna and tuna-like species for LTLT fishery in the WCPFC Convention area during 2017-2021.

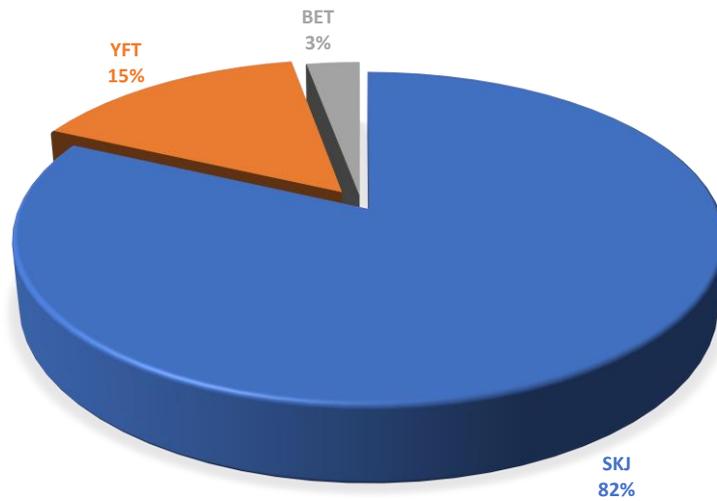


Figure 3. The catch composition of major tuna species for DWPS fishery in the WCPFC Convention area during 2017-2021.

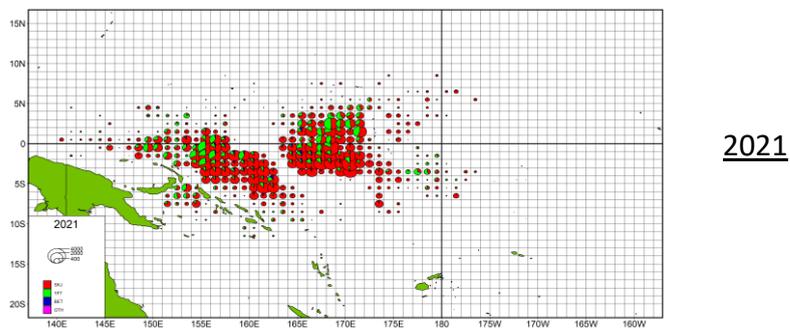
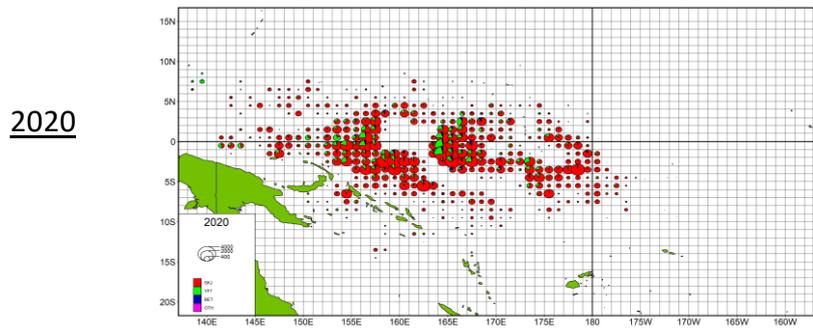
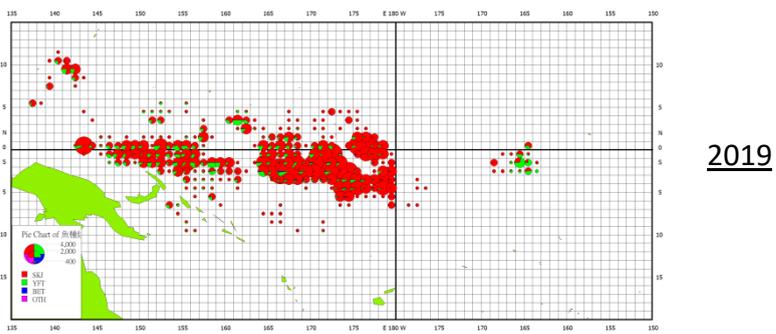
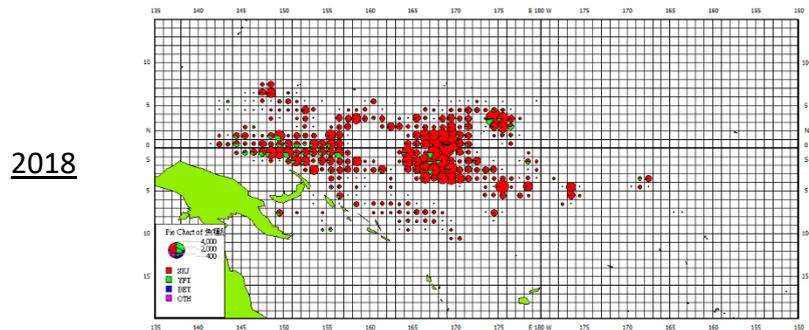
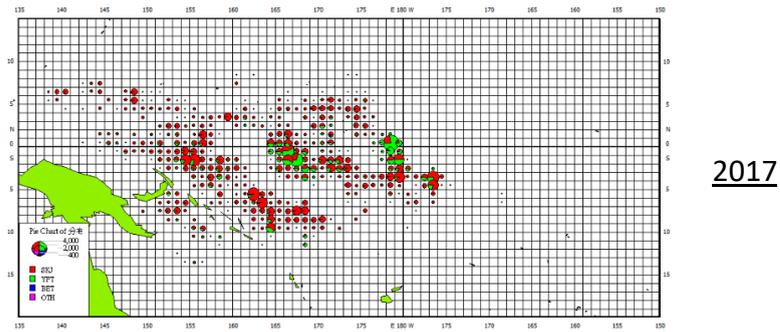


Figure 4. The catch composition distributions of DWPS fleet during 2017-2021.

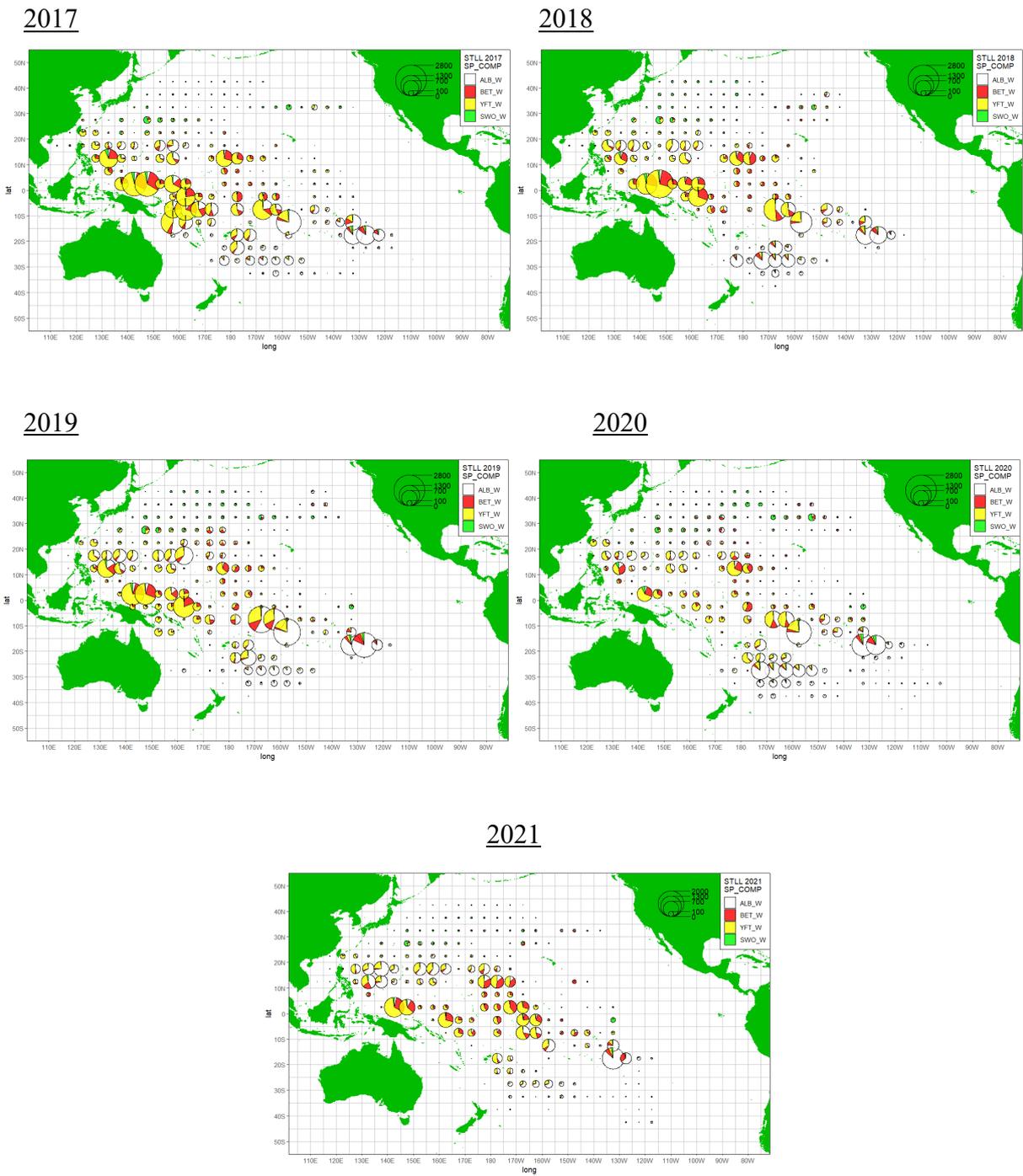
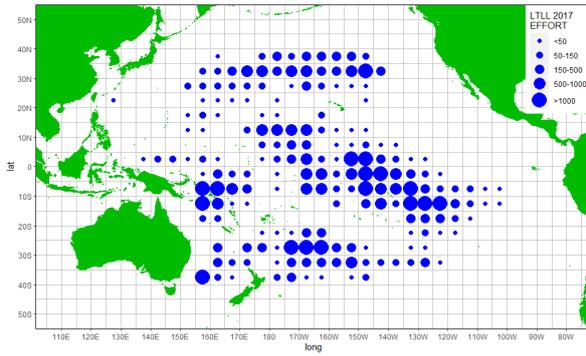
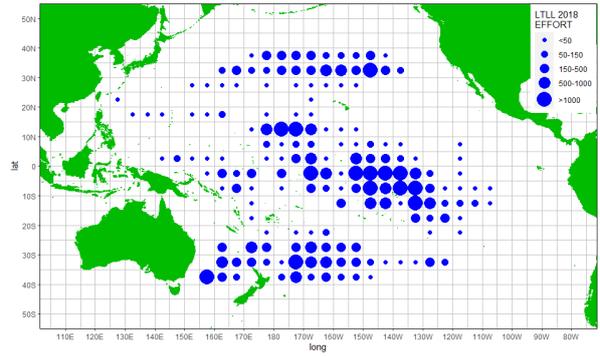


Figure 5. The catch composition distributions of tuna and tuna-like species of STLL fishery during 2017-2021. The figures of 2020 and 2021 are still in preliminary.

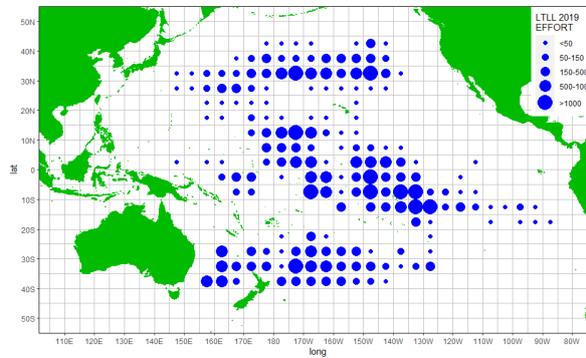
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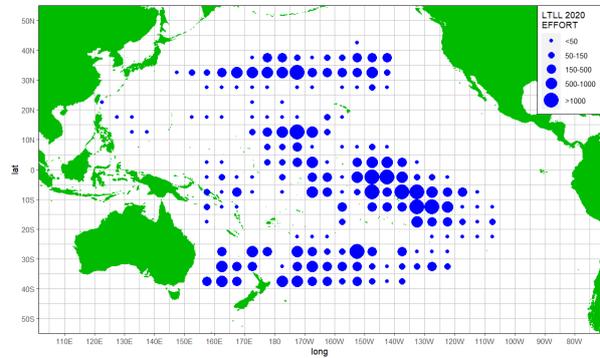
2018



2019



2020



2021

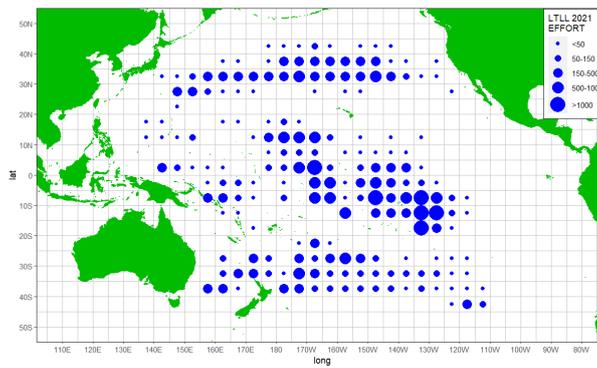
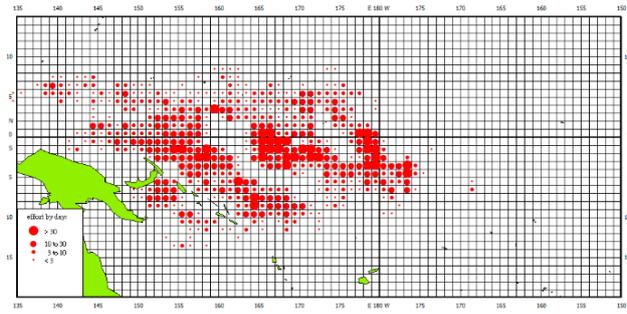
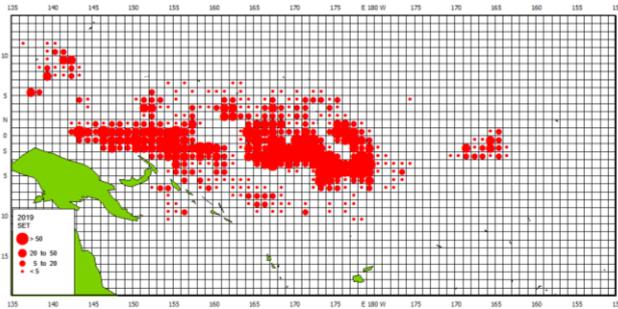
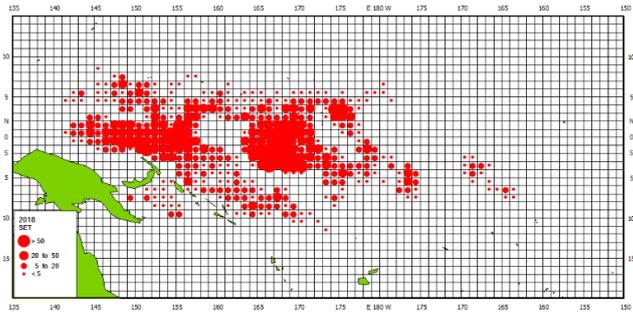


Figure 6. The fishing effort distributions of LTLL fishery during 2017-2021. The figures of 2020 and 2021 are still in preliminary.



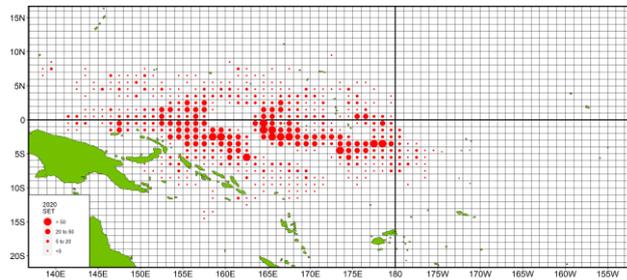
2017

2018



2019

2020



2021

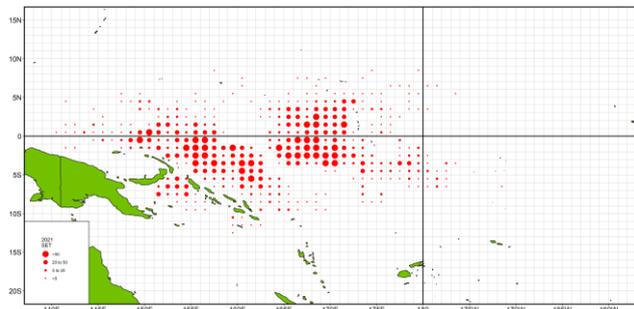
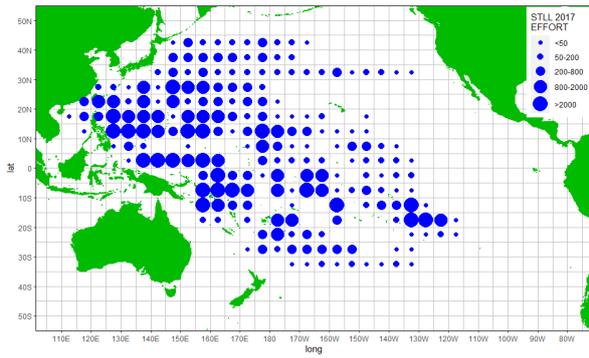
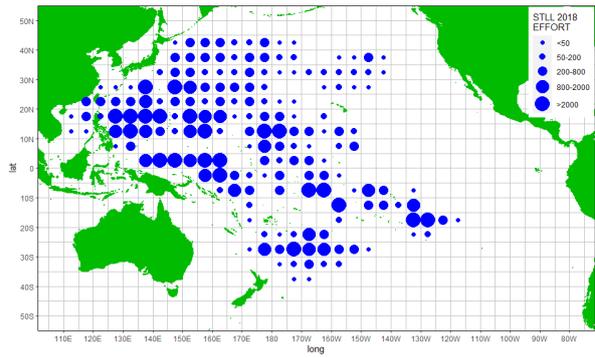


Figure 7. The fishing effort distributions of DWPS fleet during 2017-2021.

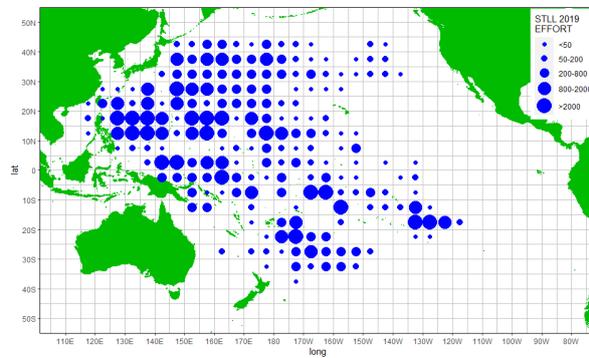
2017



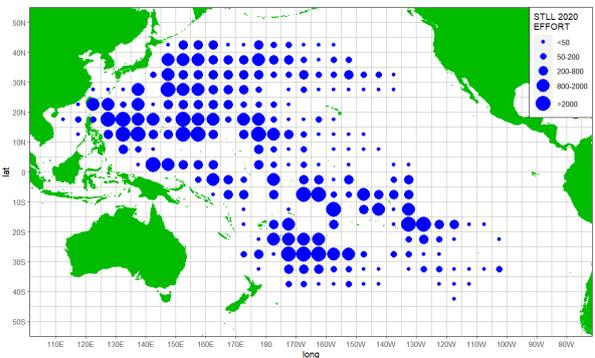
2018



2019



2020



2021

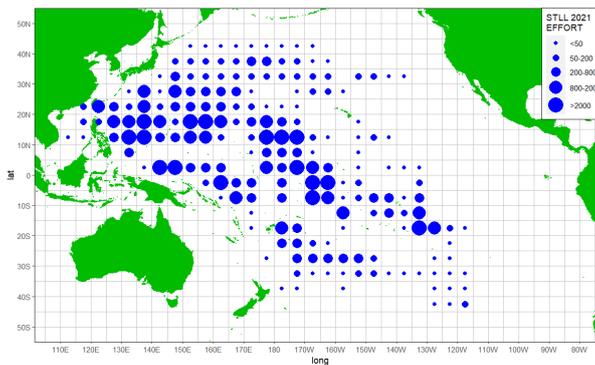


Figure 8. The fishing effort distributions of STLL fishery during 2017-2021. The figures of 2020 and 2021 are still in preliminary.