

Tunas Unloading in Phuket, Thailand During 1995-2007

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SUMMARY

Both of unloaded tuna from longline and purse seine fisheries are examined in term of effort, catch and value, species composition, catch production categorized by flag countries, size of fish as well as the relevance information and activity of port sampling and sampling size. The objective of this study is to follow up the data on tuna fisheries in the Indian Ocean, thus the available data at first from the beginning of tuna longliners unloading in Phuket until the year of 2007 and the data of tuna purse seiners unloading in Phuket during 2003 to August 2008 are described in this paper. Besides the conclusion with the progression on improvement of the port sampling and monitoring currently in place, the encounter problems and recommendation are included.

INTRODUCTION

Tuna fisheries in the Indian Ocean took off in 1973 when the French, Russian, Japanese and Taiwanese fleets commenced their longline, purse seine and pole-and-line fisheries. The Taiwanese, Chinese and Indonesian fleets have well developed longline fishing techniques in the Eastern Indian Ocean. Large size of tuna caught by longliners is high value thus highly profitable, because its meat is suitable for premium sashimi which is high demand in the Japanese raw fish markets. The tuna longliners landed in Singapore, Malaysia and Indonesia until 1994, after then, tuna catch production were unloaded at the Phuket fishing port which has well-developed infrastructures such as the landing port, processing plant, as well as the facility of international airport. While the tuna purse seiners landed in Phuket for supplying tuna canning factories industrial in Thailand.

MATERIALS AND METHODS

For longliner landing survey, port-samplings were conducted monthly at the Phuket fishing port to collect data of tuna, tuna-like and by-catch species: e.g., landing catch (metric ton, mt), effort (number of trips), fishes were randomly to be measured the individual body weight (kg) and fork length (FL) pectoral-dorsal length (PDL) and pre-dorsal length (LD1) were conducted.

For purse seiners landing survey, the fishing master were interviewed as well as logbook were asked for to acquire the data of catch (metric ton, mt), effort (number of operating sets), fishing ground and etc. Port-sampling were conducted to measure the individual body weight, folk length (FL) and pre-dorsal length (LD1) (cm).

The unloaded quantity and value of fish from each vessel was varified with the data from customs office in Phuket.

RESULT AND DISCUSSION

1. Fresh Tuna Longliners

The fishing effort increased steadily from 187 trips in 1995 to the peak of 883 trips in 1999, after then it fluctuated in narrow scope and continuously decreased into 494 trips in 2007. The whole figure of total landing catch during 1995 to 2007 showed the increasing trend (1,415 to 6,477 mts) although it showed some distinct decreased in between, which decreased from 4,373 mts in 1999 to 3,118 mts in 2000 and decreased from 5,953 in 2005 to 4,853 mts in 2006. The CPUE decreased opposite with the total landing catch and the fishing effort during 1995 to 1996 (from 8 into 5 mts/trip) after then it's steady until 2001 and increased continuously into 13 mts in 2007 (Figure 1 and 2). In the current climate (since July 2003 to 2007), due to fuel crisis, the longliners reduced their cost by transshipment at sea, so their catch was carried by other fishing boats which landed before the fishing vessel, for this reason the fishing vessel could stay and fish longer at sea.

The main species composition were yellowfin tuna (YFT), bigeye tuna (BET), bill fish (BILLs) (*Makaira* spp., *Tetrapturus* spp, *Istiophorus* spp.) and swordfish (SWO) with the average composition 59 26 7 and 5% of total landing respectively, while miscellaneous species (MCS) (Sharks, *Lepidocybium* spp., *Coryphaena* spp., *Thunnus alalunga*, *Molar* spp., *Ruretlus pretiosus*, *Sphyraena* spp. and *Taractichtis* spp.) contributed 3% of the total landing during 1995 to 2007. The total landing of yellowfin tuna, bigeye tuna, bill fish and swordfish in 2007 were 4,413 748 533 and 103 mts, respectively (Figure 3). Taking in to account of the percentage of each species, the percentage of yellowfin tuna fluctuated during 1995 to 2002 with the peak of 80.8% of total landing catch in 1998, while the percentage of bigeye tuna fluctuated opposite with yellowfin tuna during 1995 to 2002 with the peak of 49.7% of total landing catch in 2002, after then, it continued downward trend to 10.5% of total landing in 2007. It was to be remarked that the declaration of sharks were disappear since 2000 while the miscellaneous fish was declared as frozen mixed fish and indicated more significant. In 2007, the frozen mixed fish accounted 10.5% of the total landing catch (Figure 4 and Table 1).

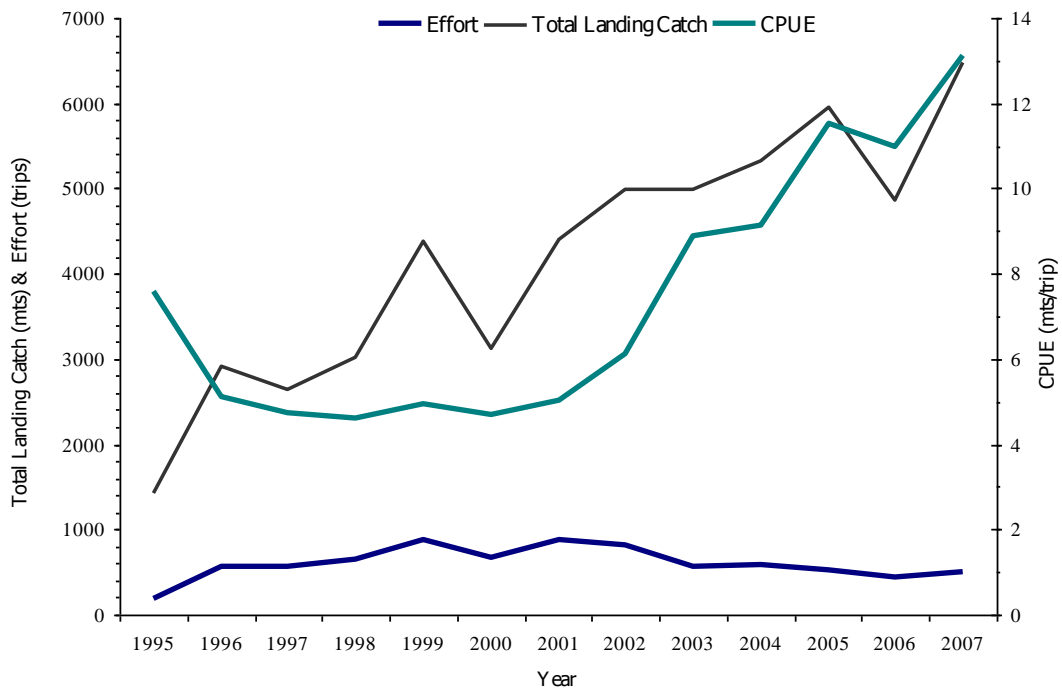


Figure 1 Change of fishing effort, total landing catch (mts), and CPUE (mts/trip) of longliner from 1995 to 2007.

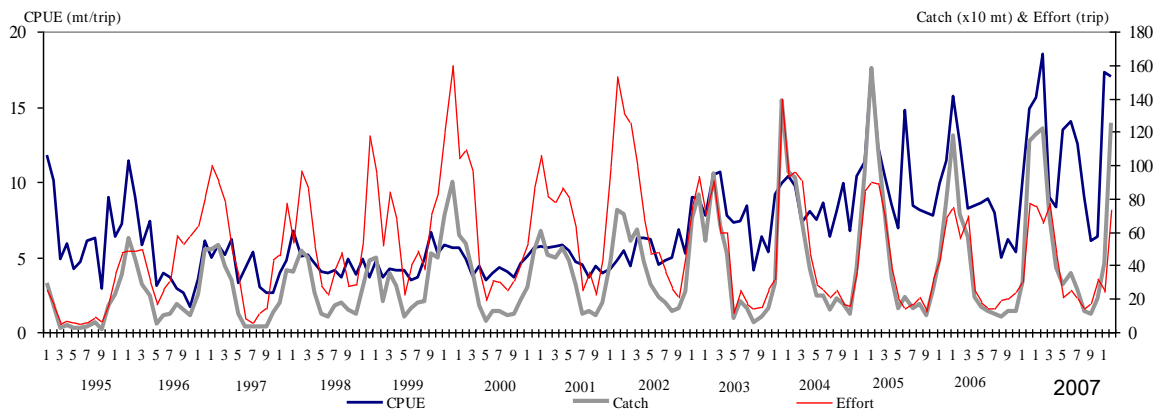


Figure 2 Changes of CPUE (mts/trip), total landing catch (mts) and fishing effort (trip) of longline fleets from 1995 to 2007.

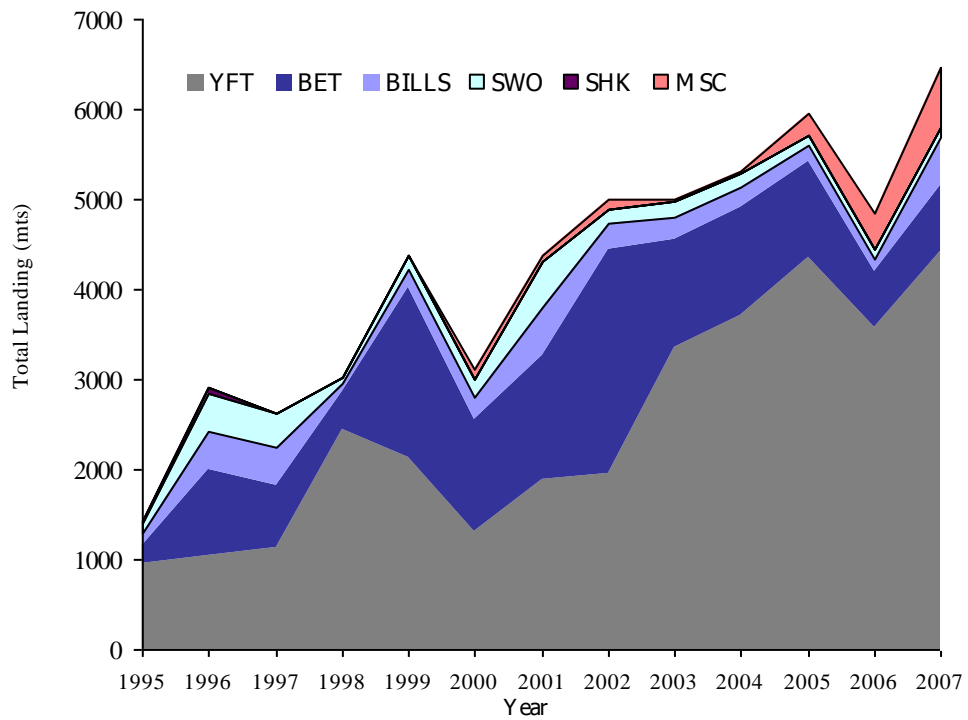


Figure 3 Total landing catch from longliners categorized by species, during 1995 to 2007.

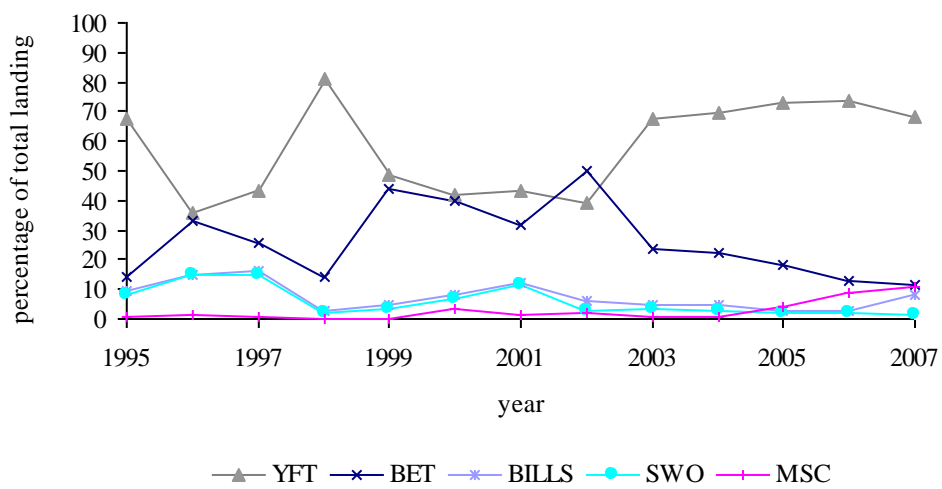


Figure 4 Total landing catch from longliner categorized by species, during 1995 to 2007.

Table 1 Fishing effort (no. of trip), catch (mt) and CPUE (mt/trip) by longliner landed at Phuket from 1995 to 2007.

Year	Month	Effort	Total	YFT	BET	BILLs	SWO	SHK	MSC	CPUE
1995	Jan	25	295	204	43	29	20	0	-	11.81
	Feb	16	161	133	2	13	13	0	-	10.07
	Mar	5	24	20	1	2	1	0	-	4.84
	Apr	7	41	33	3	3	2	0	-	5.88
	May	6	25	20	1	2	2	0	-	4.18
	Jun	5	23	17	3	1	2	0	-	4.71
	Jul	6	36	21	7	3	5	0	-	6.08
	Aug	9	57	38	5	8	6	0	-	6.29
	Sep	7	21	11	1	6	3	0	-	2.94
	Oct	18	161	136	14	6	5	0	-	8.95
	Nov	35	223	149	22	25	22	5	-	6.38
	Dec	48	348	176	98	35	31	8	-	7.24
	Total	187	1,415	958	200	133	113	13	-	7.57
1996	Jan	49	561	201	270	35	45	10	-	11.44
	Feb	49	439	161	172	39	50	17	-	8.96
	Mar	50	287	144	79	31	28	5	-	5.75
	Apr	30	221	65	102	26	22	6	-	7.35
	May	17	53	35	7	7	3	1	-	3.11
	Jun	26	103	55	22	8	18	0	-	3.92
	Jul	31	111	71	10	24	6	0	-	3.62
	Aug	58	167	87	44	28	8	0	-	2.89
	Sep	53	138	31	32	23	52	0	-	2.58
	Oct	58	100	41	12	17	20	10	-	1.72
	Nov	64	226	39	83	50	54	0	-	3.54
	Dec	82	497	108	132	138	119	0	-	6.06
	Total	567	2,903	1,038	965	426	425	49	-	5.12
1997	Jan	100	499	192	73	123	111	0	-	5.00
	Feb	90	522	202	143	91	86	0	-	5.80
	Mar	77	394	135	119	77	63	0	-	5.11
	Apr	50	309	88	91	66	64	0	-	6.17
	May	34	110	59	42	3	6	0	-	3.24
	Jun	8	34	21	11	2	0	0	-	4.17
	Jul	6	32	20	6	4	2	0	-	5.37
	Aug	12	35	21	11	3	0	0	-	2.96
	Sep	14	37	14	18	2	3	0	-	2.58
	Oct	44	114	76	15	14	8	1	-	2.59
	Nov	46	179	129	25	9	16	0	-	3.91
	Dec	77	367	181	122	31	24	9	-	4.77
	Total	558	2,632	1,138	676	425	383	10	-	4.72

Table 1 Cont.

Year	Month	Effort	Total	YFT	BET	BILLs	SWO	SHK	MSC	CPUE
1998	Jan	54	362	231	118	9	3	1	-	6.70
	Feb	97	492	271	194	21	6	0	-	5.07
	Mar	86	445	408	22	11	4	0	-	5.17
	Apr	51	232	195	28	6	3	0	-	4.54
	May	28	113	103	8	1	1	0	-	4.01
	Jun	23	90	86	3	0	1	0	-	3.92
	Jul	38	156	148	8	0	0	0	-	4.14
	Aug	48	177	163	11	2	1	0	-	3.69
	Sep	28	137	110	5	8	14	0	-	4.87
	Oct	29	109	82	2	7	18	0	-	3.80
	Nov	55	269	238	10	14	7	0	-	4.89
	Dec	118	433	400	23	5	5	0	-	3.67
	Total	655	3,015	2,435	432	84	63	1	-	4.60
1999	Jan	95	449	265	182	1	2	0	-	4.73
	Feb	52	189	125	56	4	4	1	-	3.64
	Mar	84	357	262	94	0	0	0	-	4.25
	Apr	67	276	200	75	0	0	0	-	4.12
	May	23	94	51	35	7	0	0	-	4.08
	Jun	40	140	43	91	5	2	0	-	3.49
	Jul	49	179	18	155	0	6	0	-	3.65
	Aug	38	183	48	119	16	0	0	-	4.82
	Sep	71	474	282	145	26	20	0	-	6.67
	Oct	84	442	174	196	36	35	0	-	5.26
	Nov	120	695	231	369	54	41	0	-	5.79
	Dec	160	896	425	391	51	30	0	-	5.60
	Total	883	4,373	2,124	1,909	200	140	1	-	4.95
2000	Jan	104	583	176	360	29	18	-	0	5.60
	Feb	109	531	230	257	27	17	-	0	4.87
	Mar	96	358	97	244	8	8	-	1	3.73
	Apr	37	162	67	70	14	8	-	3	4.38
	May	19	65	18	31	7	4	-	5	3.41
	Jun	31	123	33	43	24	17	-	6	3.95
	Jul	30	128	44	34	15	20	-	15	4.27
	Aug	25	101	44	32	7	8	-	10	4.04
	Sep	31	113	49	27	11	18	-	8	3.65
	Oct	42	192	121	26	17	26	-	2	4.57
	Nov	54	271	128	52	34	29	-	28	5.02
	Dec	87	491	303	68	54	36	-	30	5.64
	Total	665	3,118	1,310	1,244	247	209	-	108	4.69

Table 1 Cont.

Year	Month	Effort	Total	YFT	BET	BILLs	SWO	SHK	MSC	CPUE
2001	Jan	106	602	310	83	82	104	-	23	5.68
	Feb	82	461	243	119	37	61	-	1	5.62
	Mar	78	446	200	129	51	64	-	2	5.72
	Apr	87	503	190	152	74	81	-	6	5.78
	May	80	431	159	148	70	44	-	10	5.39
	Jun	62	287	85	131	26	14	-	6	4.63
	Jul	25	111	42	56	3	6	-	4	4.44
	Aug	36	130	60	45	16	9	-	-	3.61
	Sep	23	100	38	23	11	26	-	2	4.35
	Oct	45	178	53	82	24	12	-	7	3.96
	Nov	99	420	214	127	58	17	-	4	4.24
	Dec	153	728	301	283	79	62	-	3	4.76
	Total	876	4,397	1,895	1,378	531	500	-	68	5.02
2002	Jan	131	710	219	413	39	18	-	21	5.42
	Feb	125	546	244	266	22	14	-	0	4.37
	Mar	99	616	256	318	27	14	-	1	6.22
	Apr	68	423	195	209	12	6	-	1	6.22
	May	47	290	132	139	14	4	-	1	6.17
	Jun	48	213	67	127	17	3	-	0	4.46
	Jul	36	173	31	112	15	7	-	8	4.81
	Aug	26	130	39	64	15	11	-	1	5.00
	Sep	21	143	31	75	9	9	-	19	6.81
	Oct	46	241	67	144	9	8	-	13	5.24
	Nov	76	683	294	282	46	19	-	42	8.99
	Dec	93	828	385	336	71	32	-	4	8.90
	Total	816	4,997	1,960	2,485	296	145	-	111	6.12
2003	Jan	71	550	326	177	28	18	-	1	7.75
	Feb	91	950	674	197	31	29	-	18	10.44
	Mar	60	638	468	109	34	27	-	0	10.63
	Apr	60	467	309	141	7	10	-	0	7.78
	May	12	88	40	40	4	4	-	0	7.33
	Jun	25	185	89	82	9	6	-	0	7.40
	Jul	17	143	55	63	11	6	-	8	8.41
	Aug	14	58	20	31	4	3	-	0	4.14
	Sep	15	96	60	23	8	5	-	0	6.40
	Oct	26	139	52	62	22	3	-	0	5.35
	Nov	32	293	214	32	29	18	-	0	9.16
	Dec	140	1,389	1,053	237	53	46	-	0	9.92
	Total	563	4,996	3,360	1,194	240	175	-	27	8.87

Table 1 Cont.

Year	Month	Effort	Total	YFT	BET	BILLs	SWO	SHK	MSC	CPUE
2004	Jan	93	961	746	150	34	30	-	0	10.33
	Feb	96	929	630	220	39	40	-	0	9.68
	Mar	91	663	473	127	27	36	-	0	7.29
	Apr	47	376	275	70	23	8	-	0	8.00
	May	29	216	154	52	8	2	-	0	7.45
	Jun	25	215	130	57	24	4	-	0	8.60
	Jul	21	133	90	36	4	3	-	0	6.33
	Aug	25	202	110	73	14	5	-	0	8.08
	Sep	17	168	99	58	10	1	-	0	9.88
	Oct	16	108	84	13	9	2	-	0	6.75
	Nov	37	384	246	90	12	12	-	24	10.38
	Dec	85	962	671	251	31	9	-	0	11.32
	Total	582	5,317	3,708	1,197	235	153	-	24	9.14
2005	Jan	90	1,578	1,110	375	53	40	-	0	17.53
	Feb	89	1,094	812	235	21	26	-	0	12.29
	Mar	68	706	543	105	10	2	-	46	10.38
	Apr	39	330	256	59	12	3	-	0	8.46
	May	20	139	96	28	12	2	-	1	6.95
	Jun	14	207	139	63	5	0	-	0	14.79
	Jul	17	143	74	35	4	0	-	30	8.41
	Aug	21	171	79	34	16	18	-	24	8.14
	Sep	13	103	76	22	4	1	-	0	7.92
	Oct	32	249	189	14	6	5	-	35	7.78
	Nov	45	444	358	22	10	5	-	49	9.87
	Dec	69	789	622	85	18	11	-	53	11.43
	Total	517	5,953	4,354	1,077	171	113	-	238	11.51
2006	Jan	75	1,177	916	106	14	4	-	137	15.69
	Feb	56	704	499	130	11	8	-	56	12.57
	Mar	70	576	443	89	15	6	-	23	8.23
	Apr	25	210	136	33	7	5	-	29	8.40
	May	18	155	80	33	2	1	-	39	8.61
	Jun	14	124	63	17	2	2	-	40	8.86
	Jul	14	111	55	10	15	3	-	28	7.93
	Aug	19	95	60	12	13	10	-	0	5.00
	Sep	20	124	58	7	2	5	-	52	6.20
	Oct	24	128	97	13	7	11	-	0	5.33
	Nov	30	305	244	32	16	13	-	0	10.17
	Dec	77	1144	933	136	29	39	-	7	14.86
	Total	442	4,853	3,584	618	133	107	-	411	10.98

Table 1 Cont.

Year	Month	Effort	Total	YFT	BET	BILLs	SWO	SHK	MSC	CPUE
2007	Jan	76	1183	982	107	29	2	-	63	15.57
	Feb	66	1220	840	64	219	23	-	74	18.48
	Mar	77	691	531	72	24	9	-	55	8.97
	Apr	47	390	295	46	24	5	-	20	8.30
	May	21	282	194	28	33	9	-	18	13.43
	Jun	25	350	217	20	17	23	-	73	14.00
	Jul	20	251	132	66	3	1	-	49	12.55
	Aug	14	125	54	5	8	8	-	50	8.93
	Sep	18	109	69	11	6	1	-	22	6.06
	Oct	32	204	148	16	13	3	-	24	6.38
	Nov	24	416	225	36	46	9	-	100	17.33
	Dec	74	1256	726	277	111	10	-	132	16.97
Total		494	6,477	4,413	748	533	103	-	680	13.11

Table 2 presented total landing and effort statistics by each vessel nationality (Taiwanese, Chinese and Indonesian) during January in 2000 to December in 2007. The main fishing fleet still was Taiwanese followed by Indonesian. In January to November of 2003, there were no landing of Chinese longline fleet because some of the fleet resigned the contract and moved back to their own country and some of the remainder vessels were repaired at the dock in Phuket then shifted to operate in the Oman Water. Although the Chinese longliners came back to landing in Phuket again in 2004, after that year there were few and far between of landing. In 2007, the Thai longliner landed for five trips and there was one trip of landing from Vanuatu vessel. Average of landing catch of Taiwanese longliner showed higher than Chinese longliner while average of landing catch of Indonesian longliner was the highest variation (1 to 30.60 mts/trip). Cause of high landing catch of Taiwanese and Indonesian longliners longer of the fishing day, 25 - 35 days and 20 - 25 days, respectively, and the fishing was operated all hours a day while Chinese longliner 's fishing days was approximately 10-20 days and operated either day or night-time.

Figure 4 showed pie graphs of species composition during 2000-2007 from each vessel nationality which yellowfin tuna and bigeye were the main composition. In 2007, the main composition was yellowfin tuna followed by bigeye tuna, billfish and swordfish, respectively. As it was mentioned previously, the unidentified micellaneous species were significant increasing, 12% from Taiwanese, 4% from Indonesian and up to 28% from Thai were unloaded. While there was only bigeye tuna from Vernuatu.

Table 2 Fishing effort (no.of trip), catch (mt) and CPUE (mt/trip) by Taiwanese longliners landed at Phuket Province during January 2000 to December 2007.

Taiwanese									
Year	Month	effort	Total	BET	YFT	BILLs	SWO	MSC	CPUE
2000	Jan	84	484	299	146	24	15	0	5.76
	Feb	86	431	209	187	21	14	0	5.01
	Mar	64	248	167	67	6	7	1	3.87
	Apr	16	84	36	35	8	4	1	5.25
	May	8	29	12	8	5	2	2	3.59
	Jun	15	70	23	23	15	9	0	4.63
	Jul	16	79	21	29	9	11	9	4.94
	Aug	8	41	13	18	3	3	4	5.13
	Sep	12	53	12	22	6	9	4	4.42
	Oct	20	108	11	84	1	11	1	5.40
	Nov	39	223	37	105	30	27	24	5.72
	Dec	71	435	60	277	39	32	27	6.13
	Total		439	2,285	900	1,001	167	144	73
2001	Jan	81	474	64	240	66	86	18	5.85
	Feb	64	352	99	177	27	49	0	5.50
	Mar	45	264	77	118	31	37	1	5.87
	Apr	51	354	86	137	54	74	3	6.94
	May	37	226	74	101	32	17	2	6.11
	Jun	34	193	83	59	13	9	4	5.68
	Jul	7	63	29	30	1	1	2	9.12
	Aug	15	76	26	39	7	4	0	5.07
	Sep	15	82	18	29	9	24	2	5.47
	Oct	23	118	58	35	14	7	4	5.13
	Nov	66	310	88	171	37	12	2	4.73
	Dec	111	553	200	248	56	46	3	4.98
	Total		529	2,948	883	1,335	335	356	39
2002	Jan	98	541	311	171	30	13	16	5.52
	Feb	97	437	197	210	18	12	0	4.51
	Mar	60	440	213	198	19	9	1	7.33
	Apr	36	243	114	119	6	3	1	6.75
	May	26	191	83	93	11	3	1	7.35
	Jun	24	140	82	46	11	1	0	5.83
	Jul	20	109	67	22	12	6	2	5.45
	Aug	18	90	45	28	10	6	1	5.00
	Sep	15	116	61	26	7	6	16	7.73
	Oct	20	144	83	42	6	5	8	7.20
	Nov	64	584	237	257	39	16	35	9.14
	Dec	78	740	294	359	56	27	4	9.49
	Total		556	3,776	1,787	1,571	225	107	86

Table 2 Cont.

		Taiwanese							
Year	Month	effort	Total	BET	YFT	BILLs	SWO	MSC	CPUE
2003	Jan	68	522	168	309	27	17	1	7.68
	Feb	88	923	190	656	30	29	18	10.50
	Mar	58	609	105	445	33	26	0	10.50
	Apr	53	390	123	253	6	8	0	7.36
	May	9	65	30	29	3	3	0	7.22
	Jun	24	184	81	88	9	6	0	7.67
	Jul	15	137	60	52	11	6	8	9.13
	Aug	12	51	29	15	4	3	0	4.25
	Sep	12	88	20	56	7	5	0	7.33
	Oct	19	117	52	42	20	3	0	6.16
	Nov	23	215	23	155	22	15	0	9.35
	Dec	115	1098	187	838	39	34	0	9.55
	Total	496	4,399	1,068	2,938	211	155	27	8.87
2004	Jan	70	726	119	556	27	24	0	10.37
	Feb	80	726	146	518	30	32	0	9.08
	Mar	75	517	88	379	22	28	0	6.89
	Apr	29	220	53	153	12	2	0	7.59
	May	22	155	49	99	6	1	0	7.05
	Jun	17	155	39	103	12	1	0	9.12
	Jul	14	104	24	77	2	1	0	7.43
	Aug	25	202	73	110	14	5	0	8.08
	Sep	15	119	33	77	8	1	0	7.93
	Oct	14	104	12	81	9	2	0	7.43
	Nov	29	287	73	169	11	10	24	9.90
	Dec	73	716	202	479	27	8	0	9.81
	Total	463	4,031	911	2,801	180	115	24	8.71
2005	Jan	80	1,272	298	883	51	40	0	15.90
	Feb	80	930	194	691	20	25	0	11.63
	Mar	62	602	96	449	9	2	46	9.71
	Apr	31	285	50	223	10	2	0	9.19
	May	16	128	22	91	12	2	1	8.00
	Jun	13	199	61	133	5	0	0	15.31
	Jul	15	132	33	66	3	0	30	8.80
	Aug	20	169	34	77	16	18	24	8.45
	Sep	10	87	19	64	3	1	0	8.70
	Oct	26	216	7	164	5	5	35	8.31
	Nov	34	363	8	301	5	5	44	10.68
	Dec	57	677	54	546	15	9	53	11.88
	Total	444	5,060	876	3,688	154	109	233	11.40

Table 2 Cont.

Taiwanese									
Year	Month	effort	Total	BET	YFT	BILLs	SWO	MSC	CPUE
2006	Jan	47	779	45	631	8	3	92	16.57
	Feb	33	449	69	324	7	5	44	13.61
	Mar	58	518	76	399	14	6	23	8.93
	Apr	16	134	17	81	4	3	29	8.38
	May	11	100	11	63	1	1	24	9.09
	Jun	9	101	12	51	2	1	35	11.22
	Jul	8	88	10	41	11	2	24	11.00
	Aug	15	75	7	47	11	10	0	5.00
	Sep	15	102	5	40	1	4	52	6.80
	Oct	20	102	5	83	5	9	0	5.10
	Nov	26	216	13	176	15	12	0	8.31
	Dec	57	580	46	478	21	8	7	10.18
	Total		315	3,244	316	2,414	100	84	330
2007	Jan	11	362	50	312	0	0	0	32.91
	Feb	7	198	14	150	30	4	0	28.29
	Mar	5	69	15	50	3	1	0	13.8
	Apr	3	49	8	35	3	1	2	16.33
	May	5	107	15	74	10	3	5	21.40
	Jun	5	105	6	76	6	1	16	21.00
	Jul	1	29	10	19	0	0	0	29.00
	Aug	1	3	0	0	0	0	3	3.00

Table 3 Fishing effort (no.of trip), catch (mt) and CPUE (mt/trip) by Chinese longliners landed at Phuket Province during January 2000 to December 2007.

Chinese									
Year	Month	Effort	Total	BET	YFT	BILLs	SWO	MSC	CPUE
2000	Jan	20	99	61	30	5	3	0	4.94
	Feb	23	100	48	43	6	3	0	4.36
	Mar	31	105	73	29	2	1	0	3.39
	Apr	14	63	30	23	5	3	2	4.50
	May	10	28	15	9	1	1	2	2.80
	Jun	15	51	19	9	9	8	6	3.40
	Jul	11	38	10	11	5	7	5	3.45
	Aug	15	51	16	22	4	4	5	3.40
	Sep	17	56	14	25	5	8	4	3.29
	Oct	20	74	14	31	15	13	1	3.70
	Nov	13	36	14	15	3	1	3	2.77
	Dec	10	37	4	16	14	1	2	3.70
Total		200	738	318	263	74	53	30	3.71

Table 3 Cont.

Chinese									
Year	Month	Effort	Total	BET	YFT	BILLs	SWO	MSC	CPUE
2001	Jan	13	41	6	19	6	8	2	3.15
	Feb	10	43	9	18	8	8	0	4.30
	Mar	20	91	36	35	8	11	1	4.55
	Apr	31	111	57	32	16	4	2	3.58
	May	42	203	73	57	38	27	8	4.83
	Jun	25	84	44	22	12	4	2	3.37
	Jul	16	40	23	9	2	4	2	2.53
	Aug	19	48	17	18	8	5	0	2.53
	Sep	5	12	3	6	1	2	0	2.40
	Oct	17	50	20	14	8	5	3	2.94
	Nov	31	104	38	40	19	5	2	3.35
	Dec	29	91	45	27	10	9	0	3.14
	Total	258	918	371	297	136	92	22	3.56
2002	Jan	22	71	47	17	3	2	2	3.23
	Feb	21	82	59	18	3	2	0	3.90
	Mar	32	129	83	36	6	4	0	4.03
	Apr	27	106	62	38	4	2	0	3.93
	May	19	87	53	30	3	1	0	4.58
	Jun	22	65	41	16	6	2	0	2.95
	Jul	15	62	44	8	3	1	6	4.13
	Aug	5	23	13	5	1	4	0	4.60
	Sep	4	20	11	3	2	2	2	5.00
	Oct	24	91	57	23	3	3	5	3.79
	Nov	7	27	15	7	2	1	2	3.86
	Dec	12	57	31	12	10	4	0	4.75
	Total	210	820	516	213	46	28	17	3.90
2003	Jan	0	0	0	0	0	0	0	0.00
	Feb	0	0	0	0	0	0	0	0.00
	Mar	0	0	0	0	0	0	0	0.00
	Apr	0	0	0	0	0	0	0	0.00
	May	0	0	0	0	0	0	0	0.00
	Jun	0	0	0	0	0	0	0	0.00
	Jul	0	0	0	0	0	0	0	0.00
	Aug	0	0	0	0	0	0	0	0.00
	Sep	0	0	0	0	0	0	0	0.00
	Oct	0	0	0	0	0	0	0	0.00
	Nov	0	0	0	0	0	0	0	0.00
	Dec	5	25	9	11	1	4	0	5.00
	Total	5	25	9	11	1	4	0	5.00

Table 3 Cont.

Chinese									
Year	Month	Effort	Total	BET	YFT	BILLs	SWO	MSC	CPUE
2004	Jan	9	68	13	50	2	3	0	7.56
	Feb	7	94	67	20	4	3	0	13.43
	Mar	7	48	20	23	2	3	0	6.86
	Apr	11	70	14	45	6	5	0	6.36
	May	1	19	0	17	1	1	0	19.00
	Jun	7	47	18	15	11	3	0	6.71
	Jul	5	11	5	2	2	2	0	2.20
	Aug	0	0	0	0	0	0	0	0.00
	Sep	1	46	25	19	2	0	0	46.00
	Oct	0	0	0	0	0	0	0	0.00
	Nov	0	0	0	0	0	0	0	0.00
	Dec	0	0	0	0	0	0	0	0.00
	Total	48	403	162	191	30	20	0	8.40
2005	Jan	0	0	0	0	0	0	0	0.00
	Feb	0	0	0	0	0	0	0	0.00
	Mar	0	0	0	0	0	0	0	0.00
	Apr	0	0	0	0	0	0	0	0.00
	May	2	4	3	1	0	0	0	2.00
	Jun	0	0	0	0	0	0	0	0.00
	Jul	0	0	0	0	0	0	0	0.00
	Aug	0	0	0	0	0	0	0	0.00
	Sep	0	0	0	0	0	0	0	0.00
	Oct	0	0	0	0	0	0	0	0.00
	Nov	0	0	0	0	0	0	0	0.00
	Dec	0	0	0	0	0	0	0	0.00
	Total	2	4	3	1	0	0	0	2.00
2006	Jan	0	0	0	0	0	0	0	0.00
	Feb	0	0	0	0	0	0	0	0.00
	Mar	0	0	0	0	0	0	0	0.00
	Apr	0	0	0	0	0	0	0	0.00
	May	0	0	0	0	0	0	0	0.00
	Jun	0	0	0	0	0	0	0	0.00
	Jul	0	0	0	0	0	0	0	0.00
	Aug	0	0	0	0	0	0	0	0.00
	Sep	0	0	0	0	0	0	0	0.00
	Oct	0	0	0	0	0	0	0	0.00
	Nov	0	0	0	0	0	0	0	0.00
	Dec	0	0	0	0	0	0	0	0.00
	Total	0	0	0	0	0	0	0	0.00

Table 3 Cont.

Chinese									
Year	Month	Effort	Total	BET	YFT	BILLs	SWO	MSC	CPUE
2007	Jan	0	0	0	0	0	0	0	0.00
	Feb	0	0	0	0	0	0	0	0.00
	Mar	0	0	0	0	0	0	0	0.00
	Apr	1	5	0	5	0	0	0	5.00
	May	0	0	0	0	0	0	0	0.00
	Jun	0	0	0	0	0	0	0	0.00
	Jul	0	0	0	0	0	0	0	0.00
	Aug	0	0	0	0	0	0	0	0.00
	Sep	0	0	0	0	0	0	0	0.00
	Oct	0	0	0	0	0	0	0	0.00
	Nov	0	0	0	0	0	0	0	0.00
	Dec	0	0	0	0	0	0	0	0.00
	Total		1	5	0	5	0	0	0

Table 4 Fishing effort (no.of trip), catch (mt) and CPUE (mt/trip) by Indonesian longliners landed at Phuket Province during January 2000 to December 2007.

Indonesian									
Year	Month	Effort	Total	BET	YFT	MAR	SWO	MSC	CPUE
2000	Jan	0	0	0	0	0	0	0	0
	Feb	0	0	0	0	0	0	0	0
	Mar	1	5	4	1	0	0	0	5.00
	Apr	7	15	4	9	1	1	0	2.14
	May	1	8	4	1	1	1	1	8.00
	Jun	1	2	1	1	0	0	0	2.00
	Jul	3	11	3	4	1	2	1	3.67
	Aug	2	9	3	4	0	1	1	4.50
	Sep	2	4	1	2	0	1	0	2.00
	Oct	2	10	1	6	1	2	0	5.00
	Nov	2	12	1	8	1	1	1	6.00
	Dec	6	19	4	10	1	3	1	3.17
	Total		27	95	26	46	6	12	5
2001	Jan	12	87	13	51	10	10	3	7.25
	Feb	8	66	11	48	2	4	1	8.25
	Mar	13	91	16	47	12	16	0	7.00
	Apr	5	38	9	21	4	3	1	7.60
	May	1	2	1	1	0	0	0	2.00
	Jun	3	10	4	4	1	1	0	3.33
	Jul	2	8	4	3	0	1	0	4.00
	Aug	2	6	2	3	1	0	0	3.00
	Sep	3	6	2	3	1	0	0	2.00
	Oct	5	10	4	4	2	0	0	2.00
	Nov	2	6	1	3	2	0	0	3.00
	Dec	13	84	38	26	13	7	0	6.46
	Total		69	414	105	214	48	42	5

Table 4 Cont.

Indonesian									
Year	Month	Effort	Total	BET	YFT	MAR	SWO	MSC	CPUE
2002	Jan	11	98	55	31	6	3	3	8.91
	Feb	7	27	10	16	1	0	0	3.86
	Mar	7	47	22	22	2	1	0	6.71
	Apr	5	74	33	38	2	1	0	14.80
	May	2	12	3	9	0	0	0	6.00
	Jun	2	9	4	5	0	0	0	4.50
	Jul	1	2	1	1	0	0	0	2.00
	Aug	3	17	6	6	4	1	0	5.67
	Sep	2	7	3	2	0	1	1	3.50
	Oct	2	6	4	2	0	0	0	3.00
	Nov	5	71	30	30	5	2	4	14.20
	Dec	3	31	11	14	5	1	0	10.33
	Total	50	401	182	176	25	10	8	8.02
2003	Jan	3	28	9	17	1	1	0	9.33
	Feb	3	27	7	18	1	0	1	9.00
	Mar	2	29	4	23	1	1	0	14.50
	Apr	7	77	18	56	1	2	0	11.00
	May	3	23	10	11	1	1	0	7.67
	Jun	1	1	0.50	0.50	0	0	0	1.00
	Jul	2	6	3	3	0	0	0	3.00
	Aug	2	7	2	5	0	0	0	3.50
	Sep	3	8	3	4	1	0	0	2.67
	Oct	7	22	10	10	2	0	0	3.14
	Nov	9	78	9	59	7	3	0	8.67
	Dec	20	266	41	204	13	8	0	13.30
	Total	62	572	116.5	410.5	28	16	1	9.23
2004	Jan	14	167	18	140	5	4	0	11.93
	Feb	9	109	7	92	5	5	0	12.11
	Mar	9	98	19	71	3	5	0	10.89
	Apr	7	86	3	77	5	1	0	12.29
	May	6	42	3	38	1	0	0	7.00
	Jun	1	13	0	12	1	0	0	13.00
	Jul	2	18	7	11	0	0	0	9.00
	Aug	0	0	0	0	0	0	0	0.00
	Sep	1	3	0	3	0	0	0	3.00
	Oct	2	4	1	3	0	0	0	2.00
	Nov	8	97	17	77	1	2	0	12.13
	Dec	12	246	49	192	4	1	0	20.50
	Total	71	883	124	716	25	18	0	12.44

Table 4 Cont.

Indonesian									
Year	Month	Effort	Total	BET	YFT	MAR	SWO	MSC	CPUE
2005	Jan	10	306	77	227	2	0	0	30.60
	Feb	9	164	41	121	1	1	0	18.22
	Mar	6	104	9	94	1	0	0	17.33
	Apr	8	45	9	33	2	1	0	5.63
	May	2	7	3	4	0	0	0	3.50
	Jun	1	8	2	6	0	0	0	8.00
	Jul	2	11	2	8	1	0	0	5.50
	Aug	1	2	0	2	0	0	0	2.00
	Sep	3	16	3	12	1	0	0	5.33
	Oct	6	33	7	25	1	0	0	5.50
	Nov	11	81	14	57	5	0	5	7.36
	Dec	12	112	31	76	3	2	0	9.33
	Total	71	889	198	665	17	4	5	12.52
2006	Jan	28	398	61	285	6	1	45	14.21
	Feb	23	255	61	175	4	3	12	11.09
	Mar	12	58	13	44	1	0	0	4.83
	Apr	9	76	16	55	3	2	0	8.44
	May	7	55	22	17	1	0	15	7.86
	Jun	5	23	5	12	0	1	5	4.60
	Jul	6	23	0	14	4	1	4	3.83
	Aug	4	20	5	13	2	0	0	5.00
	Sep	5	22	2	18	1	1	0	4.40
	Oct	4	26	8	14	2	2	0	6.50
	Nov	4	89	19	68	1	1	0	22.25
	Dec	20	564	90	455	8	11	0	28.20
	Total	127	1609	302	1170	33	23	81	12.67
2007	Jan	11	362	50	312	0	0	0	32.91
	Feb	7	198	14	150	30	4	0	28.29
	Mar	5	69	15	50	3	1	0	13.80
	Apr	3	49	8	35	3	1	2	16.33
	May	5	107	15	74	10	3	5	21.40
	Jun	5	105	6	76	6	1	16	21.00
	Jul	1	29	10	19	0	0	0	29.00
	Aug	1	3	0	0	0	0	3	3.00
	Sep	3	13	2	8	1	0	2	4.33
	Oct	6	46	6	35	2	0	3	7.67
	Nov	7	99	21	53	10	3	12	14.14
	Dec	6	111	29	65	10	1	6	18.50
	Total	60	1191	176	877	75	14	49	19.85

Table 5 Fishing effort (no.of trip), catch (mt) and CPUE (mt/trip) by Thai longliners landed at Phuket Province in 2007.

Thai									
Year	Month	Effort	Total	BET	YFT	MAR	SWO	MSC	CPUE
2007	Jan	0	0	0	0	0	0	0	0
	Feb	0	0	0	0	0	0	0	0
	Mar	2	5	3	0	0	0	2	2.5
	Apr	1	4	0	4	0	0	0	4
	May	1	5	0	3	1	0	1	5
	Jun	1	4	0	2	0	0	2	4
	Jul	0	0	0	0	0	0	0	0
	Aug	0	0	0	0	0	0	0	0
	Sep	0	0	0	0	0	0	0	0
	Oct	0	0	0	0	0	0	0	0
	Nov	0	0	0	0	0	0	0	0
	Dec	0	0	0	0	0	0	0	0
	Total	5	18	3	9	1	0	5	3.6

Table 6 Fishing effort (no.of trip), catch (mt) and CPUE (mt/trip) by Vanuatu longliners landed at Phuket Province in 2007.

Vanuatu									
Year	Month	Effort	Total	BET	YFT	MAR	SWO	MSC	CPUE
2007	Jan	1	1	1	0	0	0	0	1
	Feb	0	0	0	0	0	0	0	0
	Mar	0	0	0	0	0	0	0	0
	Apr	0	0	0	0	0	0	0	0
	May	0	0	0	0	0	0	0	0
	Jun	0	0	0	0	0	0	0	0
	Jul	0	0	0	0	0	0	0	0
	Aug	0	0	0	0	0	0	0	0
	Sep	0	0	0	0	0	0	0	0
	Oct	0	0	0	0	0	0	0	0
	Nov	0	0	0	0	0	0	0	0
	Dec	0	0	0	0	0	0	0	0
	Total	1	1	1	0	0	0	0	1

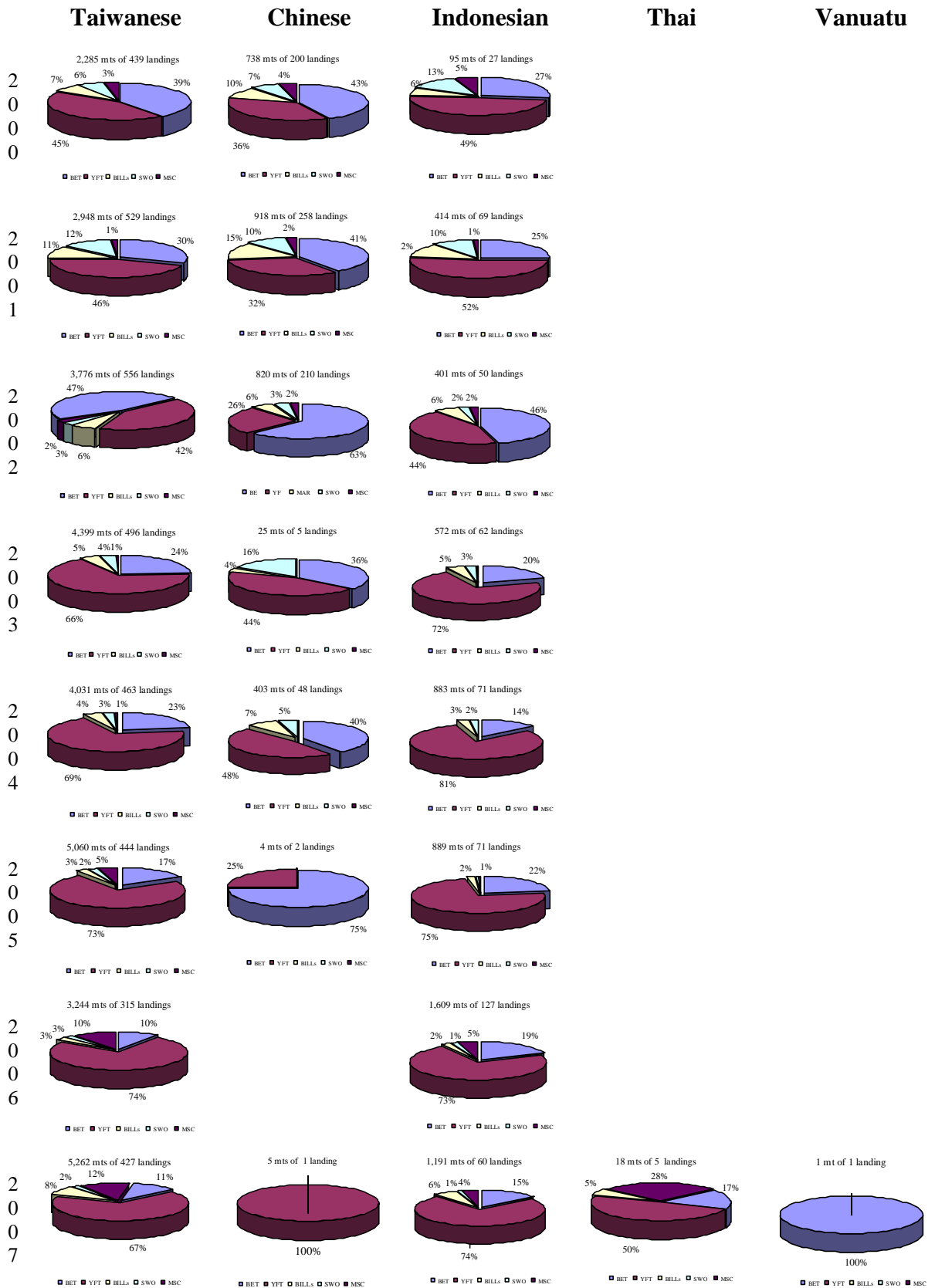


Figure 5 Species composition from tuna longliners landing in Phuket during 2000-2007, categorized by flag countries.

Table 7 and Table 8 present the sampling size of measure at length and weight of tuna, tuna-like and by-catch species during April 2000 to December 2007 including relevance activities of longliners port sampling in Phuket.

During April 2000 to December 2006, there was the Sampling Program on Fresh Tuna Longliner Unloading in Phuket. The Outcome showed the high progress of sampling method and port sampling activities. Although during the years after the finishing of the programme, AFDEC's officers were limited to conduct port sampling completely as previous period, however the monitoring and port sampling on fresh tuna longliner landing in Phuket have to be carried continuously. The sampling coverage percentage in 2007 was 11.7.

Table 7 Size range and number of samples size of tuna, tuna-like and by-catch species during April 2000 – December 2007.

Species	Size Range (Weight, kg)		Number of individual Measured Fish		
	Min	Max	LD1	PDL	Weight
Yellowfin Tuna	2	123	18,991		137,736
Bigeye Tuna	5	145	8,848		69,441
TUNA	2	90			4,728
Swordfish	2	184		976	5,786
Black marlin	7	310		314	1,656
Blue marlin	6	352		424	1,960
Stripped marlin	9	340		275	1,482
Indo-Pacific sailfish	5	58		223	648
Short-billed spearfish	4	66		32	215
BILL	9	220		117	1,622
Sharks	2	95		73	750
Others	1	130		50	2,185
Albacore	3	45	271		1,402
Total			28,110	2,484	229,611

Table 8 Longliners Port Sampling Activities in Phuket, Thailand from January 2000 to December 2007.

Year	Total no. of landing	Total no. of sampled vessel	% of coverage sampling size	Total catch (mts) from customs	Total no. of weight samples	Total no. of interview	Total no. of body length measured samples	Total no. of others activities		
								Shark	Other species	Otolith
2000	665	62	9.3	2,667	29,306	91	4,015	197	333	81
2001	876	230	26.3	2,493	59,040	44	6,324	163	540	52
2002	816	194	23.8	2,072	40,458	50	5,513	12	26	142
2003	563	201	35.7	3,162	44,864	29	3,739	14	41	318
2004	582	152	26.1	5,197	23,356	36	2,492	-	-	59
2005	517	152	29.4	5,120	21,502	52	4,760	-	-	-
2006	442	159	36.0	3,114	16,433	57	3,938	-	-	-
2007	494	56	11.3	10,114	6,158	0	1,321	-	-	-
Total	4,955	1,206	24.3	33,939	241,117	359	32,102	386	940	652

2. Tuna Purse Seiners

There were only Japanese tuna purse seiners landed in Phuket during the last six years which were the six vessels of the size range 349-477 (GRT, Gross Ton Net) 63.24-75.97 m (LOA, length overall). Type of preservation was brine and fish was kept as frozen. During 2003 to 2006, there was only Nippon Maru landed for 2-6 trips/year. In the later year, 2007, they were five vessels with totally landed of 12 trips. In 2008 (Jan-August) there were four vessels with totally landed of 7 trips.

Table 9 Number of landing of foreingers tuna purse seines in Phuket during 2003 – 2008.

Type of Vessel	Number of Landing						Total
	2003	2004	2005	2006	2007	2008*	
Tuna Purse Seiners	4	3	6	2	12	7	34

*Until August 31, 2008

Fishing Ground

The tuna purse seiners operated in the fishing grounds between latitude 05° 00' N to 10° 41' S and longitude 59° 12' E to 98° 48' E. The most intensive fishing effort were put in the West of Indonesia and the areas around Maldives and Chagos while there were scantily fishing in the East of Somalia and around Seychelles. During 2003 to August 2008 the tuna purse seiners operated only the fishing grounds where were near by the landing site, West of Indonesia and the areas around Maldives and Chagos. Thus it saved the cost of fuel (Figure 6).

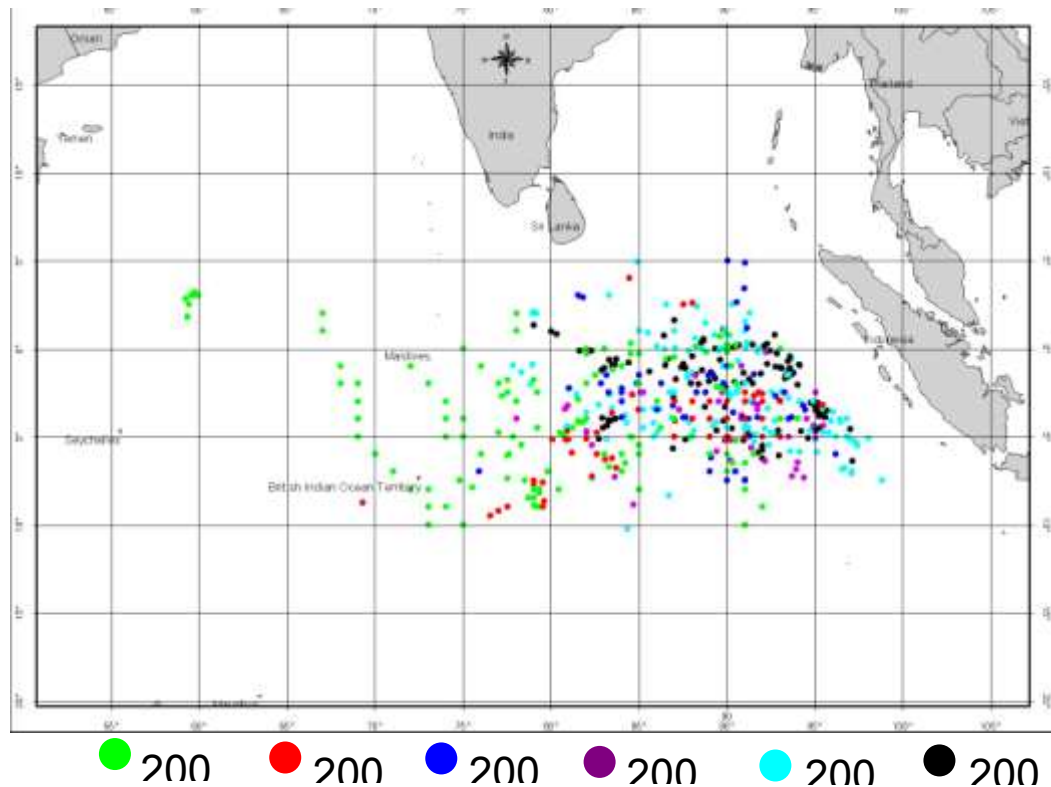


Figure 6 Fishing grounds of tuna purse seiners which landing in Phuket, 2003-August 2008.

Species composition, Catch and Value

Catch and percentage composition of skipjack, yellowfin tuna and bigeye tuna were 11,864 (63.0%), 3,489 (18.6%) and 3,493 mts (18.4%) with the value of 425.7, 155.8 and 140.3 million baht, respectively. The total catch of the three species during 2003 to August 2008 were 18,846 mts with the value of 736.4 million baht (Table 10). There was a few of by-catch which the most frequented observed species was triggerfish, *Abalistes stellaris* (Bloch & Schneider, 1801).

Table 10 Catch and value of tunas caught by foreigners purse seine landed in Phuket Province during 2003 – 2008.

Year	Catch (mts) and Value (million baht)										
	SKJ			YFT			BET			total	
	Catch		Value	Catch		Value	Catch		Value	Catch	Value
	Mts	%	Million	Mts	%	Million	Mts	%	Million	Mts	Million
2003	1,755	61.6	52.6	465	16.3	13.4	630	22.1	18.5	2,850	84.6
2004	1,602	66.8	47.6	324	13.5	10.2	474	19.8	14.8	2,400	72.6
2005	3,246	65.7	108.2	998	20.2	33.5	696	14.1	24.1	4,940	165.9
2006	895	66.3	32.5	220	16.3	10.1	235	17.4	10.8	1,350	52.2
2007	3,074	62.8	121.3	754	15.4	42.7	1,066	21.8	49.4	4,894	212.4
2008*	1,292	54.1	63.5	728	30.5	45.9	368	15.4	22.7	2,388	132.1
Total	11,864	63	425.7	3,489	18.6	155.8	3,493	18.4	140.3	18,822	720.8

*Until August 31, 2008

AFDEC pursued the port sampling continuously and it has the consistent improvement in the sampling activity. The sampling coverage during the last six year was 76.5% or 26 samples of totally 34 landings while 85% or 29 copied logbooks were received (Table11). Nearly five thousand of individual fish were measured forklength and weight while 288 samples were measured LD1, 6,370 samples were identified and counted as well. The sampling size of each species shown in Table 12.

Table 11 Number of foreingers purse seines landed at Phuket Deep Sea Port and and percentage of port sampling during 2003 to 2008.

Flag	Number of Landing						Total
	2003	2004	2005	2006	2007	2008*	
Total Landing	4	3	6	2	12	7	34
Port Sampling	3	3	3	2	9	6	26
%	75.0	100.0	50.0	100.0	75.0	85.7	76.5
Provided Logbook	4	2	3	2	11	7	29
%	100.0	66.7	50.0	100.0	91.7	100.0	85.0

Table 12 Size range and number of samples size of tunas caught by tuna purse seiners during Jauary 2003 to August 2008.

Species	Fish Size						Sampling size (No.of individual fish)			
	(Weight, kg)			(Fork lenght, cm)			Measuring			Counted
	Min.	Max.	Average	Min.	Max.	Average	Weight	FL	LD1	
SKJ	0.6	7.8	2.3	24.0	70.0	45.3	1,507	1,507	-	6,293
YFT	0.6	40.2	6.0	25.5	151.1	60.4	1,175	1,175	243	22
BET	0.5	25.5	3.6	19.6	97.0	49.5	2,310	2,310	45	55
Total Samples							4,992	4,992	288	6,370

ENCOUNTERED PROBLEMS AND RECOMMENDATION

Although the port sampling and surveying have been carried on, it seems to have some problems in connection with data collection and statistics these include.

1. Outcome of Sampling Program on Fresh Tuna Longline Vessels Unloading in Phuket during April 2000 to December 2006 had improved a lot of knowledge on the activities, total landing, species breakdown and size composition for each species caught by surface longliner

for IOTC, OFCF and AFRDEC, DOF Thailand. Even the AFRDEC term would get many problems that cooperated from fishing agency. Anyhow we tried to deal again and again by many ways and now the situation is better. Consequence, the sampling program would be continuous monitoring, Which support fund from relevant countries or IOTC.

2. The lack of logsheet of foreigner longliner unloaded at Phuket fishing port, only the interview data have been taken from the export company and master fishermen. Then, the data collection system of longliner has to be better established, so that all data users (such as the IOTC) researcher and fishermen may be satisfied.

3. The data collection and statistics address of tuna and billfish should have cooperated between the fleet nations and the port nations have been unloaded or transshipped (such as logsheet for foreigner tuna purse seine and lonliner fisheries in the Eastern Indian Ocean).

5. The logistic of fresh tuna longline should be established in the Eastern Indian Ocean, including the port sampling approach should be establish as well from IOTC.