

**Koror, Palau
August 9 - 11, 1994**

**1993-1994 Size Composition Data for Yellowfin Tuna
Collected by the Port Sampling and Fisheries Observer Programs of the
Micronesian Maritime Authority.**

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Working paper for the 4th Meeting of the Western Pacific Yellowfin Tuna Research Group,
Koror, Palau, August 9-11, 1994.

Size Composition Data from the MMA Port Sampling and Observer Programs

Port Sampling Program

The Micronesian Maritime Authority (MMA) is the main licensing and monitoring agency of the National Government of the Federated States of Micronesia (FSM). As part of its monitoring mandate, the Authority has operated a port sampling program aimed at collecting biological data (species composition, length/weight frequencies, etc.) from the foreign and domestic fishing vessels that off-load their catches in FSM ports. The MMA has received funding for its port sampling programs from the South Pacific Commission's Tuna and Billfish Assessment Program (SPC-TBAP) and from the Forum Fisheries Agency (FFA) under the Project Development Fund (PDF) of the United States Multilateral Treaty on Fisheries.

The June 15, 1993 region-wide ban on high seas transshipment of purse seine caught tuna has brought an influx of foreign purse seine vessels to FSM ports for transshipment operations. In particular, Chuuk and Kosrae have witnessed a tremendous surge of PS transshipment activity which, for the first time, has created opportunities to accurately monitor the catches of foreign fishing vessels that have previously transhipped their catches unmonitored on the high seas. The MMA has capitalized on this important opportunity to collect data with the aim of improving compliance and resource assessment issues. There are now 6 MMA port samplers in the 4 states of the FSM collecting qualitative and quantitative data from both longline and purse seine off-loadings.

Prior to 1991, most foreign longline vessels licensed to fish in the FSM EEZ off-loaded their catches in ports other than those in the FSM and as such negated the possibilities for collecting biological data. Recently, however, the Authority has shifted the licensing priorities to encourage the basing of foreign longliners in FSM ports. As a result, the number of longliners now off-loading their catches in FSM ports has increased substantially. The economic benefits for the states have been substantial in addition to the foreign assistance provided in modernizing the infrastructure of the transshipment facilities within the FSM. With a modernized and expanded infrastructure, the FSM will no doubt continue to handle a large number of foreign longline transshipments in the future as well as develop the domestic longline fleet. The monitoring of these transshipments by MMA port samplers will continue to provide the necessary information from which we hope to manage our valuable pelagic fisheries on a more reliable and sustainable basis.

Longline Transshipments

All of the foreign longline vessels currently off-loading their catches in the FSM are small scale ice-boats that provide sashimi grade fish for the Japan export market. These boats range in size from about 20-50 GRT (Taiwanese/Japanese) up to 169 GRT (Mainland Chinese). On a typical trip, these vessels will set between 650 (Chinese LL) to 2,500 (Japanese LL) hooks and stay out fishing for up to two weeks at a time. The target species are bigeye tuna, *Thunnus obesus*, and yellowfin tuna, *Thunnus albacares*, with appreciable amounts of shark and billfish caught incidentally.

The largest of these foreign companies is the Ting Hong Oceanic Enterprises Corporation which began utilizing FSM ports during 1991 and now has operations in all 4 states of the FSM. The Ting Hong operation utilizes a combination of Taiwanese and Mainland Chinese longliners. They operate two Boeing 727-100 jet planes for air transshipment of their tuna to Japan. The bycatch and reject fish are stored mainly in shore-side freezers and then transported in bulk back to Taiwan by ship.

The Japanese longline fleet comprises three distinct components: A group of small ice/slurry boats that are based in Guam and tranship their catches from that port; vessels based in Japan that fish in the FSM EEZ and return to Japan to off-load their catches; and a few Okinawan boats that are based in the FSM and tranship their catch at FSM bases. The MMA has a unique licensing system for the Japanese longline fleet

that caters for each vessel on a per trip basis. For this reason, the number of Japanese longline vessels licensed to fish in the FSM EEZ can vary from month to month.

An expanding domestic longline fleet has been developing in the FSM under the guidance of the National Fisheries Corporation (NFC). Currently, the NFC has 8 longline vessels operating between Pohnpei and Chuuk ports and their are plans to increase the fleet size on an annual basis by at least two vessels per year. In addition, there are 2 other longline vessels owned and operated by Micronesian citizens that are currently operating out of Pohnpei port.

Size Composition Data from Foreign and Domestic Longline Vessels Transhipping in FSM Ports.

Port	Year	Avg. YFT Wt. (Kg.)	No. Fish Sampled
Yap	1992	40.0	n/a
	1993	40.2	11,403
Chuuk	1993	39.3	13,818
Pohnpei	1991	32.8	1,528
	1992	31.4	5,458
	1993	32.4	6,022
Kosrae	1993	38.6	63
	1994	37.6	476
Totals		292.3	38,768
Average		36.6	5,538

Purse Seine Transhipments

As part of a region wide initiative to capture more of the economic benefits of purse seine transhipment operations and to enhance the monitoring capabilities of island nations, a ban on all high seas transhipment of purse seine caught tuna was put into effect on June 15, 1993. This ban was instituted as part of the minimum terms and conditions for all foreign purse seine vessels seeking access to the fishing zones of FFA member nations. Prior to the initiation of this ban, the Taiwanese purse seine fleet carried out trial transhipments at Chuuk lagoon with assistance from the Authority. Once the ban took effect, the Taiwanese began utilizing Chuuk as their primary transhipment base over all other available ports in the region. A list of designated transhipment ports was provided by each member country and the foreign fleets were given the option to choose any of the available ports for transhipment operations. For the FSM the following ports were designated as official transhipment sites:

- Chuuk Lagoon, Chuuk State *
- Okat Harbor, Kosrae State **
- Kolonia Harbor, Pohnpei State
- Colonia Harbor, Yap State

* Satawal Atoll in the Mortlock Islands chain of Chuuk state has been mentioned as a future transhipment site.

** Lelu Harbor was temporarily used as a transhipment site due to overcrowding at Okat Harbor

As it became obvious that both Chuuk and Kosrae port were receiving the majority of the transshipment activities, port samplers were recruited and trained. The Chuuk sampler began monitoring activities in March, 1993 with the Kosrae sampler beginning in July, 1993. Pohnpei and Yap ports have not received much purse seine transshipment activity and as a result no additional port samplers have been recruited for those ports.

The port samplers monitoring the purse seine activities have two main tasks:

1. to collect accurate and timely information on vessel movements, total amounts transhipped by species and the destination of transhipped fish.
2. to collect length frequency and species composition data from the fish being off-loaded to the Fish Carrier vessels.

In addition, they provide logistical support for the MMA Fisheries Observer program and coordinate the logistics for the Yellowfin Tuna Reproduction Study that is taking place throughout the region on foreign fishing vessels (see Research section).

Table 3. 1993 Chuuk Purse Seine Transshipment Data (July - December).

Month Transhipped	Tons of SKJ (m/t)	Tons of YFT (m/t)	Flag / No. of Deliveries
July	16,859	9,052	TW (55), KR (18), FM (3)
August	13,363	10,062	TW (47), KR (22), FM (3)
September	5,169	1,391	TW (18), KR (2)
October	13,413	5,841	TW (41), KR (12), FM (3), US (1)
November	8,763	3,241	TW (21), KR (9)
December	11,806	5,084	TW (25), KR (12), FM (2)
1993 Sub Totals	69,373 m/t	34,671 m/t	294 Deliveries TW (207), KR (75), FM (11), US (1)
1993 Totals	104,044 m/t		Avg. per vessel = 354 m/t

Table footnotes:

Some tonnages listed as mixed skj/yft were broken down to species level using .80/.20 skj/yft ratio. Monthly estimates reflect departures of Fish Carrier Vessels within the month in question.

Table 4. 1994 Chuuk Purse Seine Transshipment Data (January - June).

Month Transhipped	Tons of SKJ (m/t)	Tons of YFT (m/t)	Flag / No. of Deliveries
January	4,584	976	TW (7), KR (1)
February	14,083	3,087	TW (23), KR (16)
March	31,351	4,273	TW (36), KR (18), FM (6)
April	13,807	3,428	TW (13), KR (25), FM (1)
May	14,449	5,150	TW (44), KR (9), FM (5)
June	19,369	5,462	TW (27), KR (24), FM (4)
1994 Subtotals	97,643 m/t	22,376 m/t	(259) Deliveries TW (150), KR (93), FM (16)
1994 Totals	120,019 m/t		Avg. per vessel = 463 m/t

Table 5. 1993 Kosrae Purse Seine Transshipment Data (August-November).

Month Transhipped	Tons of SKJ (m/t)	Tons of YFT (m/t)	Flag / No. of Deliveries
August	4,494	3,203	KR (15), TW (1), FM (1)
September	3,302	1,823	KR (8), FM (2)
October	3,203	1,830	KR (14), FM (1)
November	1,935	845	KR (8)
1993 Sub Totals	12,934 m/t	7,701 m/t	50 Deliveries KR (45), TW (1), FM (4)
1993 Totals	20,635 m/t		Avg. per vessel = 413 m/t

Table footnotes:

Purse seine transshipment activities were suspended in Kosrae effective December, 1993 due to a grounding accident and subsequent litigation by the State of Kosrae and a Korean PS company. As of April 22, 1994, the operations have not begun anew.

Some tonnages listed as mixed skj/yft were broken down to species level using .80/.20 skj/yft ratio. Monthly estimates reflect departures of Fish Carrier Vessels within the month in question.

Table 6. 1994 Kosrae Purse Seine Transshipment Data

Month Transhipped	Tons of SKJ (m/t)	Tons of YFT (m/t)	Flag / No. of Deliveries
January	950	620	KR (4)
June	2,500	1,000	US (4) **
1994 Sub Totals	3,450 m/t	1,620 m/t	8 Deliveries KR (4), US (4)
1994 Totals	5,070 m/t		Avg. per vessel = 634 m/t

** Preliminary data - pending cargo manifest form.

Fisheries Observer Program

The Authority's Fisheries Observer Program has been in operation since 1979 (see Figure 1 for list of observer trips by year/gear type). Beginning in mid 1992, the Program has undergone an expansion in scope and coverage with the aim of including all flags and gear types under the umbrella of observer monitoring. Prior to this period, the majority of observer placements took place on Japanese purse seine vessels and to a lesser extent on Japanese longline vessels. With the increased activity of foreign longline fleets operating and basing in the FSM (e.g. Taiwan and Mainland China vessels), emphasis has been now placed on gathering real time observer data from these fleets as well as the traditional Japanese longline fleets. Likewise, the increase in foreign purse seine fishing activity in the region has resulted in the need to broaden the placement coverage of our observer force to include these new fleets into the program, mainly Taiwan and Korea.

For the calendar year 1993 the expansion of the Observer Program continued on track with a total of 37 trips completed. With generous assistance from the South Pacific Commission, a Fox-Pro database was created towards the end of 1993 with the purpose of entering current as well as historic purse seine and longline observer records. This database will allow for more efficient and accurate queries of the observer records to take place and timely reports on such information as bycatch and discards can be generated as needed.

For 1994, a total of 34 trips have been completed as of July 30 with total trip numbers for 1994 projected to reach in excess of 60 trips. As with 1993 observer placements, the Program has boarded observers on all flag vessels licensed to operate in the FSM EEZ including domestic purse seine and longline vessels. Substantial increases in coverage have been realized for the Korean and Taiwanese purse seine fleets along with first ever observer trips on mainland Chinese longline vessels.

In conjunction with the creation of the observer database, revisions have been made to the data collection forms that the observers take to sea with them. A rewrite of the observer manuals for longline and purse seine trips is underway and is expected to dovetail with the creation of a regional observer manual proposed under the SPR-TRAMP Regional Observer Program.

The Program workforce currently stands at 10 full time observers, 4 from Chuuk, 3 from Kosrae and 3 from Yap.

The main objectives of the Observer Program are outlined below:

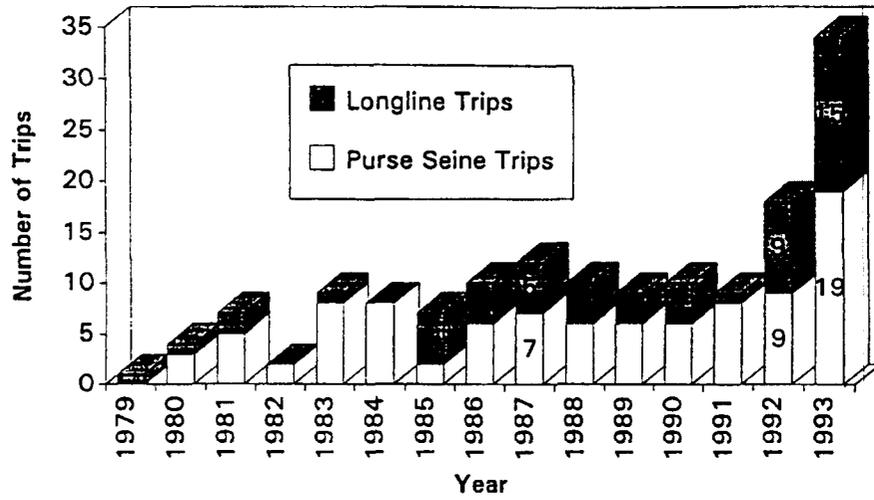
- To collect catch and effort data during fishing operations which can then be used to validate and/or update the information received from foreign vessel catch reports.
- To carry out biological sampling, for research purposes, which may include but is not limited to, length frequency measurements of landed catch, collection of gonad and stomach content samples, removal of hard parts for ageing studies, etc.
- To report on the fishing activities and operations of the vessels with the aim of identifying unique gear and fishing strategies that may affect the efficiency and overall catch of the vessel.
- To document the levels of bycatch and discards for both target (tunas) and incidentally caught species (e.g. sharks, marlins, turtles).
- To collect information on the sightings and activities of other fishing vessels encountered at sea for compliance with current licensing agreements.

Funding for the Observer Program comes from contributions by the fishing vessel owners and acceptance of MMA Observers on the vessels is a mandatory aspect of all the foreign fishing agreements the Authority currently manages.

The data collected by the MMA observers is held in strict confidence and used mainly for resource management purposes. Our fisheries observers are not surveillance officers and they are not empowered to enforce the laws. They do, however, report in detail all that takes place during their stay on the vessels which includes the accurate recording of fishing positions in and out of the FSM EEZ.

The data gathered by the Observer Program has been used in the preparation of an important regional reports on the bycatch and discards of fish species captured by the various fishing fleets (SPC Working Paper No. 8 presented at the 6th SCTB, Pohnpei, 1993 and a revision of that paper to be presented at the 7th SCTB in Palau on Aug. 5-8). The catch reports submitted by the foreign fishing vessels operating in the region do not typically include information on the bycatch of incidental species and the discards of this bycatch and/or target tunas.

Figure 1. 1979 - 1993 MMA Observer Trips



A majority of the MMA Observer workforce has received observer training from the Forum Fisheries Agency and are available to make trips on the United States PS fleet under the US Multi-Lateral Fisheries Treaty (USMFT) Observer Program. These trips are paid for by funds allocated from the USMFT. The data gathered by our observers from these trips are handed over to FFA and processed by their staff. The Authority then receives annual reviews of the USMFT that incorporates the observer data into the reviews.

Figure 4. 1993 MMA Observer Trips by Flag (37 Trips)

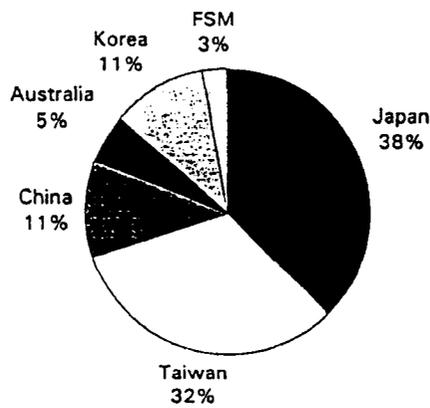


Table 1. 1993 Yellowfin Tuna Length Frequency Records - Taiwan Purse Seine						
Source: MMA Fisheries Observer Program						
OBC	Date of Set	Set Type	Position	No. of YFT	Sum Lengths	Average
IY	11093	Surf.	0555S 15614E	37	3090	83.5
IY	51093	WH. SHK	0030S 15529E	21	1768	84.2
IY	71093	LOG	0012S 15424E	24	1282	53.4
SL	60393	SURF	0046S 14842E	100	10308	103.1
SL	80393	SURF	0102S 14857E	50	4342	86.8
SL	50393	SURF	0025N 14657E	100	10119	101.2
SL	10393	SURF	0307N 15106E	100	10485	104.9
SL	280293	SURF	0241N 15105E	100	10081	100.8
RL	40493	LOG	0037N 14915E	2	245	122.5
RL	20493	MM	0002N 14717E	52	6723	129.3
RL	10493	SURF	0051S 14754E	50	6862	137.2
RL	300393	SURF	0015N 14757E	58	7932	136.8
RL	300393	SURF	0008N 14752E	54	7254	134.3
RL	310393	SURF	0020S 14557E	66	8754	132.6
RL	160393	LOG	0258N 14518E	61	3621	59.4
RL	150393	LOG	0301N14528E	54	2566	47.5
RL	190393	LOG	0308N 14512E	45	4101	91.1
RL	210393	SURF	0308N 13802E	58	7795	134.4
RL	260393	MM	0146N 14704E	15	2016	134.4
RL	310393	SURF	0028S 14755E	66	8814	133.6
NF	210593	LOG	0128N 14629E	50	2695	53.9
NF	220593	LOG	0115N 14649E	38	2132	56.1
NF	230593	SURF	0030N 14841E	50	6266	125.3
NF	240593	SURF	0020N 14847E	4	478	119.5
NF	260593	LOG	0032N 14829E	50	3882	77.6
NF	270593	SURF	0011N 14647E	38	4488	118.1
NF	310593	LOG	0025N 14458E	50	2672	53.4
NF	30993	LOG	0218N 15055E	43	1621	37.7
NF	40993	SURF	0204N 15257E	50	3064	61.3
NF	50993	SURF	0050N 15101E	27	3324	123.1
NF	100993	LOG	0335N 16102E	82	4264	52
NF	150993	LOG	0007N 15347E	80	3678	46
NF	170993	LOG	0018N 15212E	76	5401	71.1
NF	200993	SURF	0322S 15535E	75	6618	88.2
NF	230993	SURF	0341S 15444E	50	4738	94.8
NF	250993	SURF	0533S 15741E	75	6496	86.6
NF	280993	SURF	0643S 15725E	100	9274	92.7
NF	11093	SURF	0553S 15616E	100	8946	89.5
Totals				2151	198195	3557.9
Average				56.61	5215.66	93.63
Standard Deviation				26.62	3010.28	31.29

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Table 2. 1994 Yellowfin Tuna Length Frequency Records - Taiwan Purse Seine.						
Source: MMA Fisheries Observer Program						
OBC	Date of Set	Set Type	Position	No. of YFT	Sum Lengths	Average
SL	80194	LOG	0006N 14624E	41	2298	56
SL	90194	LOG	0021N 14537E	25	1648	65.9
SL	130194	MM	0018S 14241E	100	10681	106.8
SL	140194	MM	0007S 14229E	50	4966	99.3
SL	150194	MM	0020S 14253E	25	2647	105.9
SL	160194	MM	0029S 14252E	65	7931	122
SL	190194	SURF	0040S 14331E	100	12303	123
SL	190194	MM	0044S 14322E	101	10479	140.8
SL	210194	LOG	0048S 14426E	50	2462	50.2
SL	250194	MM	0002S 14234E	50	6119	122.4
SL	270194	PAYAO	0022S 14317E	25	1303	52.1
PJ	70194	PAYAO	0017N 14438E	30	1701	56.7
PJ	100194	SURF	0017N 15000E	62	7354	118.6
PJ	160194	SURF	0042S 14707E	55	7651	139.1
PJ	170194	MM	0055S 14712E	66	8392	127.2
PJ	240194	LOG	0033S 14631E	75	3764	50.2
PJ	250194	LOG	0030S 14618E	100	5075	50.8
LI	70594	LOG	0236N 14608E	50	3864	77.3
LI	80594	LOG	0253N 14548E	50	4371	87.4
LI	100594	LOG	0225N 14624E	28	1918	68.5
LI	110594	LOG	0159N 14704E	50	4158	83.2
LI	130594	LOG	0132N 14729E	50	4466	89.3
LI	140594	LOG	0117N 14744E	27	2284	84.6
LI	150594	LOG	0128N 14643E	50	4051	81
LI	170594	LOG	0051N 14851E	23	1536	66.8
LI	170594	LOG	0105N 14751E	50	4125	82.5
LI	180594	SURF	0109N 14704E	50	4848	100
LI	190594	LOG	0105N 14444E	50	2753	55.1
LI	200594	SURF	0329N 14629E	50	4634	92.7
LI	210594	LOG	0323N 14653E	50	3617	72.3
LI	230594	LOG	0126N 14818E	35	2132	60.9
LI	240594	LOG	0118N 14916E	50	4814	96.3
LI	250594	LOG	0118N 14916E	23	1972	85.7
LI	290594	LOG	0112N 15102E	20	2011	100.6
LI	300594	LOG	0119N 15112E	71	6216	87.5
LI	310594	LOG	0214N 14856E	50	4443	88.9
LI	10694	LOG	0327N 14922E	51	4400	86.3
Totals				1898	169387	3233.9
Average				51.30	4578.03	87.40
Standard Deviation				22.18	2730.53	25.70

Table 3. 1993 Yellowfin Tuna Length Frequency Records - Korean Purse Seine.						
Source: MMA Fisheries Observer Program						
OBC	Date of Set	Set Type	Position	No. of YFT	Sum Lengths	Average
PJ	190793	SURF	0124S 15540E	50	4476	89.5
PJ	210793	SURF	0115S 16025E	50	3811	76.2
RL	260893	LOG	0440N 14835E	100	6134	61.3
RL	280893	LOG	0126N 15029E	25	1413	56.5
RL	260993	SURF	0501S 15810E	100	9061	90.6
PJ	130993	LOG	0214N 15828E	50	2379	47.6
PJ	140993	LOG	0159N 15845E	18	1152	64
PJ	150993	LOG	0147N 15842E	11	761	69.2
PJ	240993	SURF	0411S 15624E	30	3900	130
PJ	250993	SURF	0534S 15749E	50	4796	95.9
PJ	260993	SURF	0606S 15749E	42	4671	111.2
PJ	270993	LOG	0457S 15818E	50	2814	56.3
PJ	61093	LOG	0538S 15654E	35	2428	69.4
PJ	81093	LOG	0455S 15725E	34	1928	56.7
PJ	101093	SURF	0521S 15742E	36	3130	86.9
PJ	101093	SURF	0527S 15748E	18	1897	105.4
PJ	111093	LOG	0529S 15745E	22	1014	46.1
PJ	131093	LOG	0542S 15623E	26	1973	75.9
PJ	151093	SURF	0258N 15328E	22	1311	59.6
IY	131193	SURF	0026S 15302E	28	3282	117.2
IY	151193	LOG	0029S 15233E	50	2962	59.2
IY	161193	SURF	0104S 15413E	20	2436	121.8
Totals				867	67729	1746.5
Average				39.41	3078.59	79.39
Standard Deviation				23.29	1932.35	25.18

YF_PSLF2.XLS

Table 4. 1994 Yellowfin Tuna Length Frequency Records - Korean Purse Seine.						
Source: MMA Fisheries Observer Program						
OBC	Date of Set	Set Type	Position	No. of YFT	Sum Lengths	Average
SP	310194	SURF	0100N 15004E	47	6266	133.3
SP	30294	LOG	0001S 14604E	111	6171	55.6
SP	50294	LOG	0004S 14535E	66	3502	53.1
SP	60294	LOG	0002S 14519E	100	5064	50.6
SP	70294	LOG	0012S 14458E	33	1626	49.3
SP	160294	SURF	0352S 16203E	35	3120	89.1
SP	180294	MM	0049N 16317E	59	7108	120.5
SP	190294	MM	0051N 16250E	57	6979	122.4
SP	190294	MM	0056N 16253E	46	5611	122
SP	200294	MM	0051N 16230E	73	8662	118.7
SP	200294	MM	0051N 16224E	39	4929	126.4
IY	120294	LOG	0354S 15651E	50	4710	94.2
IY	130294	PAYAO	0406S 15658E	112	7339	65.5
IY	140294	SURF	0359S 15807E	91	9669	106.3
IY	160294	LOG	0357S 15757E	121	6275	51.9
IY	170294	LOG	0339S 15748E	25	1435	57.4
IY	180294	SURF	0410S 15848E	90	8568	95.2
IY	280294	LOG	0440S 15747E	116	9170	79.1
IY	20394	LOG	0405S 15630E	120	8273	68.9
IY	30394	LOG	0510S 15629E	90	5986	66.5
IY	40394	LOG	0525S 15605E	121	8770	72.5
IY	50394	LOG	0532S 15613E	92	5816	63.2
IY	70394	SURF	0535S 15654E	118	3648	73.3
IY	70394	LOG	0532S 15613E	113	7095	62.8
IY	80394	LOG	0525S 15628E	123	8909	72.4
NF	180394	SURF	0304S 15520E	100	6323	63.2
NF	30494	LOG	0500S 15757E	60	3029	50.5
NF	40494	LOG	0456S 15801E	25	1351	54
PM	170494	SURF	0205N 13941E	50	5830	116.6
PM	210494	LOG	0254N 14653E	20	1762	88.1
PM	270494	SURF	0030S 15940E	50	6751	135
PM	270494	SURF	0027S 15943E	50	6902	138
PM	90594	SURF	0153S 15425E	50	6741	134.8
PM	140594	SURF	0119S 16032E	50	7095	141.9
PM	160594	SURF	0134S 16029E	50	5659	113.2
PM	180594	SURF	0130S 16016E	50	5699	114
PM	230594	SURF	0107S 15854E	50	6254	125.1
Totals				2653	218097	3344.6
Average				71.70	5894.61	90.39
Standard Deviation				32.86	2231.57	31.33

Table 5 1993 Yellowfin Tuna Length Frequency Records - Japan Purse Seine						
Source: MMA Fisheries Observer Program						
OBC	Date of Set	Set Type	Position	No. of YFT	Sum Lengths	Average
IY	120293	SURF	0317N 15741E	21	1725	82.1
IY	110293	PAYAO	0339N 15806E	25	1983	79.3
IY	60293	MM	0307N 15743E	18	1300	72.2
IY	300193	LOG	0243S 16230E	12	743	61.9
IY	290193	LOG	0242S 16236E	12	532	44.3
IY	290193	LOG	0242S 16227E	20	1487	74.4
IY	280193	MM	0242S 16233E	21	1498	71.3
IY	260193	LOG	0258S 16234E	21	1019	48.5
IY	180193	LOG	0312N 14654E	12	580	48.3
IY	170193	LOG	0405N 14425E	16	932	58.3
SP	280693	LOG	0531N 14232E	76	3756	49.4
SP	10793	SURF	0358N 14307E	100	9831	98.3
SP	40793	LOG	0429N 14416E	26	1885	72.5
SP	50793	LOG	0454N 14634E	92	7043	76.6
SP	70793	SURF	0357N 15103E	100	9825	98.3
SP	80793	SURF	0338N 15105E	52	6538	125.7
SP	90793	SURF	0451N 15358E	100	11338	113.4
LI	221093	LOG	0137N 16106E	100	6162	61.6
LI	241093	SURF	0045N 16056E	69	4955	71.8
LI	251093	LOG	0133N 16148E	100	4675	46.8
LI	281093	PAYAO	0042N 16122E	100	5117	51.2
LI	291093	PAYAO	0021N 16143E	100	4522	45.2
LI	41193	LOG	0056N 16000E	44	2211	50.3
LI	51193	LOG	0012N 16134E	41	2579	62.9
LI	91193	SURF	0058S 15838E	100	14240	143.4
LI	101193	SURF	0018S 15847E	54	6353	117.6
LI	121193	LOG	0028N 15851E	56	2365	42.2
LI	151193	LOG	0344S 16326E	100	7062	70.6
LI	161193	LOG	0351S 16319E	100	7654	76.5
LI	161193	SURF	0309S 16324E	100	10001	100
LI	171193	LOG	0342S 16323E	100	8742	87.4
LI	201193	LOG	0258S 16300E	100	8350	83.5
LI	211193	PAYAO	0321S 16307E	120	6697	55.8
LI	221193	SURF	0407S 16316E	100	7688	76.9
LI	231193	PAYAO	0344S 16323E	65	6942	106.8
LI	251193	LOG	0124S 16225E	100	5154	51.5
LI	261193	LOG	0121S 16232E	100	5147	51.5
LI	291193	LOG	0547S 16442E	100	9674	96.7
LI	301193	LOG	0601S 16434E	66	5884	89.2
LI	301193	SURF	0627S 16448E	100	10368	103.7
Totals				2739	214557	3017.9
Average				68.48	5363.93	75.45
Standard Deviation				36.10	3522.13	24.97

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Table 6 1994 Yellowfin Tuna Length Frequency Records - Japan Purse Seine						
Source: MMA Fisheries Observer Program						
OBC	Date of Set	Set Type	Position	No. of YFT	Sum Lengths	Average
CL	40694	SURF	0244N 14437E	100	11384	113.8
	100694	LOG	0119N 15831E	19	1619	85.2
	110694		0219N 15814E	2	196	98
	120694		0219N 15919E	16	1517	94.8
	120694	SURF	0056N 15955E	18	2368	131.6
	130694		0050N 16001E	13	1648	126.8
	150694		0012N 16044E	50	6173	123.5
	160694		0015N 16046E	9	1114	123.8
	160694		0014N 16040E	55	4625	84.1
	180694		0021N 15942E	6	760	126.7
	180694		0021N 15933E	50	5820	116.4
	180694		0022N 15934E	27	3403	126
Totals				365	40627	1350.7
Average				30.42	3385.58	112.56
Standard Deviation				28.42	3192.34	17.31
Table 7 1993 Yellowfin Tuna Length Frequency Records - FSM Purse Seine						
Source: MMA Fisheries Observer Program						
OBC	Date of Set	Set Type	Position	No. of YFT	Sum Lengths	Average
NF	250293	LOG	0019N 15112E	6	401	66.8
NF	240293	LOG	0027N 15437E	10	603	60.3
NF	180293	LOG	0356N 15222E	18	1185	65.8
NF	40293	MM	0106N 15433E	15	1478	98.5
NF	310193	MM	0011N 15424E	25	3034	121.4
NF	10393	PAYAO	0015S 15334E	4	289	72.3
LI	80593	LOG	0152N 16321E	73	5586	76.5
LI	130593	LOG	0122S 16248E	100	7847	78.5
LI	140593	LOG	0140S 16245E	100	7695	77
LI	150593	LOG	0101S 16234E	100	8132	81.3
LI	160593	PAYAO	0107S 16200E	100	6168	62.7
LI	180593	LOG	0008S 16255E	100	6962	69.3
LI	190593	LOG	0014S 16207E	100	7671	76.7
Totals				751	57051	1007.1
Average				57.77	4388.54	77.47
Standard Deviation				44.04	3246.93	16.45

Table 8 1994 Yellowfin Tuna Length Frequency Records - FSM Purse Seine						
Source: MMA Fisheries Observer Program						
OBC	Date of Set	Set Type	Position	No. of YFT	Sum Lengths	Average
SL	270294	LOG	0822S 17126E	34	1689	49.7
SL	20394	LOG	0839S 17223E	29	1343	46.3
SL	30394	LOG	0838S 17211E	20	974	48.7
SL	40394	LOG	0755S 17113E	25	1519	60.8
SL	140394	LOG	0316N 15949E	44	2701	61.4
SL	220394	LOG	0149N 15729E	37	2969	80.2
SL	230394	LOG	0109N 15712E	30	2414	80.5
SL	260394	LOG	0145N 15630E	34	2520	74.1
SL	270394	LOG	0144N 15610E	80	6051	75.6
SL	310394	LOG	0351N 15557E	53	4570	86.2
SL	20494	LOG	0339N 15606E	42	3322	79.1
SL	30494	LOG	0423N 15534E	49	3219	65.7
SL	40494	LOG	0449N 15546E	51	3887	76.2
SL	60494	LOG	0432N 15602E	28	2477	88.5
SL	110494	MM	0254N 15655E	31	2944	95
SL	170494	LOG	0027N 15539E	49	2696	55
SL	190494	LOG	0006N 15620E	33	2059	62.4
SL	200494	LOG	0007N 15640E	32	1432	44.8
SL	220494	PAYAO	0108N 15609E	37	2258	69.1
Totals				738	51044	1299.3
Average				38.84	2686.53	68.38
Standard Deviation				13.58	1214.16	15.07

Table 9. 1993 - 1994 Yellowfin Tuna Length Frequency Records by School Type and Flag.						
Source: MMA Fisheries Observer Program						
Year	Flag	Set Type	No. of YFT	Sum Lengths	Average	
1993	Taiwan	LOG	655	38160	63.2	
		MM	52	6723	134.4	
		SURF	1408	149528	108.6	
		WH.SHK.	21	1768	84.2	
1994	Taiwan	LOG	1069	78378	75.1	
		MM	457	51215	117.8	
		PAYAO	55	3004	54.4	
		SURF	317	36790	114.7	
1993	Korea	LOG	421	24958	60.2	
		SURF	446	42771	98.6	
1994	Korea	LOG	1386	88944	64.1	
		MM	274	33289	122	
		PAYAO	112	7339	65.5	
		SURF	881	88525	112.8	
1993	Japan	LOG	1394	93636	63.9	
		MM	39	2798	71.8	
		PAYAO	410	25261	67.7	
		SURF	896	92862	102.8	
1994	Japan	LOG	37	3332	92.7	
		SURF	328	37295	119.2	
1993	FSM	LOG	607	46082	72.5	
		MM	40	4512	110	
		PAYAO	104	6457	67.5	
1994	FSM	LOG	670	45842	66.8	
		MM	31	2944	95	
		PAYAO	37	2258	69.1	

Table 10. 1993-1994 Yellowfin Length Frequency Records by School Type and Flag.
 Source: MMA Purse Seine Port Sampling Program

Year	Flag	Set Type	No. of YFT	Average Length
1993	Taiwan	SURF	351	88.40
		LOG	479	70.60
1994	Taiwan	SURF	346	79.00
		LOG	246	70.10
1993	Korea	SURF	90	99.20
		LOG	447	60.00
1994	Korea	SURF	353	79.90
		LOG	1511	66.10
1993	FSM	SURF	0	0.00
		LOG	115	64.40
1994	FSM	SURF	0	0.00
		LOG	156	60.10

Figure 5. 1993 MMA Observer Trips by Gear Type (37 Trips)

