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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, 2014

This paper is prepared for the 10th meeting of the WCPFC Scientific Committee held in Majuro, Republic of the Marshall Islands, from 6 to 14 August, 2014.

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 2014	Yes

Summary

There are 3 Taiwanese tuna fishing fleets operating in the WCPFC Convention Area: 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 2013, the total catches of main tuna and tuna-like species for these 3 fleets were 16,182 MT for LTLL, 212,480 MT for DWPS and 40,142 MT for STLL, respectively. In 2013, 30 observation trips were deployed on the tuna longline fishing vessels operating in the Pacific Ocean.

1 Annual fisheries' information

The Pacific Ocean is one of the earliest tuna fishing grounds exploited of our 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 vessel of LTLL, DWPS and STLL fleets in recent five years (2009-2013) in the WCPFC Convention Area.

1.1.1 LTLL

The LTLL vessels refer to those vessels larger than 100 GRT, and the number of active vessels fishing in the WCPFC Convention Area in 2013 was 82. The number of active vessel decreased to lower than 80 in 2009 for high fuel price with some fishing vessels ceasing operation temporarily, and the vessel number returned to 90 in 2010; increased to 95 for some shifting from Indian Ocean for pirate issue in 2011, and decreased to 87 in the following year and decreasing to 82 in 2013 with some vessels shifting back to Indian Ocean.

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 adjustment of business strategy of some companies. The fleet further reduced to 34 authorized in 2004 and maintained at this level ever since. The number of active purse seiners reached the lowest of recent years at 32 in 2009 for 2 fishing vessels sank, and returned to 34 in 2010 with 2 new building ones. In 2013, there were three aged purse seiners replaced by 3 new-built ones.

1.1.3 STLL

The STLL fleet operates both within and beyond the EEZ of Taiwan. Vessels with freezing equipment extended their fishing grounds to more distant waters operating in a similar pattern as LTLL vessel. They change their fishing grounds and target species based on fishing season and market price. In 2013 there were 1,296 STLL vessels operating in the WCPFC Convention Area.

1.2 Annual Catch in the WCPFC Convention Area

1.2.1 LTLL

The catch of major tuna and tuna-like species caught by LTLL fishery in the recent five years (2009-2013) in the WCPFC Convention Area is shown in Table 2. The catch composition distribution of tuna and tuna-like species of LTLL in recent 5 years (2009-2013) is shown in Figure 1. Mean catch percentage of major tuna and tuna-like species of our LTLL fishery in the WCPFC Convention area in the recent five years is shown in Figure 2. The dominant species of catch were bigeye tuna (36.4%), albacore (34.1%) and yellowfin tuna (14.0%).

1.2.2 DWPS

The catch of major tuna species in the WCPFC Convention Area during 2009-2013 is shown in Table 3. The most dominant species remained to be skipjack, accounting for about 87.2% of the total catch, followed by yellowfin tuna and bigeye tuna, which accounts for 11.4% and 1.4% of the total catch, respectively (Figure 3). The catch composition distribution of DWPS in recent 5 years (2009-2013) is shown in Figure 4.

1.2.3 STLL

Total catch of mainly tuna and tuna-like species landed in domestic ports in 2013 was 12,709 MT. The dominant species of catch are yellowfin tuna (45%), billfish (34%), swordfish (13%) and bigeye tuna (3%). As to those landed in foreign ports, yellowfin and bigeye are the main species of catch. Total catch of main species by STLL from 2009 to 2013 in WCPFC Convention Area is shown in Table 4. The catch composition distribution of tuna and tuna-like species of STLL during

2011-2013 is shown in Figure 5.

1.3 Fishing Patterns

1.3.1 LTLL

LTLL fleet can be divided into two groups in accordance with target species: those operating mainly in tropical area (between 15°N and 15°S) targeting on bigeye tuna, and those operating in subtropical and temperate waters targeting on albacore. The fleet targeting bigeye tuna usually conducts a year round operation, and transship their catches to transport vessels and receive fuel and supplies during transshipment. Those fishing for albacore usually entered fishing ports in the Pacific twice a year for catch landing, fuel and supply receiving. The fishing effort distribution in recent 5 years (2009-2013) is shown in Figure 6.

1.3.2 DWPS

The DWPS vessels mainly operate in the tropical waters close to the equator area targeting on SKJ. 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 to be the most prevailing fishing method. In 2013, about 65.6% sets were deployed on free school.

The fishing effort distribution in recent 5 years (2009-2013) is shown in Figure 7. The fishing effort is more concentrated in the western Pacific Ocean.

1.3.3 STLL

Most of STLL based at domestic or foreign ports mainly target on YFT for fresh sashimi markets, while some STLL vessels target on billfish or albacore. Flake ice is used as coolant on the STLL vessels, but some are equipped with freezing equipment for better preservation of their catches. The fishing effort distribution in recent 3 years (2011-2013) is shown in Figure 8.

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

The LTLL logbook format had been revised in 2003 to accommodate 4 shark species (blue shark, silky shark, shortfin mako, and other sharks), sea birds, sea turtles and marine mammals. To comply with CMM 2008-06 and CMM 2009-04, the logbook format had been revised again and included more shark specie (thresher shark, tiger

shark, white shark, probeagle, crocodile shark, hammerhead shark and oceanic white tip shark) into logbook recording items. Annual catch of key shark species of LTLL, STLL and DWPS in 2013 is shown in Table 5.

According to the "ANNUAL REPORT TO THE COMMISSION PART 1: INFORMATION ON FISHERIES, RESEARCH AND STATISTICS" format approved by Commission meeting, the bycatch information is revealed in the following paragraph. In 2012, observers recorded 28 sea turtles (3 hawksbill, 1 leatherback, 2 green ,and 22 olive ridley turtles), 16 seabirds (2 black-footed albatross, 9 albatrosses nei, 4 frigatebird and 1 masked booby immature) and 1 cetaceans (1 blackfish) were taken and 467 seabirds ,1 sea turtle and 7 cetaceans were sighted. In 2013, observers recorded 39 sea turtles (2 leatherback,10 green, 4 loggerhead and 23 olive ridley turtles), 13 seabirds (8 albatrosses nei, 1 wandering albatross, 2 black-footed albatross, 1 White-chinned Petrel and 1 Southern Giant Petrel) were taken and 1094 seabirds, 22 cetaceans and 1 turtle were sighted. Since some observation trips conducted between 2013 and 2014, the observer data of 2013 is incomplete.

In 2013, the DWPS vessels reported that 4 leatherback turtles, 1 loggerhead turtle, 1 false killer whale and 19 whale sharks were encircled incidentally, and all of these incidental bycatch were live released.

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

For better understanding the fishing activities and bycatch of the longline fishery, FA launched a pilot observer program in 2002. During 2009-2013, the numbers of LTLL, STLL and DWPS fisheries of observation trips in Pacific Ocean is shown in Table 6. In accordance with the government's policy in establishing an observers program and supporting the increase of observers, in 2012 the observer program was extended to the STLL fleets. In 2013, the total observation trips were conducted on LTLL and STLL vessels were 15 and 15 trips, respectively.

Our observer program had received interim authorization in 2009 and received full authorization after auditing in November 2011. 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 species in the Pacific Ocean, government of Taiwan has commissioned scientists to conduct a series of researches in 2013 as follows：

- Stock assessment of Pacific bluefin tuna.
- Age and growth of Pacific bluefin tuna revealed by otolith microstructure.
- Impact of climate change on Pacific albacore stock and fishing ground.
- Studies on the assessment of south Pacific albacore stock.
- Age and growth study of south Pacific albacore.
- Study on the north Pacific albacore resource.
- Environmental effects on billfish CPUE in the Pacific.
- A study on CPUE standardization and stock status for Pacific blue marlin and North Pacific swordfish.
- The billfish and tuna tagging project in waters off eastern Taiwan.
- Research on Ecological Related Species bycatch of distant water tuna longline fisheries.
- Comparisons of effects from different CPUE standardization models on WCPO yellowfin tuna for Taiwanese longline fishery.
- Estimation of historical catches and standardization of CPUEs for dominant sharks in three oceans.

The scientific papers presented at recent Pacific Ocean RFMOs meetings during 2013 to 2014 were as follows:

- Analysis of swordfish catch per unit effort data for Japanese and Chinese Taipei longline fleets in the southwest Pacific Ocean. (WCPFC-SC9-2013/SA-IP-03)
- Catch and standardized CPUE of the blue shark by Taiwanese large-scale longline fishery in the North Pacific Ocean. (ISC/13/SHARKWG-1/07)
- Catch and abundance index of the blue shark by Taiwanese small-scale longline fishery in the North Pacific Ocean. (ISC/13/SHARKWG-1/08)
- Estimate of the intrinsic rate population increase for the blue shark in the North Pacific. (ISC/13/SHARKWG-2/04)

— Updated historical catches and standardized CPUE series of blue shark by Taiwanese tuna longline fisheries in the North Pacific Ocean. (ISC/13/SHARKWG-2/05)
— Updated estimation of catch and CPUE of the blue shark in Taiwanese large-scale longline fishery.(ISC/13/SHARKWG-2/06)
— Estimate of intrinsic population increase rate for the blue shark in the North Pacific. (ISC/13/SHARKWG-2/07)
— Development of Taiwanese albacore-targeting longline fisheries in the North Pacific Ocean, 1995-2010.(ISC/13/ALBWG-01/16)
— Taiwanese albacore-targeting longline fisheries in the North Pacific Ocean, 1995-2011(ISC/13/ALBWG-3/01)
— Standardizing catch and effort data of the Taiwanese distant-water tuna longline fishery for blue marlin (*Makaira nigricans*) in the Pacific Ocean, 1967-2011. (ISC/13/BILLWG-1/09)
— Sex-specific growth parameters and natural mortality rates of blue marlin (*Makaira nigricans*) in the northwest Pacific Ocean. (ISC/13/BILLWG-1/10)
— Vertical and horizontal movements of blue marlin in the northwestern Pacific Ocean determined using pop-up satellite tags. (ISC/13/BILLWG-2/03)
— Stock assessment of blue marlin (*Makaira nigricans*) in the Pacific Ocean using an age-structured model.(ISC/13/BILLWG-2/07)
— Model selection uncertainty and multi-model inferece in the generalized fishery production modeling: simulation study of the Pacific blue marlin stock. (ISC/13/BILLWG-2/10)
— Updated and revised historical catch and standardized CPUE series of the blue shark by Taiwanese large-scale tuna longline fisheries in the North Pacific Ocean.(ISC/14/SHARKWG-1/07)
— A comparison study of North Pacific albacore (*Thunnus alalunga*) age and growth among various sources (ISC/14/ALBWG/04)
— Albacore catch statistics of Taiwanese longline fisheries operated in the North Pacific Ocean, 1995-2011, and preliminary estimates for the year of 2012.(ISC/14/ALBWG/05)
— Standardized CPUE of swordfish (Xiphias gladius) for the Taiwanese distant-water tuna longline fishery, based on a two-stock scenario in the North Pacific. (ISC/14/BILLWG-1/07)
— Catch estimates of swordfish (Xiphias gladius) for the WCNPO and EPO stocks from the Taiwanese fisheries. (ISC/14/BILLWG-1/09)

— Standardized Catch Per Unit Effort of Pacific Bluefin Tuna (*Thunnus orientalis*) by General Linear Model for Taiwanese Small-Scale Longline Fishery in the Southwestern North Pacific Ocean. (ISC/14/PBFWG-1/01)
— Updates of Input Data for Stock Assessment Model, Stock Synthesis 3, on Pacific Bluefin Tuna. (ISC/14/PBFWG-1/05)

The scientific papers published on scientific journal during 2013 to 2014 were as follows:

— Chang, S. K. and T. L. Yuan. 2014. Deriving high-resolution spatiotemporal fishing effort of large-scale longline fishery from vessel monitoring system (VMS) data and validated by observer data. Canadian Journal of Fisheries and Aquatic Sciences (Accepted on 18 May 2014).
— Wang, C. H. and S. B. Wang. 2012. Species and global change-Assessing the extinction point of albacore stocks. Natural Science. 4(7): 419-422.
— Tsai, W. P., C. P. Chin, and K. M. Liu. 2013. Estimate the intrinsic population growth rate of the blue shark in the North Pacific using demographic analysis. Journal of the Fisheries Society of Taiwan 40(4): (In press).
— Tsai, W. P., C. L. Sun., A. E. Punt, and K. M. Liu 2014. Demographic analysis of the shortfin mako shark, *Isurus oxyrinchus*, in the Northwestern Pacific using a two-sex stage-based matrix model. ICES Journal of Marine Science. doi: 10.1093/icesjms/fsu056. (In press).
— Weng, J. S., M. K. Hung, C. C. Lai, L. J. Wu, M. A. Lee, and K. M. Liu. 2013. Fine-scale vertical and horizontal movements of juvenile yellowfin tuna (*Thunnus albacares*) associated with subsurface fish aggregating device (FAD) off southwestern Taiwan. Journal of Applied Ichthyology 29 (5): 990-1000.
— Tsai, W. P., C. L. Sun, K. M. Liu, and S. B. Wang. 2014. Standardization of CPUE series and catch estimate of the blue shark by Taiwanese large-scale tuna longline fishery in the North Pacific Ocean. Journal of Marine Science and Technology, Vol. 21, Suppl, pp. 23-30.
— Wang, S. P., M. N. Maunder and A. Aires-da-Silva. 2014. Selectivity's distortion of the production function and its influence on management advice from surplus production models. Fisheries Research, 158: 181-193.
— Wang, S. P., M. N. Maunder, K. R. Piner, A. Aires-da-Silva and H. H. Lee. 2014. Evaluation of virgin recruitment profiling as a diagnostic for selectivity curve structure in integrated stock assessment models. Fisheries Research, 158: 158-164.

2.3 Statistics data collection system in use

Logbooks of LTLL, STLL and DWPS fishing vessels authorized to operate in WCPFC Convention Area are collected while calling port or transshipping. All fleets are required to submit catch reports periodically while fishing: fishing vessels of LTLL and DWPS report weekly and the STLL fishing vessels operating outside of our EEZ report monthly.

In addition, the fishing vessels and the fish traders have to report the trade and transshipment data. Market State data on LTLL are collected from the Organization for the Promotion of Responsible Tuna Fishery (OPRT) and from fish traders at foreign ports; as to the landing of STLL fishery in foreign ports, information on the fishing activities of the fishery was obtained from port States trading companies and such information together with available commercial trade data was used for the catch estimation.

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

2.4.1 Longline fisheries

The logbook is the main data source of catch and effort for all species, supplemented by trade data. The size data of all species is mainly from the first 30 fish caught for each setting recorded on logbook. A port-sampling program conducted in domestic ports aims at collecting the length data of tuna and tuna-like catch. The observer program has been collecting size data for all species. The coverage has gradually increased. These data have already been used and reported in some researches.

2.4.2 DWPS fishery

The logbook is the source of catch and effort data. Trade data has been collected for estimating the catch composition of bigeye tuna and yellowfin tuna. Length data was collected from fishing vessels. To strengthen length data collection of DWPS fishery, the fishing fleet started collecting length data from December, 2013. Ten fishes, mainly skipjack and tuna species, are measured the fork length randomly per set.

3. Implementation of Conservation and Management Measure

3.1 CMM 2005-03

In accordance with CMM 2005-03, 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 2013, the total catch of north Pacific albacore made by our fishing fleet was 4,427 MT with 2,626 MT in the north Convention area, and 22 LTLL vessels directed at albacore in the North Pacific Ocean with 2,108 fishing days; 1,273 days was deployed in the north Convention area.

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 2009-2013 is shown in Table 7. None of our fishing vessel targets on striped marlin.

3.3 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.

3.4 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 2013.

3.5 CMM 2010-05

In accordance with CMM 2010-05, CCMs shall report annually to the Commission the catch levels of their fishing vessels that have taken South Pacific Albacore as a bycatch as well as the number and catch levels of vessels actively fishing for South Pacific albacore in the Convention area south of 20°S. The catch of South Pacific albacore in the convention area south of 20°s during the period 2006-2013 and the number of longline vessels fishing are shown in Table 10.

3.6 CMM 2010-07

In accordance with CMM 2010-07, each CCM shall include key shark species, as identified by the Scientific Committee, in their annual reporting to the Commission of annual catch and fishing effort statistics by gear type, including available historical data, in accordance with the WCPF Convention and agreed reporting procedures. The total catch of key shark species of 3 Taiwanese fishing fleets in 2013 shows in Table 5.

3.7 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. In 2013, those instances already related in last paragraph of section 1.4.

3.8 CMM 2011-04

In accordance with CMM 2011-04, each CCM shall estimate, through data collected from observer programs and other means, the number of releases of oceanic whitetip shark, including the status upon release (dead or alive), and report this information to the WCPFC in Part 1 of their Annual Reports. In 2013, our observers recorded 39 discards (dead) and 50 releases (alive) of oceanic whitetip shark in the WCPFC Convention Area. Therefore, it is estimated that there were totally 4,860 oceanic whitetip shark released (1,855 alive and 3,005 dead) in the WCPFC Convention Area in 2013.

3.9 CMM 2012-07

In accordance with CMM 2012-07, 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, including mitigation used, observed and reported species specific seabird bycatch rates and numbers, to enable the Scientific Committee to estimate seabird mortality in all fisheries to which the WCPFC Convention applies. Taiwan Fisheries Agency has required fishermen and industries to take appropriate measures to mitigate incidental catch of seabirds. Fishing vessels operated in WCPFC Convention designated area are required to employ 2 tori lines to mitigate seabirds catch incidentally. For this purpose Also, 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 is shown in Table 11-14.

Table 1. The number of fishing vessel by fishery in the WCPFC Convention Area during 2009-2013.

	LTLL	DWPS	STLL
2009	75	32	1,220
2010	90	34	1,235
2011	95	34	1,376
2012	87	34	1,326
2013	82	34	1,296

Table 2. The catch (in MT, round weight) of major tuna and tuna-like species of LTLL fishery in the WCPFC Convention Area during 2009-2013.

	N-ALB	S-ALB	BET	YFT	SWO	MLS	BUM	BLM	SKJ	TOTAL
2009	1,861	3,697	8,863	3,111	1,278	187	1111	12	506	20,626
2010	1,952	5,831	8,000	3,569	1,339	239	1,269	61	104	22,364
2011	2,818	4,121	6,579	3,167	1,554	257	1,166	22	155	19,839
2012	1,592	4,064	5,770	2,059	1,319	249	975	7	214	16,249
2013*	2,035	4,498	5,486	1,441	1,386	222	934	1	179	16,182

* Preliminary estimate

Table 3. The catch (in MT, round weight) of major tuna species of DWPS fishery in the WCPFC Convention Area during 2009-2013.

	SKJ	YFT	BET	Total
2009	173,725	16,237	2,113	192,075
2010	166,211	29,203	3,437	198,851
2011	155,641	18,143	2,151	175,935
2012	172,664	25,750	2,239	200,653
2013*	186,330	22,659	3,491	212,480

* Preliminary estimate

Table 4. The catch (in MT, round weight) of tuna and tuna-like species of the STLL fishery in WCPFC Convention Area during 2009-2013.

	ALB	BET	YFT	PBF	SWO	BILL
2009	8,288	4,456	16,582	877	3,261	6,117
2010	12,652	3,874	18,656	373	2,740	7,861
2011	9,276	4,696	18,153	292	3,239	7,046
2012	8,505	5,224	14,889	210	3,430	6,430
2013*	10,870	5,114	13,558	331	2,932	7,337

* Preliminary estimate

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

Table 5. The catches (in MT, round weight) of key shark species* of LTLL, STLL and DWPS fisheries in the WCPFC Convention Area in 2013 (preliminary estimate).

	BSH	FAL	MAK		OCS	PTH	BTH	ALV	SPZ	SPL	SPK	EUB	POR	SHK
			SMA	LMA										
LTLL	1295	483	282	0.04	0	6	2	0	0.02	0	0	0	0	29
STLL	8170	74	622		0	400	450	0	81	292	0	0	0	3103
DWPS**	0	21.5	0	0	0	0.2	0	0.1	0	0	0	0	0	12

* The government has prohibited all vessels from retaining on board, transshipping, storing on a fishing vessel, or landing any whale sharks since 2008. Therefore, the table does not include the whale shark.

** FAL, ALV & PTH: discards

Table 6. The observation trips of LTLL, STLL and DWPS fisheries in the Pacific Ocean during 2009-2013.

	LTLL	STLL	DWPS
2009	22	-	-*
2010	17	-	-**
2011	15	-	-**
2012	20	12	-**
2013	15	15	-**

* In accordance with CMM 2008-01, the coverage of observers for DWPS had reached 100% during July and September of 2009

** The coverage of observers for DWPS has reached 100%.

Table 7. The catch of striped marlin in the area of south of 15°S during 2009-2013.

Year	Catch (MT)
2009	95
2010	138
2011	132
2012	82
2013*	64

* Preliminary estimate

Table 8. The catch of swordfish and the number of the fishing vessel in the area of south of 20°S during 2000-2013.

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	72

* Preliminary estimate

Table 9. The transshipment information in 2013. UNIT: MT

Offloaded / Received	Location of transshipment	Area of transshipment	Product Form	Area of Catch	Gear Type	Number of Transhipments	BET	ALB	YFT	SKJ	SWO	BUM	MLS	SKX	OTH
Offloaded	high sea	WCPFC area	Frozen	catch in WCPFC area	Longliner	107	4,387	1,418	748	0	769	358	234	425	636
				catch in other Pacific			989	264	31	0	170	62	16	36	79
		other Pacific		catch in WCPFC area		30	315	338	131	0	40	90	10	101	172
	port	WCPFC area		catch in WCPFC area		783	3,643	7,971	3,693	0	579	911	442	1,048	1,742
				catch in other Pacific			429	511	39	0	52	24	6	6	67
				catch in EEZ of WCPFC member	tuna purse seiner	229	1,544	0	17,388	159,856	0	0	0	0	0

Table 10. The catch of south Pacific albacore and the number of fishing vessel in the area of south of 20°S during 2006-2013.

Year	Catch (MT)	Number of fishing vessel	
		LTLL	STLL
2006	5,042	31	26
2007	4,605	19	30
2008	1,907	17	36
2009	3,372	22	31
2010	4,352	19	25
2011	3,978	30	39
2012	2,854	28	29
2013*	5,160	21	52

* Preliminary estimate

Table 11. Fishing effort, observed effort and seabird bycatch information of longline fishery in the area of south of 30°S during 2009-2013.

Year	Fishing effort				Observed seabird bycatch	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Bycatch rate
2009	23	3248476	1126840	34.7%	7	0.006
2010	23	3520686	270974	7.7%	0	0.000
2011	32	2678483	564642	21.1%	124	0.220
2012	27	3726172	998719	26.8%	8	0.008
2013*	22	3254725	1006432	30.9%	7	0.007

* Preliminary

Table 12. Fishing effort, observed effort and seabird bycatch information of longline fishery in the area of north of 23°N during 2009-2013

Year	Fishing effort				Observed seabird bycatch	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Bycatch rate
2009	456	65002329	162404	0.2%	2	0.012
2010	428	41458705	0	0.0%	0	-
2011	465	64460898	3000	0.0%	0	0.000
2012	430	37607241	128540	0.3%	3	0.023
2013*	358	17065033	306204	1.8%	3	0.010

* Preliminary

Table 13. Fishing effort, observed effort and seabird bycatch information of longline fishery in the area of 23°N - 30°S during 2009-2013..

Year	Fishing effort				Observed seabird bycatch	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Bycatch rate
2009	946	233712964	2302236	1.0%	4	0.002
2010	880	230406268	3097325	1.3%	0	0.000
2011	892	253889416	3198976	1.3%	3	0.001
2012	884	231277695	4449362	1.9%	5	0.001
2013	815	223439373	3947142	1.8%	3	0.001

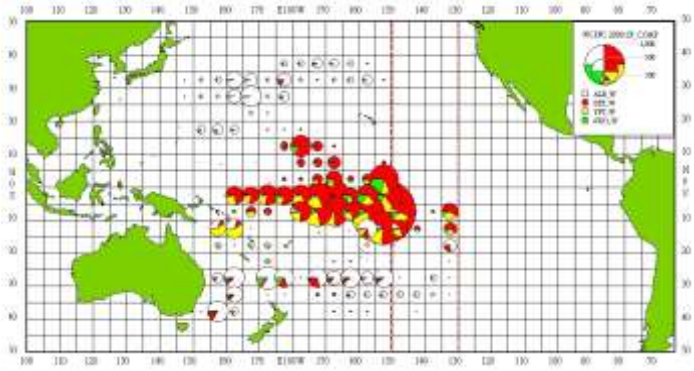
* Preliminary

Table 14: Number of observed seabird bycatch of longline fisheriy by species and area during 2009-2013..

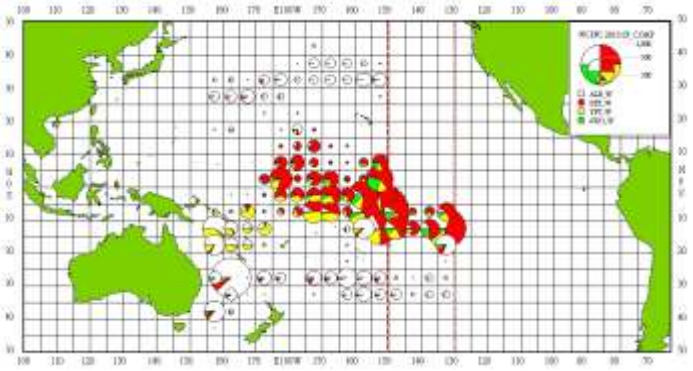
Year	Species	South of 30˚S	North of 23˚N	23˚N - 30˚S
2009	Unidentified albatross	4	2	1
	Unidentified seabirds	3		3
	Total	7	2	4
2010	-			
2011	Black-browed albatross	1		
	Buller's albatross	1		
	Wandering albatross	10		
	Unidentified albatross	98		
	Flesh-footed shearwater	6		
	Tropical shearwater			1
	Wedge-tailed shearwater	2		
	Black petrel	1		
	White-chinned petrel	4		
	Brown booby			2
	Unidentified seabirds	1		
	Total	124	0	3
2012	Black-footed albatross		2	
	Campbell albatros	1		
	Wandering albatross	2		
	Unidentified albatross	5	1	
	Frigatebird			4
	Masked booby			1
	Total	8	3	5
2013*	Black-footed albatross		2	
	Gray-headed albatross	1		
	Wandering albatross	1		
	Unidentified albatross	3	1	3
	Southern giant petrel	1		
	White-chinned petrel	1		
	Total	7	3	3

* Preliminary

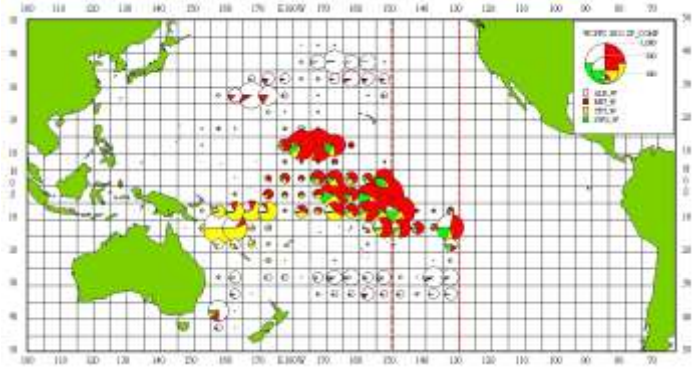
2009



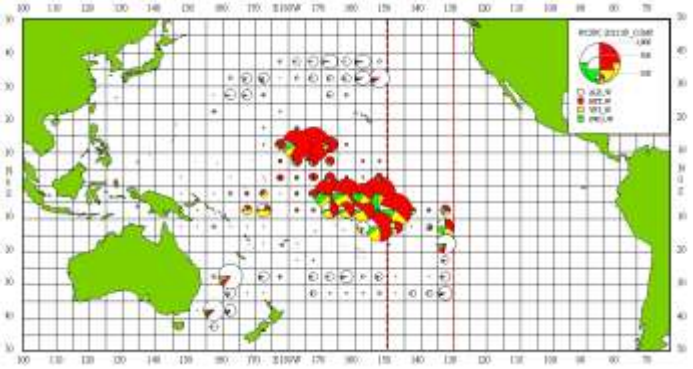
2010



2011



2012* preliminary



2013* preliminary

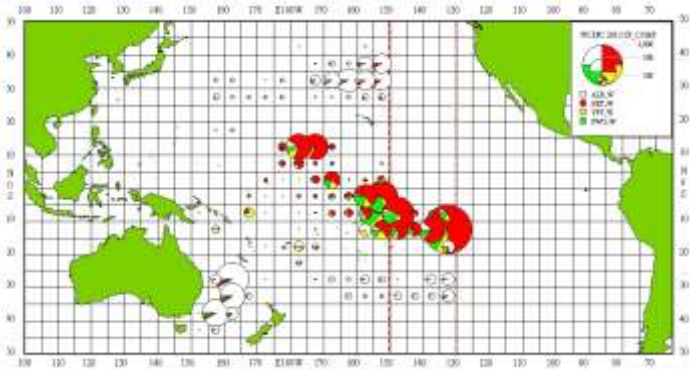


Figure 1. The catch composition distributions of tuna and tuna-like species of LTLL fishery during 2009-2013.

The figures of 2012 and 2013 are still in preliminary.

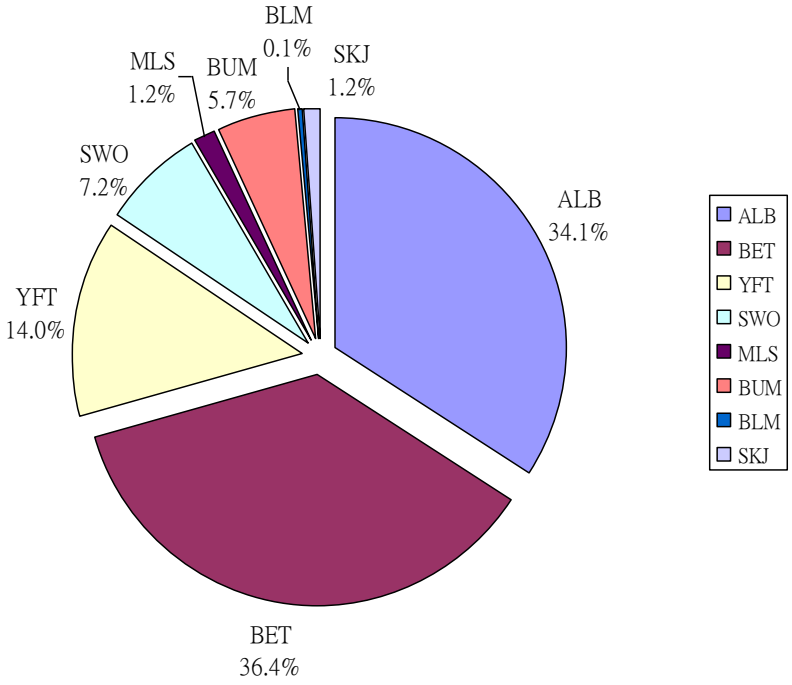


Figure 2. Mean catch percentage of major tuna and tuna-like species of LTLL fishery in the WCPFC Convention area during 2009-2013.

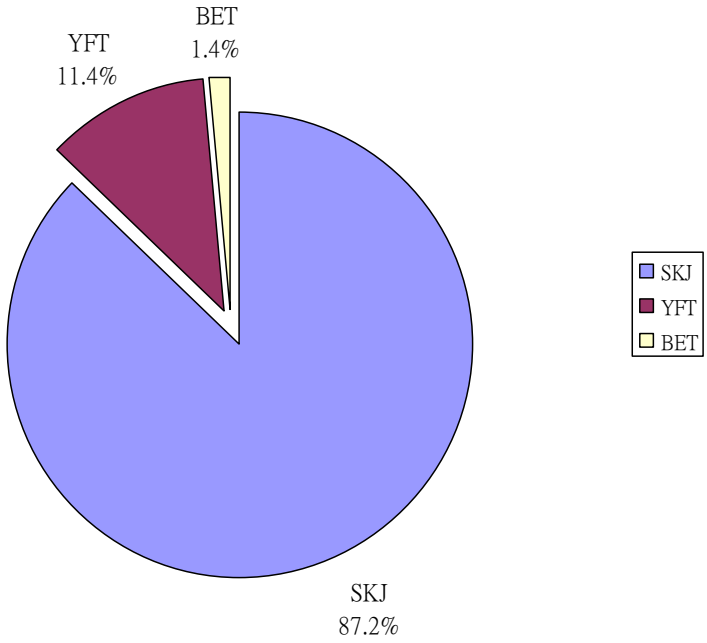


Figure 3. Mean catch percentage of major tuna and tuna-like species of DWPS fishery in the WCPFC Convention area during 2009-2013.

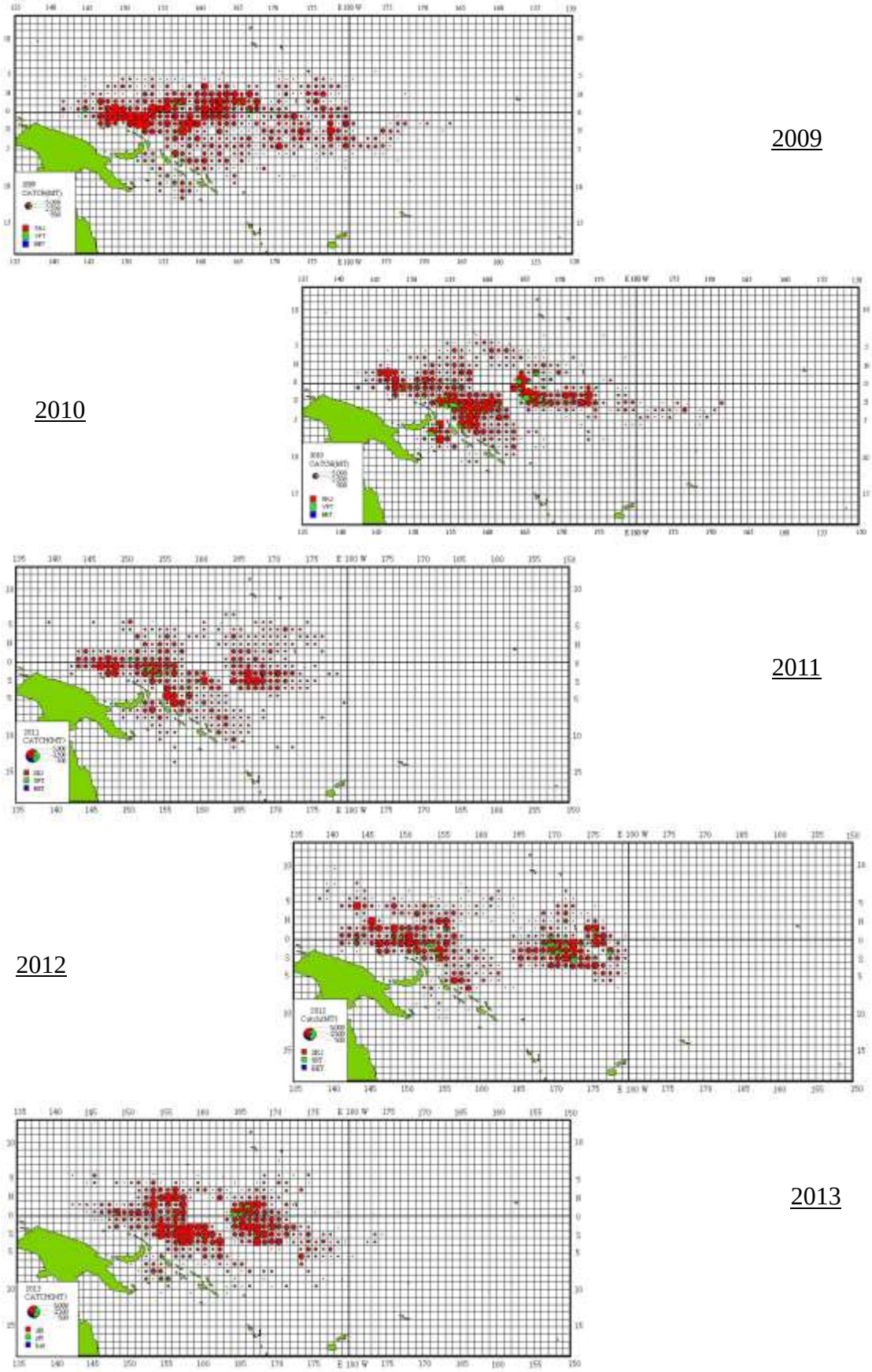
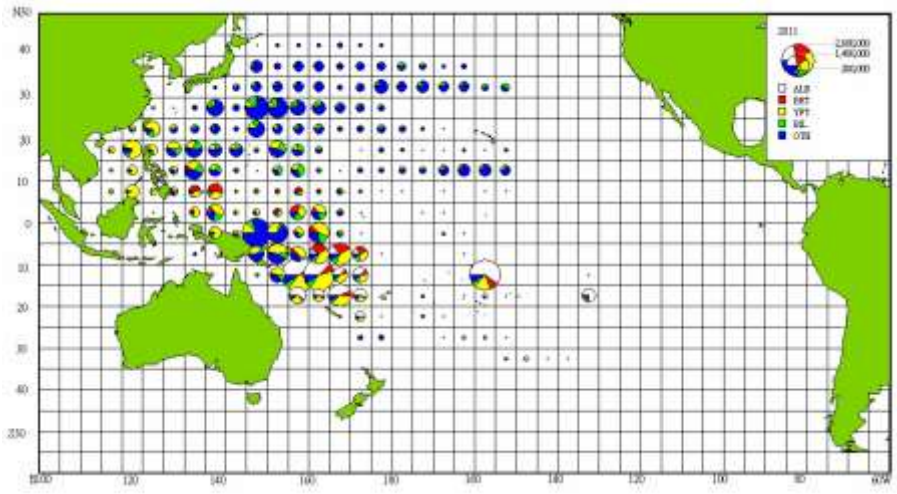
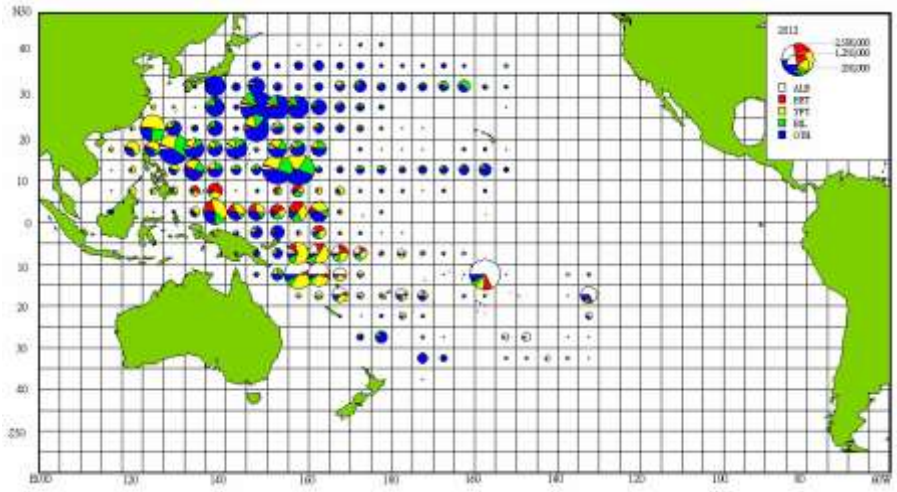


Figure 4. The catch composition distributions of DWPS fleet during 2009-2013.

2011



2012* preliminary



2013* preliminary

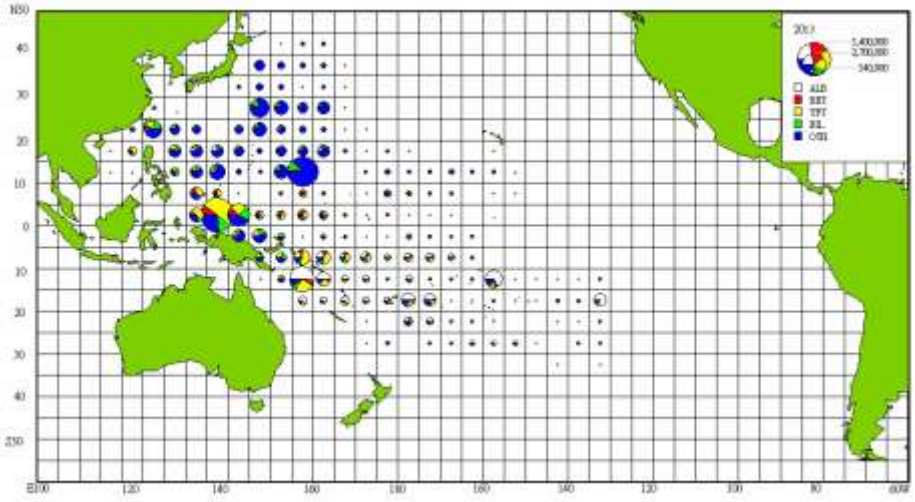
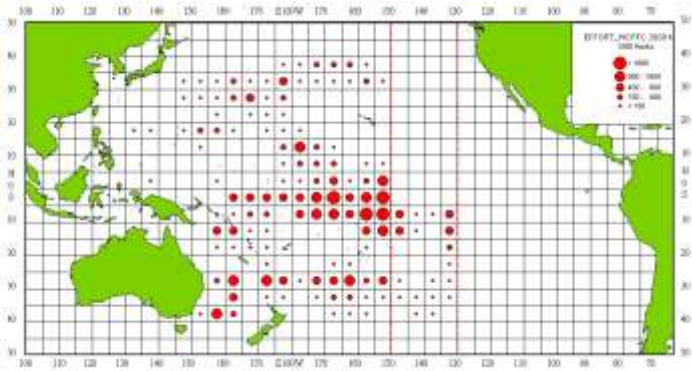
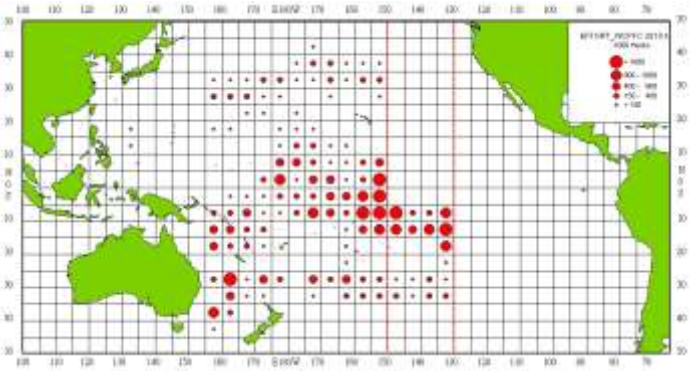


Figure 5. The catch composition distributions of tuna and tuna-like species of STLL fishery during 2011-2013. The figures of 2012 and 2013 are still in preliminary.

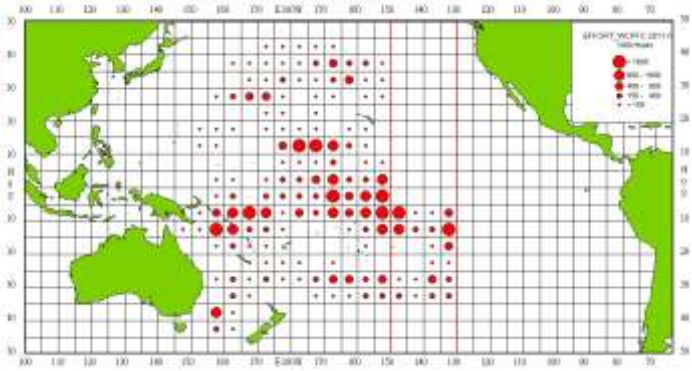
2009



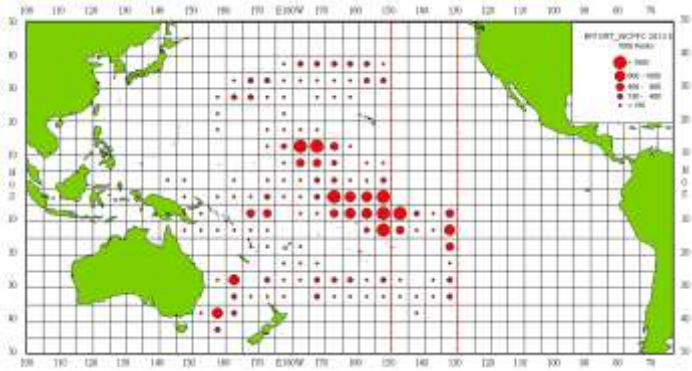
2010



2011



2012* preliminary



2013* preliminary

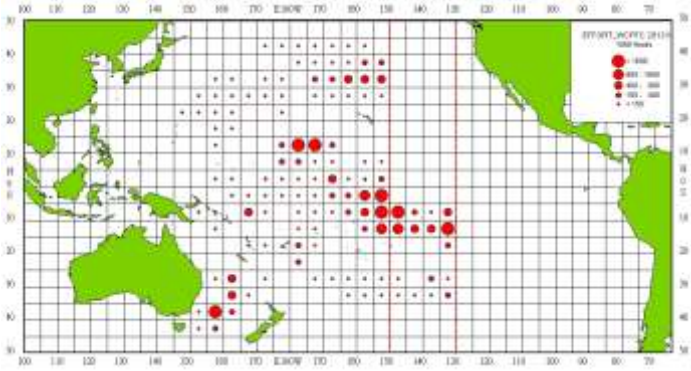
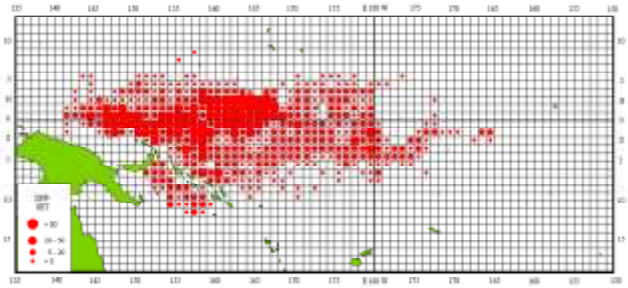
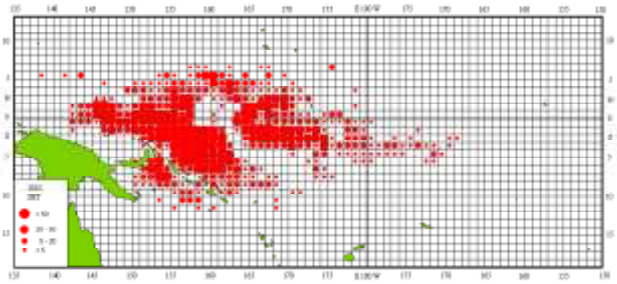


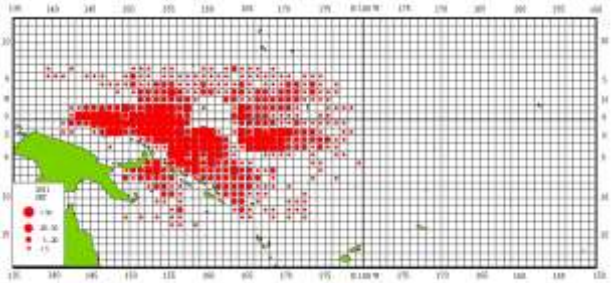
Figure 6. The effort distributions of LTLL fishery during 2009-2013. The figures of 2012 and 2013 are still in preliminary.



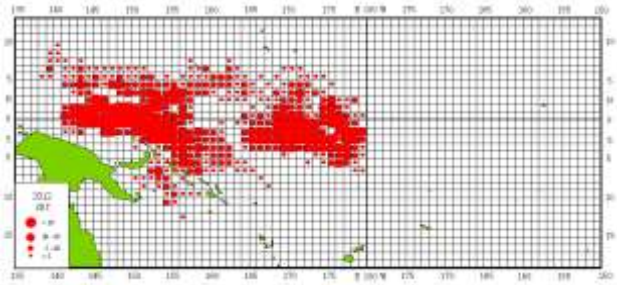
2009



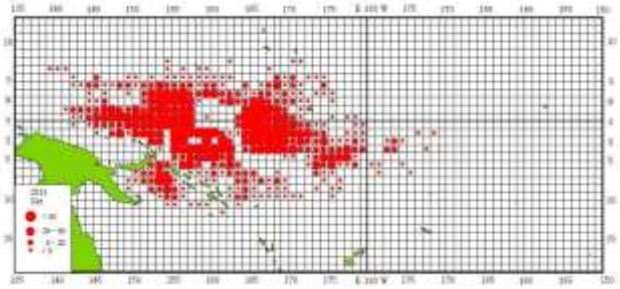
2010



2011



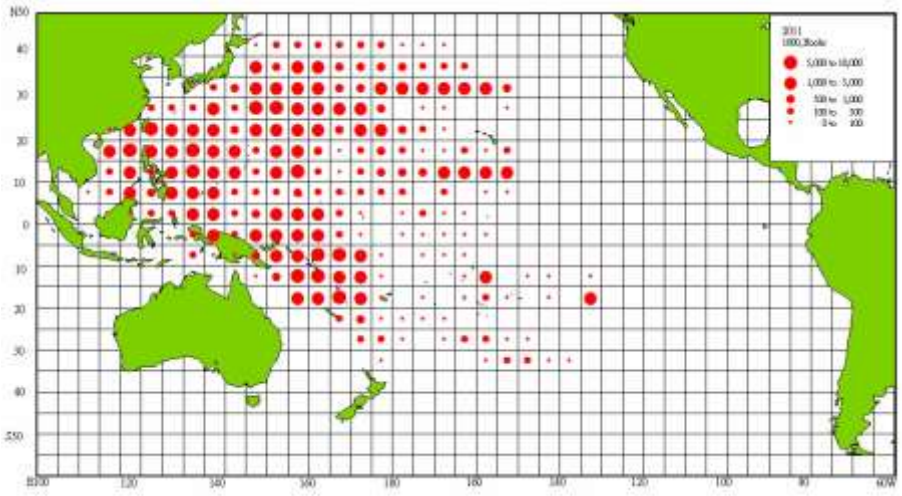
2012



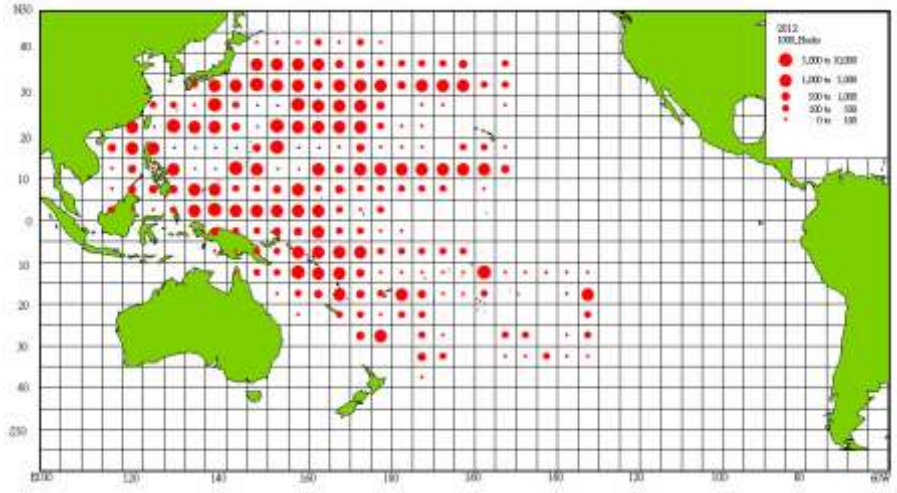
2013

Figure 7. The effort distributions of DWPS fleet during 2009-2013.

2011



2012* preliminary



2013* preliminary

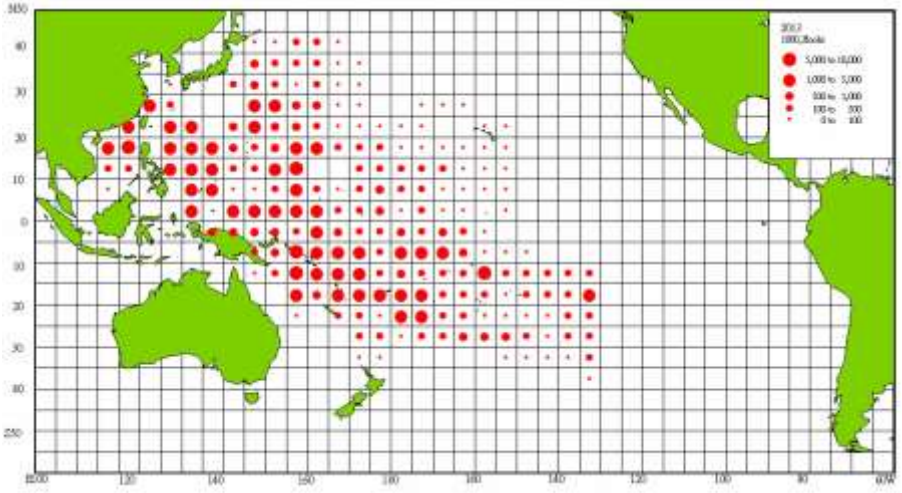


Figure 8. The effort distributions of STLL fishery during 2011-2013. The figures of 2012 and 2013 are still in preliminary.