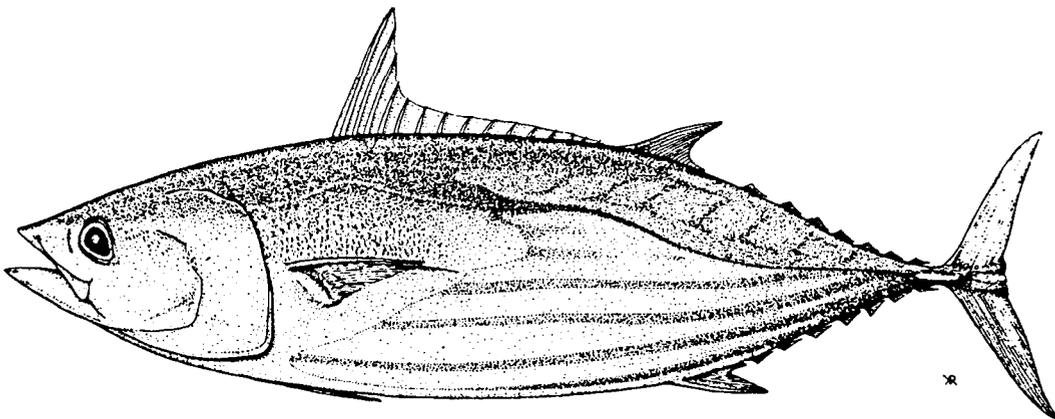


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MMA PURSE SEINE TRANSHIPMENT SAMPLING MANUAL



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I. INTRODUCTION

The Micronesian Maritime Authority (MMA) has instituted, as part of the minimum terms and conditions of access for foreign fishing vessels seeking to operate in the EEZ of the FSM, a ban on high-seas transshipment of purse seine (PS) caught tuna. This ban is part of a region wide initiative aimed at improving the monitoring capabilities of the various fisheries agencies who are in charge of collecting data from the foreign fishing fleets operating in the western Pacific Ocean. A second aim of the transshipment ban is to provide economic benefits to the island states through increased transshipment interactions with local industries (through port fees, stevedoring, bunkering, supplies, local employment, support facilities, etc.).

The ban formally took effect June 15, 1993 with some vessels having voluntarily complied before this date. A majority of the PS vessels from the Taiwanese and Korean fleets have elected to tranship their catches from the FSM ports of Chuuk and Kosrae. As part of the monitoring and compliance objective, port samplers have been recruited by the MMA in various FSM ports to gather data on length frequencies of the catch and to compile various statistics on the transshipment operations.

The purpose of this manual is to provide a field guide for MMA port samplers to follow when carrying out their duties. The port samplers are encouraged to provide suggestions on ways to improve this manual and periodic revisions will take place to incorporate these suggestions.

II. FISH CARRIER ARRIVAL

You should make every attempt to secure advance knowledge of the arrival of Fish Carrier Vessels (Refrigerated Transport Vessels) to your port. This can be accomplished by keeping in close contact with the local agents in charge of handling the ship traffic for your port or through the port authority. Occasionally you will receive notice from MMA headquarters of the imminent arrival of a Fish Carrier to your port, especially if the Carrier is applying for a Carrier Vessel Permit for the first time. When a Fish Carrier arrives you should begin noting down the information asked for in the **MMA Fish Carrier-Cargo Manifest Form** (see Appendix A). You may find it convenient to give a blank copy of the this Fish Carrier Form to the captain of the Carrier vessel when he arrives to your port. The captain can then keep a running record of the PS vessels that deliver cargo to his ship and when he departs port he should turn in this Carrier Form to you or any other authorized agent in your port.

Procedures for Filling out the Header Information for the Fish Carrier Vessel-Cargo Manifest Form are as follows:

1. *Vessel Name* → List the English spelling of the Carrier vessel. If not visible, or if the name is displayed in a language other than English, you should ask the captain of the Carrier to show you his MMA Carrier Vessel permit which will have the correct name in English. (see Appendix B for copy of Carrier Vessel Permit application).
2. *Captain's Name* → The name of the captain of the Carrier vessel.

3. *Port* → The designated transshipment port you are assigned to cover. If the Carrier is anchored or drifting at a site other than the designated site then list the site in parenthesis next to the designated port entry (e.g. Port Kosrae (Lelu Harbor))
4. *MMA Permit No.* → Ask the captain of the vessel to show you the MMA Carrier Vessel Permit. Copy down the number as written on the permit and verify the validity of the expiration date.
5. *Arrival Date* → Write out the date, e.g. July 7, 1993, that the vessel arrived to your port. This will avoid confusion on what format was used to list the date. If, for example, a particular Carrier arrives to your port late one evening and drifts outside the harbor entrance until early the next morning waiting for first light to enter port; you should list the date the vessel actually enters port as the arrival date.
6. *Departure Date* → Write out the date, e.g. July 20, 1993, that the vessel departs port upon termination of the transshipment operation. If the vessel leaves port temporarily for any reason and returns within 24 hours, this should not be considered the departure date. You should, however, note down the reason why the vessel temporarily left port on the back of the Carrier Form.
7. *Destination* → This is a very important piece of information and every effort should be made to obtain the vessel's final cannery destination. Ask the agent of the transportation company that chartered the vessel or the vessel captain for the final cannery destination.
8. *Shipping Company* → List the name of the company that owns the Carrier vessel.
9. *Transportation Chartering Company* → List the name of the company that has contracted out the Carrier Vessel for transportation services to the canneries (e.g. Marine Chartering Co).
10. *Fish Purchasing Company* → List the name of the company that has arranged for the purchase of the fish from the purse seine vessels (e.g. Tri-Marine International, Inc.).
11. *Fish Onboard Upon Arrival?* → This bit of information can usually be obtained from the Customs agent clearing the vessel. If the vessel arrived with fish on board then the amount by species should be declared to Customs. Ask the Customs agent for the information. If it is not available from Customs then ask the vessel captain or the transportation company agent (e.g. Marine Chartering agent) for the information. If a **metric tonnage** breakdown by species is not available then list the overall tonnage onboard for all species combined. *Port of loading* refers to the previous transshipment port(s) where the fish was loaded from the PS vessels to the Carrier. If various ports of loading have occurred prior to the vessel arriving to your port, try and list the order in which they occurred and the tonnage by species taken onboard at each port (use the back of the form for additional writing space). *Flag of PS vessels* refers to the flag under which the FSM fishing license has been issued, e.g. Taiwan, Korea, Japan.

Procedures for Filling out the Table Information for the Fish Carrier Form are as follows:

1. *Name of PS Vessel (CRN)* → The correct spelling of the PS vessel name should be taken from the FSM fishing permit that must, by law, be posted in the wheel house of every licensed vessel operating in the FSM EEZ. Likewise, the CRN should also be taken from the permit. Once obtained, the permit name and CRN should be used to verify that the correct information is painted on the vessel in the appropriate locations (Name on the port and starboard bow siding with the CRN directly below in legible characters).
2. *Date Begin Unloading (Date Beg. U/L)* → Write in the month and day, e.g. July 6, that the PS vessel first began unloading fish to the Carrier. If the PS vessel suspends operations for a considerable length of time (breakdown of hydraulic system, shift in position of carrier, etc.), then note down on the back of the Fish Carrier Form the date the operation was suspended, the reason for the suspension, and the date the operation begins anew.
3. *Date End Unloading (Date End U/L)* → Write in the month and day, e.g. July 13, that the PS vessel finishes unloading fish to the particular Carrier noted in the header information for this form.

Note: The PS vessel may subsequently unload more fish to a different Carrier ask the fishing master for this information.

4. *Tons of SKJ* → List the metric tons of skipjack tuna that the PS vessel unloaded to the Carrier in question. This information can be obtained from various sources such as, the agent for the transportation company, the captain of the Carrier vessel (completed Cargo Manifest Form), the fishing master and/or captain of the PS vessel, or the local agent in charge of the operation in your port.

Note: The tonnage by species information is one of the most important data points you will be collecting. Please make every effort possible to obtain this information on a timely and accurate basis.

5. *Tons of YFT* → List the metric tons of yellowfin tuna that the PS vessel unloaded to the Carrier in question. If the information you obtain lists bigeye tuna in addition to skipjack and yellowfin then note this amount down as a footnote for the PS vessel in question.

Note: Most of the small and medium size fish (normally less than 10 kilograms in weight) are currently taken to Asian canneries where there is no price difference paid amongst the species of tuna. As a result, there is no incentive for the PS vessels to try and separate out the various species while unloading to the Carriers. Likewise, the larger yellowfin tuna (surface school fish) are rarely found mixed with any substantial amounts of bigeye tuna.

6. *Mixed YFT + SKJ* → List the combined amounts of YFT and SKJ that the PS vessel unloaded to the Carrier vessel. This column is to be filled out only when you are not able to get an accurate breakdown of amount unloaded by species.

Note: Use multiple pages of this form to accommodate more PS vessel entries than there are spaces on an individual page. List the page number at the top of the form to indicate

multiple pages, e.g. if there are 3 pages list Pg. 1 of 3, Pg. 2 of 3, and Pg. 3 of 3 respectively.

III. FISH CARRIER DEPARTURE

When a Fish Carrier has completed receiving it's cargo and is ready to depart your port, you should make sure that you obtain a copy of the MMA Fish Carrier-Cargo Manifest Form . This is a very important document and you must make every effort to track down this information.

The cargo manifest should list information on the tonnage received from each PS vessel (by species), the dates they received the fish, and the final destination of the fish. Make sure the information received is accurate and complete. Clarify any ambiguous information with the captain of the Carrier vessel prior to his departure.

IV. PURSE SEINE VESSEL ARRIVAL

When a PS vessel arrives to your port to unload fish to a Carrier vessel you should make arrangements to board the vessel at the earliest possible time (usually after Customs and Immigrations clearance). Once on board the vessel you should locate the fishing master or the highest ranking officer in charge if the fishing master is not present. Give to the fishing master the letter of introduction that you have in your possession and show him your identification badge (see Appendix C for the English version of the introduction letter, Appendix D for the Taiwanese version and Appendix E for the Korean version).

Once the fishing master has read the letter and you have answered any specific questions he might have, then ask him to show you the FSM fishing permit. As stated earlier, this permit should be posted in the wheel house of the vessel. If it is not then make a note and forward this information to MMA headquarters. If the fishing master fails to produce an FSM fishing permit then you should return to your office and contact MMA headquarters immediately.

From the FSM fishing permit, copy down the PS vessel name and the CRN. Verify that the permit is valid, i.e. date of expiration listed in the right hand corner of the permit has not been reached. If the permit has expired, then you should immediately contact MMA headquarters.

Next you should request from the fishing master to see the fishing logbook. If he is reluctant to cooperate, direct his attention to your letter of introduction that details your authority as an FSM government official to have access to the fishing logbook. Once in hand, you should begin to copy the appropriate information from the fishing logbook onto the MMA Well Loading Form (see Appendix ?).

V. MMA WELL LOADING FORM

The MMA Well Loading Form has been designed so that the pertinent sampling information can be abstracted from the PS vessel's fishing logbook. Information on the set type, position, catch by species, and the well storage sequence are to be recorded. This information will allow you to

choose the appropriate wells for length frequency sampling based on the statistical parameters mentioned above.

If you board the PS vessel and the clearance party is in the process of inspecting the necessary documents (which may include the fishing logbook), you should wait until they are finished with their inspection. Once the vessel has been cleared, then ask the fishing master to allow you access to the fishing logbook to complete the Well Loading Form.

You may need to have the radio-operator, or anyone else on the vessel who understands English, assist you in the interpretation of the logbook information. In addition, the chief engineer may have to be consulted for information on the well loading sequence for the catch.

The Well Loading Form should be abstracted for the most recent fishing operation completed previous to the transshipment operation. That is, the last information recorded in the fishing logbook since the previous transshipment operation.

Procedures for Filling out the Header Information on the MMA Well Loading Form

1. *PS vessel name* → List the PS vessel name taken from the FSM Fishing Permit.
2. *Carrier Vessel* → List the Carrier Vessel name as recorded on the FSM Support Vessel Permit.
3. *Port* → List the port where the transshipment is taking place.
4. *Arrival Date* → refers to the date the PS vessel entered the port regardless of whether the transshipment operation has taken place.
5. *Departure Date* → refers to the date the PS vessel leaves the port and not necessarily the date the transshipment operation terminated.
6. *Last Port of Entry* → refers to the last transshipment port of entry and not to any intermediate ports visited for a brief period on an emergency or otherwise basis.
7. *Departure Date* → refers to the date the PS vessel departed port to begin the trip that you are now copying.

Procedure for Filling out the Table Information on the MMA Well Loading Form

1. *Set #* → refers to the sequential order (1,2,5 etc.) of those sets that recorded catch (do not include those sets that were unsuccessful, i.e. "zero-catch" sets).
2. *Date* → Record the date of the set as listed in the fishing logbook.
3. *Latitude and Longitude* → Record the set position as noted in the fishing logbook.

4. *Set type* → For the purposes of this form, set type should be recorded as either log or surface fish. If the logbook goes into more detail (e.g. whale shark set, payao set from vessel, etc.) then make a footnote on the back of the Well Loading Form referring to the set in question by its set number on the form.
5. *SKJ, YFT and OTH* → List the catch for that set, in metric tons, in the columns for SKJ and YFT. If the logbook records catch of bigeye tuna, BET, then list this catch in the "other" (OTH) column. Use the Species Codes in Appendix F.
6. *Well number (Well #)* → Refers to the placement of the catch in the storage wells below deck. The accurate recording of the well loading sequence is absolutely imperative for the selection of fish to be sampled. You may need to consult with both the fishing master and the chief engineer to obtain this information. For designation of the starboard wells, use the letter "S" and for designation of the port wells, use the letter "P" (e.g. port 5 well = P5 well)

VI. SAMPLING STRATEGIES AND CONSIDERATIONS

The sampling of purse seine caught fish being transhipped at FSM ports presents some unique sampling strategies not found under conventional port sampling programs. For one, you will be dealing with foreign fishermen who generally do not have a good grasp of the English language. As a result, the logbook information may be difficult to understand and you may have to request assistance in translating the information into English.

The current Regional PS Catch Report Form does not require the routine recording of well loading information for the catches. As a result, you will have to use various sources available (e.g. the chief engineer's records) to track down the well loading information.

Another concern is the occasional separation of the catch, by species and size, to unique carriers destined for canneries in different parts of the world. We have seen, for example, that the Asian canneries are purchasing small to medium size tuna with the larger tunas (mostly yellowfin) going to Europe, Japan or the US canneries.

Keeping these factors in mind, a sampling strategy has been designed to obtain the type of information that will be most useful for management of the tuna stocks in the western Pacific Ocean.

Of particular interest to the fisheries managers throughout the region are the size classes of fish being captured on log fish versus surface caught fish. In order to accurately quantify sizes of fish by set type, length frequency samples must come from wells that are not contaminated with a mixture of the two set types. This topic will be covered in more detail in the section on Selection of Wells for Sampling (Sec. IX, Pg. 15).

VII. MEASUREMENTS AND SAMPLING PROCEDURES

Before getting into the specific sampling design there are some important points to remember about the sampling procedures:

1. Do not measure any deformed or damaged fish, especially those with bent or broken tails.
2. When using calipers, gently set the caliper jaws on the upper jaw (snout) and the center of the tail (fork) with the fish laying straight and flat.
3. Do not let the crew assist you in choosing fish as they often will select only attractive (i.e. large) and/or conveniently sized fish.
4. You should be positive of your species identification before you record the information on your form. If you are not sure of an identification then set aside the fish and examine it carefully when time permits. Using secondary identification features (e.g. liver differences between bigeye and yellowfin tuna) will help clarify doubts.

Note: Be sure you receive permission from the chief engineer and/or the fishing master to cut open the fish in question before doing so!

5. Do not commit any vital information to memory. Always record completely the information onto the forms and double-check your information when the workday is finished.
6. Conduct your LF sampling in a way that will interfere as little as possible with the unloading procedure.
7. When conducting a random sample, remember to choose fish as if you were grabbing blindly into the well. Do not select fish based on their size and/or aesthetic qualities.
8. After you have taken your measurements, return the selected fish to the proper location as soon as possible. Remember to be courteous and respectful of the rules and regulations of the vessel.
9. **Never turn your back on the operation while measuring fish.** Keep your eyes open and be aware of the potentially dangerous areas around you. Respect the dangerous nature of the operation and take measures to ensure your own personal safety.

VIII. SAMPLING OBJECTIVES

The primary target species that you will be sampling are yellowfin tuna, *Thunnus albacares*, skipjack tuna, *Katsuwonus pelamis*, and bigeye tuna, *Thunnus obesus* (see Appendix K - Species Identification Keys). You will, however, be asked to identify and record other species commonly encountered in purse seine catches that you come across during your sampling (see Appendix F for list of Species Codes).

The first task at hand is to identify whether or not the unloading crews onboard the PS vessels are separating the fish by size and/or species. To accomplish this you must go down to the wet deck area and observe the unloading operation. If you see large yellowfin being taken out of the wells and placed in a corner, or thrown into a separate well for unloading at a later date, then you need to make note of this before proceeding with your sample.

If the carrier to which the PS vessel is unloading to is bound for an Asian cannery (e.g. Bangkok, Korea) then you will most likely be sampling log caught fish and smaller fish from surface sets. For these smaller fish, your sampling objective is to obtain a **100 fish species composition sample (S.C.S.)**. The sample needs to be completely **random**. That means that you are to grab, without regard for species or size, 100 fish as they are taken out of the wells or as they are winched up from within the wells onto the working deck. Usually, 8-10 fish per brail are sampled without interrupting the operation for any length of time.

After you have measured 100 fish for the species composition sample, you will then tally up the number of skipjack, yellowfin and bigeye that were measured. You are asked to measure a minimum of 50 skipjack, so if in your 100 fish S.C.S. you have obtained at least 50 skipjack, then do not measure any more skipjack for that well.

After having completed your S.C.S. , your new target for yellowfin will be 100 fish and for bigeye 50 fish. This means that if, for example, you sampled 22 yellowfin during the 100 fish S.C.S., you will now need to **selectively** seek out 78 more yellowfin (from the same well) to reach the 100 yellowfin target. Likewise, if you measured only 12 bigeye during your S.C.S., then you will need to **selectively** seek out 38 more bigeye to complete the 50 fish bigeye target.

Obviously, there will be times when there are very few or no bigeye present in your sample. The same may hold true, to a lesser extent, for yellowfin. You should, however, make every effort to obtain the target samples for both yellowfin and bigeye if there are sufficient numbers of fish available for sampling . You are not expected to wait around for half a day trying to get your target numbers if only a few fish are present in the samples!

There will be occasions when pure skipjack school fish are being unloaded with few or no yellowfin and/or bigeye present. In such cases you will not have to do a 100 fish S.C.S. and your new target will be 50 skipjack only. As you may have already noticed, the size ranges for skipjack tuna are much less variable, hence the smaller target sample size.

If the PS vessel you are on is unloading it's size sorted larger fish to a yellowfin tuna carrier then you will not be required to do a 100 fish S.C.S. Your target sample size will now be 50 yellowfin (size sorted sample). If there are other species present in the "yellowfin carrier load" then you should measure and record those species only if you come across them as part of your random sample. Remember, your random sampling data will be used to extrapolate the species composition of the catch for the fleets in question.

Procedures for Filling out the Header Information on the MMA - Purse Seine Length Frequency Sheet (see Appendix H)

1. *Name* → List your name and the name of any assistants who are working with you.
2. *Date* → Write out the date, e.g. July 6, you took the sample. This will avoid confusion on the format used to record the date.
3. *Port* → List the official designated port and in parenthesis the actual site of transshipment if it differs from the designated site.

4. *Carrier Vessel* → List the English name of the Carrier vessel receiving the fish you are sampling.
5. *CRN/PERMIT No.* → List the Country Registration Number and the Support Vessel Permit number of the Carrier vessel as recorded on the Support Vessel Permit.
6. *Purse Seine Vessel* → List the English spelling of the PS vessel name. This name should be taken from the FSM Fishing Permit and the correct spelling checked against the name painted on the bow siding of the vessel.
7. *CRN/PERMIT No.* → List the Country Registration Number and the Fishing Permit Number found on the PS vessel's FSM Fishing Permit posted in the wheel house.
8. *Type of sample* → List the type of sample taken, e.g., 100 fish species composition sample (S.C.S.), a straight 50 fish sample, or selective sampling to arrive at target numbers after S.C.S.
9. *Time* → Record the time you begin sampling fish and the time you finish.
10. *Size Sorting? (Explain)* → If the unloading crews on the PS vessel are separating fish by species and/or size, to be off loaded to a different Carrier at a later date, then you write "yes" in the space provided. List the species and the size category being separated (e.g. large YFT).
11. *Location/Well No.* → List the location on the PS vessel where the LF sampling is being conducted (e.g. working deck, wet deck, upper deck) and the well number from which the fish are being extracted for your sample (e.g. Starboard 9 well).

Procedure for Filling out the Table Information on the PS Length Frequency Sheet

List the species code in the appropriate column on the sheet (see Appendix F for Species Codes). The fork lengths are to be recorded to the nearest centimeter (e.g. 45.1 cm = 45 cm., 43.8 cm = 44 cm) when possible. If you need additional space to record notes concerning the sample you are taking then use the reverse side of the sheet for doing so. Be careful to note down the appropriate species codes in the species column on the sheet. If you use quotations and/or arrows to denote the same species code in a long series, be extra careful not to mix up the species codes.

IX. SELECTION OF WELLS FOR SAMPLING

Once you have completed the well loading form, then you should select for sampling those wells that contain the following criteria:

1. **No mixed set types - Do not measure fish from a well where log fish and school fish (surface fish) have been combined.** Measurements should come from pure log fish wells or pure surface fish wells.

2. **Give sampling priority to those wells that have fish from one set if possible.** If, for example, there was a large catch made, say 120 m/t, and the fish were placed in the starboard 5 well (50 m/t), the port 5 well (50 m/t) and Starboard 6 well (20 m/t), then the best wells to sample would be the # 5 wells (one set wells) and not the Starboard 6 well which will most likely receive fish from the following set(s). If there are no "one-set" wells available for sampling, then choose those wells which have the fewest sets for sampling (e.g. 2 or 3 set wells).
3. **Try and obtain samples for both school types, i.e. log fish and surface fish.** If there are pure wells of both school types, then you will need to carry out distinct LF samples for each school type. Remember, the emphasis is on quality not quantity. I would rather see you get good LF samples with supporting documentation from one vessel versus marginal LF samples from several vessels.
4. **If possible, select those wells that have fish from the same month of capture.** For example, a well that contains 3 sets of pure log fish captured in July would be preferable for LF sampling versus another well that had 4 sets of log fish, 3 of which were made in July but with the 4th set made in August.

X. REPORTING REQUIREMENTS

Every two weeks you should send your completed forms to MMA headquarters. If you know of someone who is travelling to Pohnpei from your Island, then ask that person to hand-carry the data package to Pohnpei. Call the office and notify someone from MMA of the time of arrival of the flight and the courier's name. We will send someone to the airport to pick up the package.

You need to make photocopies of all your data prior to sending the data off to Pohnpei. These copies should be kept in a secure, accessible place for reference and cross-checking. It is imperative that you maintain your files in order and update them on a timely basis.

You will occasionally be contacted by MMA headquarters and asked to convey information about the transshipment activity over the radio. When doing so, be very careful not to reveal any confidential information over the radio (vessel name, tonnage by vessel, etc.). In order to avoid revealing such confidential information, a series of simple radio codes has been developed for your use (Appendix I). If instructed to, please use the codes when transmitting confidential information over the radio.

XI. CONFIDENTIALITY AND ACCURACY OF DATA

The data you will be collecting is the sole property of the Micronesia Maritime Authority and is considered strictly confidential. You are not authorised to release or discuss any portion of your data to anyone other than authorised MMA personnel, unless prior approval has been obtained. You are also responsible for the accuracy of the data you collect. Falsifying information is a serious breach of this responsibility, the violation of which, will lead to the immediate termination of your contract. The information you collect is vital to the coherent management of your nation's valued fisheries resources.

As an official FSM government representative your work reflects the image of your nation and you should uphold the highest standards of conduct while onboard the vessels.

APPENDIX G - SPECIES CODES

I. Scombrids (Tuna Family)

<i>Code</i>	<i>Category</i>	<i>Common name</i>
YFT		Yellowfin
BET		Bigeye
ALB		Albacore
SBT		Bluefin (Southern)
SKJ		Skipjack
KAW		Kawakawa
MAK		Unidentified mackerel
WAH		Wahoo
BUL		Bullet tuna
FGT		Frigate tuna
TUN		Unidentified tuna

Not all codes are FAO standard. Craig has been contacted about this. TL.

II. Billfish

MLS	Striped Marlin
BLZ	Blue Marlin
BLM	Black Marlin
SWO	Swordfish
SAI	Sailfish
SBS	Short-billed Spearfish
MAR	Unidentified Marlin

III. Sharks and Rays

SLK	Silky shark
MAK	Mako sharks
OWT	Oceanic White-tip shark
THR	Thresher sharks
BSH	Blue shark
HAM	Hammerhead shark
TIG	Tiger shark
SHK	Unidentified sharks
RAY	Pelagic Sting-ray (other rays)

APPENDIX G - SPECIES CODES

IV. Fishes

TRF	Oceanic Triggerfish
RBR	Rainbow Runner
RUD	Rudder Fish
SCD	Mackerel Scad
REM	Remora Fishes
SUN	Sunfishes
MAH	Mahi Mahi (Dolphinfish)
OPH	Opah
BAR	Barracudas
FSH	Unidentified Bony Fishes

V. Marine Turtles & Mammals

HAW	Hawksbill
GRN	Green
LTB	Leatherback
OLR	Olive Ridley
TUR	Unidentified Turtle
DOL	Dolphin/Porpoise
WHL	Whale
MAM	Unidentified Marine Mammal

VI. Species Condition codes

<i>Code</i>	<i>Description</i>
A	Alive
D	Dead
U	Condition Unknown