



Pacific  
Community  
Communauté  
du Pacifique

# Purse-seine Observer Guide

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2021





# Purse-seine Observer Guide 2021

SPC Oceanic Fisheries Programme



Noumea, New Caledonia, 2021

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Original text: English

Pacific Community Cataloguing-in-publication data

Purse-seine Observer Guide 2021 / SPC Oceanic Fisheries Programme

1. Purse seining — Oceania.
2. Fisheries — Oceania.
3. Fishery management — Oceania.
4. Fisheries — Law and legislation — Oceania.
5. Purse seining — Law and legislation — Oceania.

I. Title II. Pacific Community

639.277830995

AACR2

ISBN: 978-982-00-1399-5

Prepared for publication and printed at  
Pacific Community headquarters, Noumea, New Caledonia, 2021

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## Acknowledgements

Cover – Jipe Le Bars. Illustrations – Youngmi Choi. Design and layout – Lorena Gonzalez

Original texts written by Ms Deirdre Brogan.

General forms, Journal and Tuna tagging recovery texts were based on the *Longline Observer Guide 2021* by Siosifa Fukofuka, Timothy Park and Caroline Sanchez.

## Abbreviations

EEZ	exclusive economic zone
EPIRBS	emergency position indicating radio beacons
FAO	Food and Agriculture Organization of the United Nations
FFA	Pacific Islands Forum Fisheries Agency
FSMA	States of Micronesia Arrangement for Regional Fisheries Access
GPS	global positioning system
IMO	International Maritime Organization
IRCS	international radio call sign
IUU	illegal, unreported, unregulated
MARPOL	International Convention for the Prevention of Pollution from Ships
PIRFO	Pacific Islands Regional Fisheries Observer
PNA	Parties to the Nauru Agreement
SPC	Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
SSI	species of special interest
USMLT	United States Multilateral Treaty
UTC	Universal Time Coordinated
UVI	unique vessel identifier
VMS	vessel monitoring system
VSC	vessel safety check
WCPFC	Western and Central Pacific Fisheries Commission

# Purse-seine Observer Guide

Observers collect valuable information which cannot be collected elsewhere, providing much of the information needed to both understand and manage the fishery and help enforce legislation. The data is expensive to gather in terms of both funding and work hours. It is therefore important that observer forms are filled in accurately to ensure that the collected data is of high quality and can be used for the intended purposes.

The Purse-seine Observer Guide has been put together to assist the Pacific Island Regional Fisheries Observer (PIRFO) with the observer data collection forms and other parts of observer work while out at sea. This guide is part of the materials used during PIRFO training.

The Purse-seine Observer Guide should be used by purse-seine observers who are completing SPC/FFA Regional Purse-seine Observer Forms. The observer form was last revised in 2018.

The aim of this guide is to make sure observers know the correct way, and the most practical way, to collect accurate fisheries information and data. It is also important to know that purse-seine fishing operations covered by PIRFO do change from time to time. This guide won't be able to provide correct answers for every scenario that is carried out by various fleets; however, it provides enough information to guide the newly trained PIRFO on their first at sea trip.

## Form PS-1 (page 1) General Information

### Data submitted

One PS-1 (page 1) form must be filled in for every trip. Every workbook has two PS-1 (page 1) forms inside. Observers are required to fill in the first form. The second form is included as a back-up form only. If a second or third workbook is used during a trip on the same vessel, there is no need to fill in another PS-1 (page 1) form.

### Definition: Fishing trip

A complete fishing trip is defined as 'from one full or partial unloading to the next full or partial unloading'.

If your purse-seine vessel comes into port but does not unload fish, the observer should normally remain on board the vessel until the trip is complete (i.e., the vessel returns to port to unload some or all of its fish). If the observer's trip does not cover a complete fishing trip, as defined in the box above, they can give the reason in the written report.

A lot of the information for the PS-1 form can only be collected by questioning the captain or other officers. It might be difficult to fill in the PS-1 form as soon as you get on board, but you should make a start after the first few days on board. It can be a good way to start building up a relationship with a new captain and the officers before the fishing starts. If you cannot get the information for some of the data fields at the beginning of the trip, you may find that you will be able to get the answer later on. For some data fields like 'Usage', you will need to gather information continuously during the trip before you can fill in the form.

*Fill in all data fields.* Fill in all the data fields on the PS-1 form or insert a dash if necessary. A dash shows that the observer tried to get the information, but they were not able to get it (due to a language barrier etc). However, with 100% purse-seine observer coverage, many vessels are very aware of the information observers require. If a dash is inserted in a data field where information is normally expected, then write a comment to explain why. If there is not enough room on the form, then record the page number of your journal where the rest of the comment can be found (see 'Observer journal' page 80).

### Trip details

On the PS-1 form, the trip details are the header details.

### Observer programme

OBSERVER  
PROGRAMME: **SBOB**

Fill in the code for the observer programme that organised your placement with the vessel.

*Note:* This may not be your national observer programme. For instance, when you go on a trip organised by the Forum Fisheries Agency, you may use a code like FFAOB. Ask your observer coordinator or placement officer to confirm your observer programme code before you go on board.

**Caution!** Watch out for this data field as it is placed in the title area of the form and not the main part of the form because of lack of space.

OBSERVER PROGRAMME: <b>SBOB</b>		<b>SPC/FFA REGIONAL PURSE SEINE OBSERVER GENERAL INFORMATION</b>			<b>FORM PS-1 (pg 1)</b>					
REV. 2018										
<b>TRIP DETAILS</b>										
OBSERVER	NAME <b>John Smith</b>		TRIP START LOCATION <b>At sea 08°27'S 167°35'E</b>			TRIP START (SHIP'S DATE AND TIME)				
						YY	MM	DD	h h	m m
						<b>20</b>	<b>05</b>	<b>20</b>	<b>08</b>	<b>00</b>
NATIONALITY <b>SB</b>		TRIP ID NUMBER <b>JHS 20-01</b>	TRIP END LOCATION <b>Honiara</b>			TRIP END (SHIP'S DATE AND TIME)				
						YY	MM	DD	h h	m m
						<b>20</b>	<b>06</b>	<b>29</b>	<b>16</b>	<b>30</b>
VESSEL NAME <b>Solomon Jade</b>		FISHING PERMIT / LICENSE No.s <b>SI-LV09/2020</b>		VESSEL DEPARTURE PORT <b>Honiara</b>		VESSEL DEPARTURE DATE				
						YY	MM	DD		
						<b>20</b>	<b>05</b>	<b>19</b>		

Note that the data fields to the right of the vertically inserted word 'Observer' are asking for information related to the observer, and not the vessel. We further outline these seven data fields below.

### Observer name

Observers must write their full name as it appears in their passport (first name, last name). The full name should be written on all forms. Do not use any nicknames or abbreviations.

### Nationality

This is the observer's nationality as shown by the passport they hold. To indicate the observer's nationality, use the country codes page inside the workbook.

### Trip ID number

Record the complete observer trip identification number issued by your placement observer programme, or as determined by the number of trips already completed during the calendar year. All observers will be issued with their own personal 3-letter observer ID code during observer training, and these can be used to create your trip ID number. Some observer programmes issue their own trip ID numbers. You should confirm your observer trip ID number with your coordinator or placement officer before you leave port.

### Definition: Purse-seine vessel

In this guide, the 'purse-seine vessel' is the observer's assigned vessel, which is the vessel they have been sent to in order to observe fish being caught. Initially, the observer might board another vessel to transit to the purse-seine vessel. This vessel is referred to as the transit vessel in this guide. The transit vessel may also be a purse-seine vessel, a fish carrier or a light boat; however, for the purpose of this guide, any purse-seine vessel that carries the observer to their assigned vessel is known as the transit vessel.

### Trip start location

This is the place the observer first boards their purse-seine vessel. Normally this will be at a port and the name of the port will be written into the data field. If you travel to your purse-seine vessel by means of a transit vessel, then the observer's trip start location will be recorded as 'At sea' and the latitude and longitude (dd° mm' and ddd° mm') of the position where the purse-seine vessel was boarded should be recorded in this field. See example below.

<b>TRIP DETAILS</b>										
OBSERVER	NAME <b>John Smith</b>		TRIP START LOCATION <b>At sea 08°27'S 167°35'E</b>			TRIP START (SHIP'S DATE AND TIME)				
						YY	MM	DD	h h	m m
						<b>20</b>	<b>05</b>	<b>20</b>	<b>08</b>	<b>00</b>
NATIONALITY <b>SB</b>		TRIP ID NUMBER <b>JHS 20-01</b>	TRIP END LOCATION <b>Honiara</b>			TRIP END (SHIP'S DATE AND TIME)				
						YY	MM	DD	h h	m m
						<b>20</b>	<b>06</b>	<b>29</b>	<b>16</b>	<b>30</b>

### Trip start (ship's date and time)

Use ship's time to record the trip start. Record the date using the YY MM DD date standard (year-month-day). The trip start time is when the observer's purse-seine vessel starts to leave port. It is possible that the observer will be on board the purse-seine vessel for a day or more before the purse-seine vessel leaves port, but the information that is required here is the date and time the vessel leaves port. The date and time that the observer joined the purse-seine vessel can be recorded in Support Form 4 and noted in both the journal and the trip report. If the observer joins the purse-seine vessel at sea, then the 'Trip start date and time' is the date and time they transferred between vessels.

**Date format: Year Month Date (yy mm dd)      Time format: Hour Minute (hh mm)**

### Recording information on transit vessels

Normally, the time the observer starts recording data is the same time they have recorded as the trip start (ship's date and time). If the observer sees an incident while on board the transit vessel that they would like to report, they are encouraged to report this in their journal and their trip report. They should refer to the observer forms as a guide as to what information is required (i.e. the GEN-1 data fields). If, in the observer's opinion, it is a serious incident and merits a full form (i.e. GEN-3 form) make sure the name of the transit vessel is placed in the 'Vessel name' data field in the header details. Any such forms should be kept separate from the main set of forms and clearly identified to the debriefer or coordinator when the forms are submitted.

### Trip end location

Record the location where the trip ended. Normally, this will be the name of the port where the observer disembarks the vessel. Fill in the port name. If the observer disembarks from the purse-seine vessel at sea and returns to port on board another transit vessel, then the return port will be 'At sea' and the latitude and longitude (dd° mm' and ddd° mm') positions will be recorded.

### Trip end (ship's date and time)

Use ship's time to record the time and date the trip ends. If the observer returns to port on board the purse seiner, then record this as the time the purse-seine vessel comes alongside the wharf, anchorage in the lagoon or drops its anchor.

If the observer returns to port on board another transit vessel, then the return date and time will be the time that the observer leaves their purse-seine vessel.

Fill in these trip end data fields before you put your workbooks away!

The following data fields refer to the purse-seine vessel trip details.

NATIONALITY	TRIP ID NUMBER	TRIP END LOCATION	TRIP END (SHIP'S DATE AND TIME)				
			YY	MM	DD	h h	m m
SB	JHS 20-01	Honiara	20	06	29	16	30

### Vessel name

Fill in the full name of the vessel as written on the vessel's licence. Do not abbreviate the name. Include all numbers associated with the name.

### Fishing permits or licence number(s)

The fishing permit/licence number which the vessel is operating under during the time the observer is on board should always be recorded. The vessel's licence certificate will be displayed in the wheelhouse or the captain can provide it for to you. It will show the licence number. All other current fishing permit/license numbers issued to the vessel should be recorded by the observer. The vessel will have more than one fishing permit or licence number if it has paid to fish in different exclusive economic zones (EEZ) or in more than one fishery.

### Vessel departure port

Fill in the name of the purse-seine vessel's last departure port. If the observer joins their purse-seine vessel in port, then the observer's 'Trip end location' will be the same as the 'Vessel departure port'. However, if the observer joined their purse-seine vessel at sea, they will have to ask the captain or other officers the name of the last port the purse-seine vessel departed from.

### Vessel departure date

Fill in the date your purse-seine vessel departed port. If the observer boarded their vessel in port, then the observer's 'Trip start date' will be the same as the 'Vessel departure date'. However, if you joined the purse-seine vessel at sea you, will have to ask the captain or other officers the date the vessel left port.

### Vessel characteristics

Much of the vessel characteristics information can be found by looking at the vessel's fishing licence, which should be displayed in the wheelhouse, or observers can ask the captain for this information.

VESSEL CHARACTERISTICS													
VESSEL OWNER		NFD		COUNTRY REG. No.	IRCS	UVI	IMO	FLAG	SB	LENGTH	M	GRT	(circle one)
				MGI - 1546	JCRE	IMO 8814275		SB		42	F	995	mT
No. of SPEED BOATS	2	No. of OTHER ONBOARD AUXILIARY BOATS	2	Do OTHER TENDER BOATS WORK with CATCHER	Y	NET SKIFF ENGINE :	MAKE	POWER		VESSEL CRUISING SPEED:		10.2	mts
HELICOPTER CHARACTERISTICS		MAKE	MODEL	REGISTRATION NUMBER	EFFECTIVE RANGE	KM	COLOUR	No. of VESSELS that the HELICOPTER SERVICES: (including this vessel)					
		----	----	-----	-----		-----	-----					

### Vessel owner

Fill in the name of the owner of the vessel as written on the vessel licence.

### Country registration number

Fill in the country registration number as written on the country registration certificate or on the vessel licence. The country registration number is issued by the country where the vessel was registered.

### International radio call sign

The International radio call sign (IRCS) is a unique radio frequency. Call signs are issued by the national telecommunication agency. The radio call sign should be displayed on the vessel's licence and on the sides of the vessel (port and starboard). The IRCS markings must be either in black lettering on a white background or white lettering on black background. The call sign enables two vessels with the same vessel name to be identified separately. The call sign is also useful when the actual vessel name is difficult to understand.

### UVI

The unique vessel identification number is issued by the IMO (International Maritime Organisation) or from the Lloyds Register of Shipping. The WCPFC has required all vessels over 100 GRT to have this number from the 1st of January 2016.

### Vessel flag

Fill in the nationality of the vessel as recorded on the vessel license. The flag (country) of the vessel is always the same as the country issuing the country registration certificate. Do not be swayed by the nationality of the captain or crew on board the vessel. Their nationality may not be the same as the flag of the vessel.

A flag of convenience (FOC) is used by vessels that are registered in a country different to that of the vessel owner's country of residence

### Length

Record the overall length of the vessel. The official term is 'Length overall' and it can be abbreviated as LOA. You may be able to find the length of the vessel on the ship's plan (often displayed in the corridor or wheelhouse) or on the fishing licence papers. Length overall refers to the distance between the most fore and aft points on the vessel, measured parallel to the waterline. Observers are asked to keep an eye out to see if there have been any changes to the length of the vessel.

### Gross tonnage

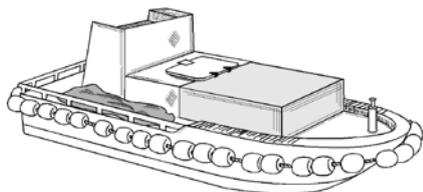
Record the vessel's gross tonnage. Gross tonnage is a unitless index related to a ship's overall volume. Note that gross tonnage is different from gross registered tonnage (GRT). If you can't get gross tonnage, record the gross registered tonnage and make a comment in the comment area of the form.

### No. of speed boats



Count and record the number of speed boats that are on board the main purse-seine vessel. Speed boats are small and generally they have a large outboard engine on the back and are stored on board the purse-seine vessel. On Japanese purse-seine vessels, speed boats may be bigger, often use jets and are generally much faster than speed boats on Korean or US vessels. Speed boats are used to keep a school of tuna inside the net. They do this by creating noise and sea wave motion around any open areas of the net.

### No. of other auxiliary boats



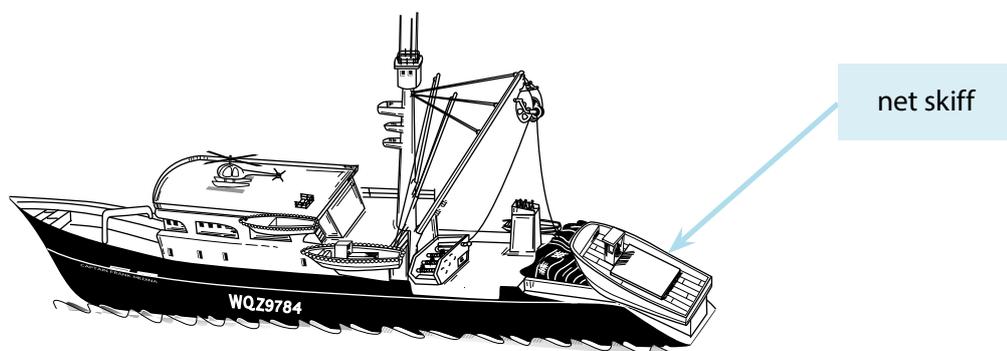
Count the number of auxiliary boats that are on the vessel. These boats are similar in length to the speed boats but generally wider. They do not have an outboard engine like the speed boat and are stored on board the purse-seine vessel. They may be called tow boats or light boats and they have a variety of tasks to do. Tow boats may be used to tow the purse-seine vessel if there is a strong current during stacking or brailing. They are also used to tow and keep the net floatlines apart during the net hauling process. They can also be used to keep a school of tuna inside the net. At times, they are deployed away from the purse-seine boat with lights over the side to attract fish or hold a school of fish if the seiner makes an early morning FAD set. They have also been used to 'spray' water on a school of fish to hold them in position during a daytime set.

### Do other tender boats work with the catcher: Y / N?

Tender vessels are 15 to 20 meters in length and are independent of the purse-seine vessel (they are not stored on board the purse-seiner). They help the purse-seine vessel find fish, check FADs and get supplies etc. You will have to ask the captain or officers if they have any tender vessels that assist the purse-seine vessel by deploying or checking FADS, bringing food or other supplies to the purse-seine vessel. The use of tender vessels is common in purse-seine fishing in the Philippines.

### Net skiff engine make and power

The net skiff is the largest support vessel found on board purse seiners. It is found behind the stacked net at the back of the vessel. It holds one end of the purse-seine net during setting. It is the largest of the auxiliary vessels that are stored on board the purse seiner. Observers should ask the captain or the chief engineer for both the skiff's engine make and horsepower.



### Vessel cruising speed

Vessel cruising speed is the safe and economical vessel speed during transiting and searching. Setting of the net and investigation are usually not carried out at the cruising speed. Ask the captain what the cruising speed is.

### Helicopter make and model

If there is a helicopter on board, ask the helicopter pilot for this information. An example of the make and model for a helicopter is Hughes Model 550.



### Helicopter registration no.

If there is a helicopter on board ask the helicopter pilot for the helicopter registration number. An example of a helicopter registration number is N807BA. The helicopter registration number will be marked on the outside of the helicopter.

### Effective range of helicopter (Kms Nm)

This is the furthest distance the helicopter can travel away from the vessel while guaranteeing it can return safely to the purse-seine vessel's helicopter landing site. For instance, if a helicopter can travel 120 nautical miles before it runs out of fuel, then its effective range is approximately 55 Nm. Ask the helicopter pilot for this information. Select and circle the correct units of distance that have been recorded — kilometres (Kms) or nautical miles (Nm).

### Colour of helicopter

Mark down the main colour on the body of the helicopter. Other identifying features can be described in the trip report (stripes etc.) Note down anything that might help identify the helicopter during a surveillance run etc. If the helicopter has two main colours, record both.

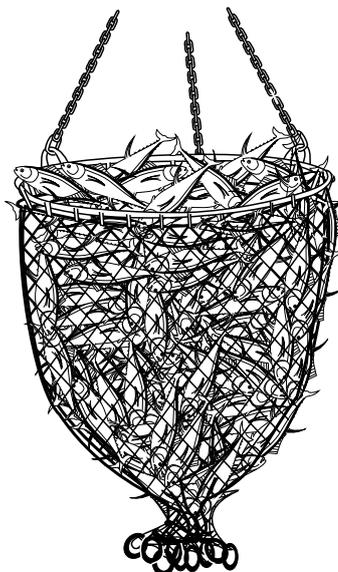
### No. of vessels that the helicopter services (including this vessel)

Some helicopters work with more than one purse seiner and the cost of running the helicopter is shared between these fishing vessels. Normally, but not always, the helicopter will have a main fishing vessel that they return to at the end of the day. The helicopter pilot will have his cabin there. However, at times, the purse-seine vessel might



### Identify the brail(s) used on board

Then record the capacity of the brail in metric tonnes. This will help you estimate the total catch. Remember to identify and name the same brail (e.g. 'brail 1') the same way on the PS-4 form (also 'brail 1'). If there is a second type of brail, record the information for brail # 2. If the vessel intentionally brails live fish on board with any of the brails and processes these tuna differently, circle 'Y' (yes) for live fish brail.



Ask the captain or the chief engineer on the vessel what the capacity of the brail is (in metric tonnes). This is an important piece of information, so make sure the correct information is recorded. Try to capture what a 'full brail' means to the captain. If, for instance, he tells you that the brail carries 10 metric tons, does this mean when the brail is filled up to the top of the stainless frame, the top of the netting, or maybe it refers to when the brail is 3/4 full.

Occasionally, vessels will have two types or sizes of brails on board, and generally one of these brails will be larger than the other (on Japanese purse seiners, for instance). The capacity of both brails should be recorded. Identify and label each brail. **It may be better if the observer always identifies and records the larger brail as brail 1.** This will avoid confusion later on when the observer is asked to record information about brail 1 and brail 2 separately on the PS-3 and PS-4 forms. If there is only one brail size, just mark a dash for the rest of the brail types, and circle 'Y' or 'N' for live fish brail.

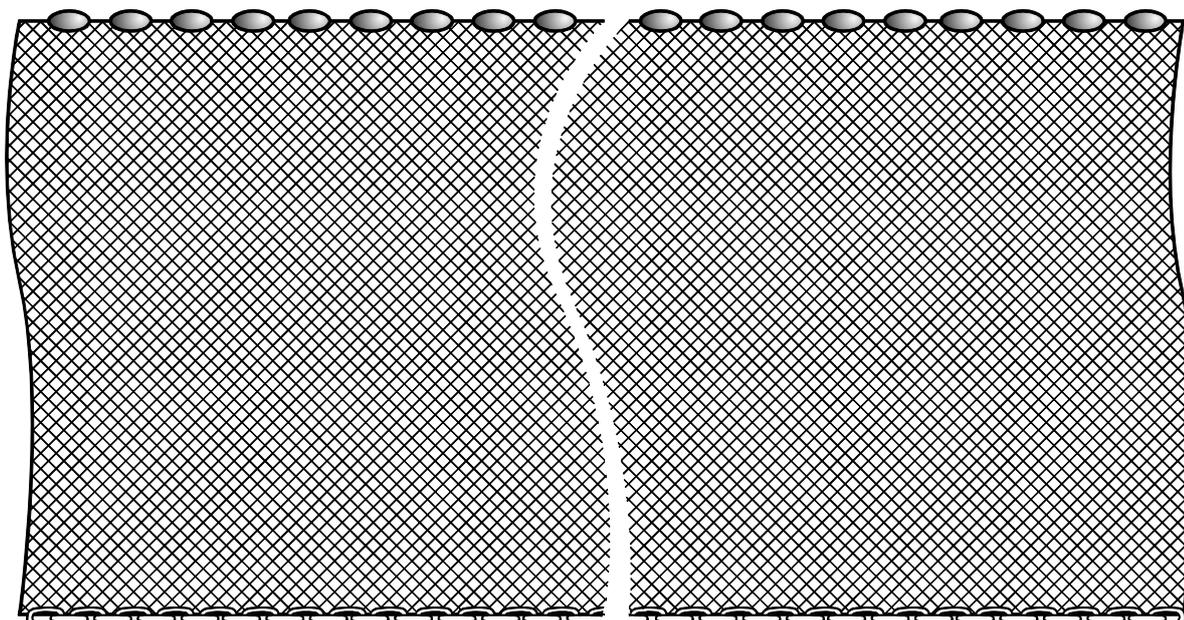
It is important that the brail which is identified and recorded as brail 1 on the PS-1 (page 1) form is also the same brail that is identified and recorded as brail 1 on the PS-3 and PS-4 forms. The same applies for other brails.

### Net – max. depth

The maximum depth of the net tells us how deep the net will fall into the water. Deeper nets can help catch deeper schools of tuna, but they take longer to reach the maximum depth of the net. This slows down the time it takes to close the bottom of the net and increases the chance of the fish escaping.

Ask the captain or the chief engineer for this information. Remember to always select and circle the unit of length that has been recorded: M – meters; Y – yards; or F – fathoms.

### Net – max. length



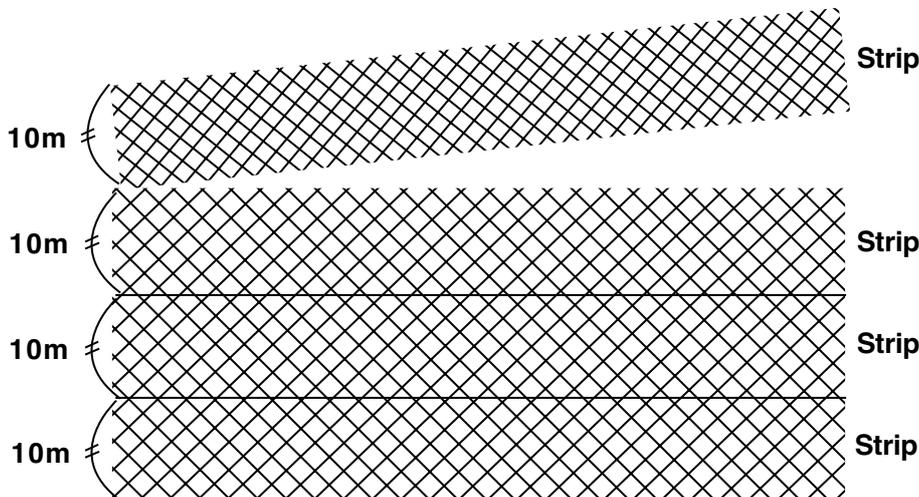
The maximum length of the net will explain how large a circle the net can make around the school of fish. Much like the net depth, the best maximum length is a compromise between having a long net that will safely circle the school of tuna and a shorter net which takes less time to deploy. Don't include the tow line in the length of the net.

Ask the captain or chief engineer for this information. Remember to always select and circle the unit of length that has been recorded: M – meters; Y – yards; or F – fathoms.

### Net – no. of strips

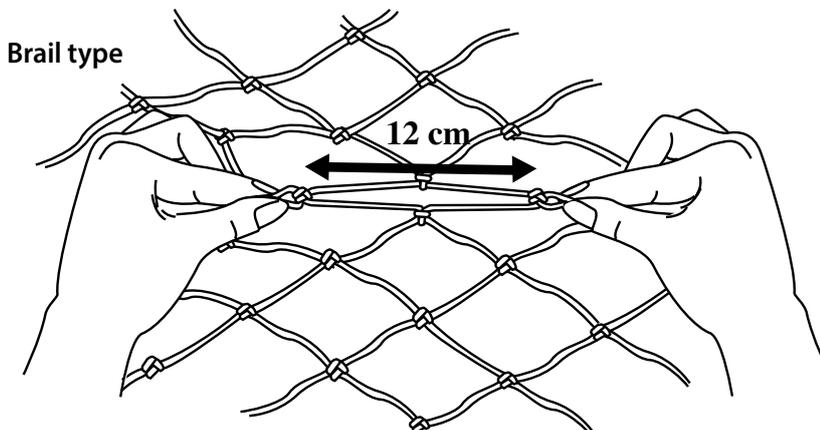
The purse-seine net is made up of horizontal panels of netting. These are laced together to form the depth of the net. One strip is usually around 10 meters in height. The number of strips determines the depth of the net.

The number of strips in the purse-seine net can be found by asking the captain, deck boss or chief engineer, or by looking at the vessel's net plan.



### Net – mesh size (of main body)

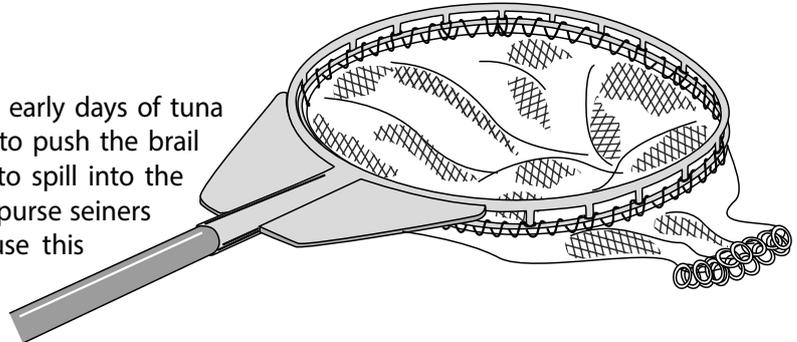
Measure the size of the mesh in the main body of the net as shown in the diagram below. It should be possible to get good access to the main section of the net when the net is stacked up on deck. Make sure that the mesh from the main body (which has the largest mesh size) is measured. Note that the mesh size is often considerably smaller at the top of the net near the floats and at the bottom of the net near the chain. To get the mesh size, pull the net's diamond mesh lengthways, so it reaches its greatest width and measure this width. Remember to always select and circle the correct unit which has been recorded (i.e. either in centimetres [cm] or inches [in]). It can be hard to get the mesh size, however, so ask the fishing master or deck boss for the correct mesh size.



Describe the type of brail used. Write about the shape of the brail mouth, the shape and length of the brail handle, and how the brail handle is manoeuvred during brailing (cargo winch etc.) The information that is collected may be used to prepare a list of standard brails. More information can be recorded in your trip report and drawings of the brails are very useful.

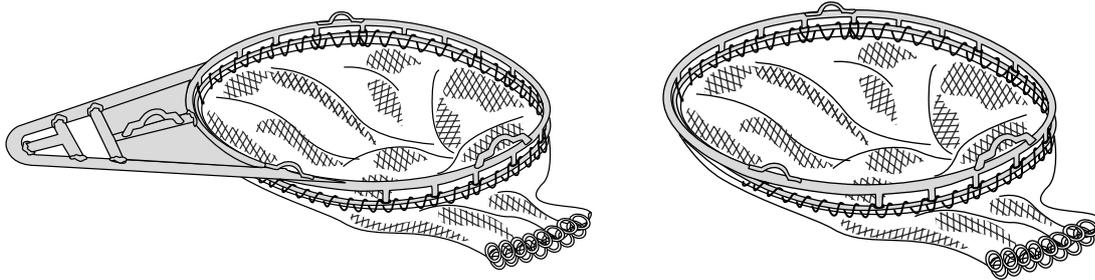
### LH – Long handle

Brails with long handles were used in the early days of tuna purse seining. The crew used the handle to push the brail down into the sack, allowing more tuna to spill into the brail during the brailing operation. Small purse seiners and some Philippine purse seiners still use this type of brail.



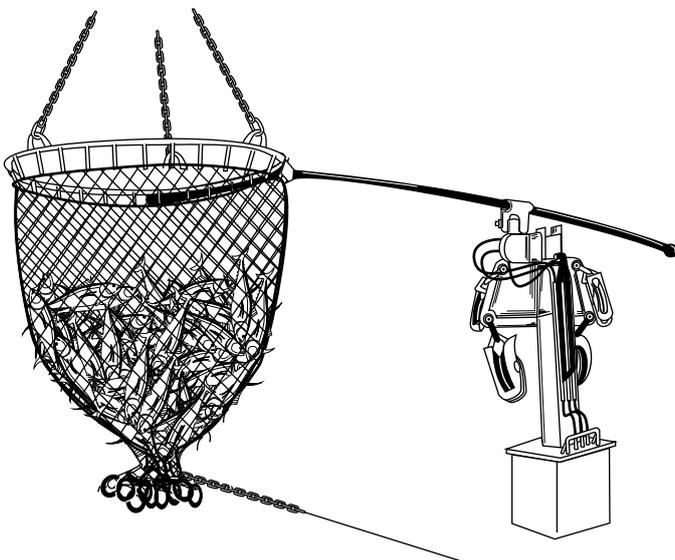
### HF – Brail with heavy stainless-steel frame

The heavy frame makes it easier for the brail to quickly sink into the sack (tuna) and allow the brail to scoop more tuna into the brail every time the brail is dropped into the sack. The brail is moved by hydraulic and electrical winches from the net/sack to the deck and into the fish hatch (hopper hatch).



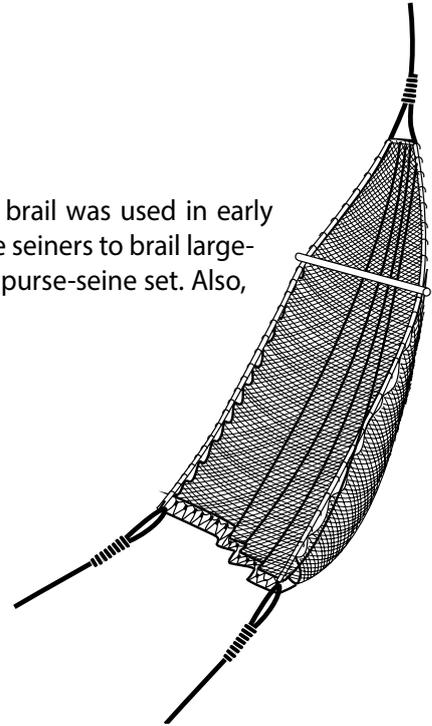
### SP – Spanish type

A brail with a handle attached to the davit block. The long handle helps in controlling the movement of the brail from the net/sack to the fish hatch during brailing operations. It also makes brailing operations faster and safer with the brail's handle attached to the davit block.



### JP – Japanese type

A 'net' brail is commonly found on Japanese purse seiners. This type of brail was used in early Japanese group purse-seine fisheries. They are still used on some Japanese seiners to brail large-size sashimi-grade yellowfin and bigeye tuna that are caught on a typical purse-seine set. Also, they are used for brailing live skipjack.



### Brail change comments

Record any changes to brail capacity (a new panel inserted etc.) by recording a new brail number (i.e. brail 2 or brail 3) and then recording all the brail details, specifying the type, new capacity and whether the brail is used for live fish brailing. Provide brief comments on the brail change (such as date, reason etc.) in this data field.

### Example of filled electronics data fields:

ELECTRONICS		USAGE		USAGE				
GPS	<input checked="" type="radio"/> Y <input type="radio"/> N	ALL	DEPTH SOUNDER	<input checked="" type="radio"/> Y <input type="radio"/> N	ALL			
TRACK PLOTTER	<input checked="" type="radio"/> Y <input type="radio"/> N	TRA	SST GAUGE	<input checked="" type="radio"/> Y <input type="radio"/> N	OIF			
		USAGE	MAKE	MODEL	COMMENTS			
ADV in TEC.	EQUIPMENT TYPE .....	<input checked="" type="radio"/> Y <input type="radio"/> N	----	-----	-----			
	EQUIPMENT TYPE .....	<input checked="" type="radio"/> Y <input type="radio"/> N	----	-----	-----			
	BIRD RADAR	<input checked="" type="radio"/> Y <input type="radio"/> N	ALL	FURUNO	FR 293948			
	SONAR	<input checked="" type="radio"/> Y <input type="radio"/> N	ALL	KODEN	KD 19837			
	GPS BUOYS	<input checked="" type="radio"/> Y <input type="radio"/> N	OIF	TAIYO	TD 1838			
	ECHO SOUNDING BUOY	<input checked="" type="radio"/> Y <input type="radio"/> N	ALL	JRC	JFV-2501	25 OUT AT SEA AND 10 STILL STORED ONBOARD		
	NET DEPTH INSTRUMENTATION	<input checked="" type="radio"/> Y <input type="radio"/> N	BRO	FURUNO	FNZ-28			
	DOPPLER CURRENT METER	<input checked="" type="radio"/> Y <input type="radio"/> N	ALL	FURUNO	CI-68			
	AIS	<input checked="" type="radio"/> Y <input type="radio"/> N	TRA	FURUNO	FR 2084			
VMS SYSTEMS	1 IRIIDIUM	<input checked="" type="radio"/> Y <input type="radio"/> N	ALL	FARLA WATCHDOG	FR 1760			
	2 .....	<input checked="" type="radio"/> Y <input type="radio"/> N	---	-----	-----			
COMMUNICATION SERVICES	PHONES	SATELLITE:	<input checked="" type="radio"/> Y <input type="radio"/> N	Phone # 1 800 45678	MOBILE/ CELL PHONE:	<input checked="" type="radio"/> Y <input type="radio"/> N	Phone # 677 78595	
	OTHER	FACSIMILE:	<input checked="" type="radio"/> Y <input type="radio"/> N	Fax # .....				
INFORMATION SERVICES	WEATHER	WEATHER FAX:	<input checked="" type="radio"/> Y <input type="radio"/> N	WEATHER SATELLITE MONITOR:	<input checked="" type="radio"/> Y <input type="radio"/> N	EMAIL:	<input checked="" type="radio"/> Y <input type="radio"/> N	Email address:
	WEBSITES	PHYTOPLANTION	<input checked="" type="radio"/> Y <input type="radio"/> N	SST	<input checked="" type="radio"/> Y <input type="radio"/> N	SEA HEIGHT	<input checked="" type="radio"/> Y <input type="radio"/> N	www. ....

Please circle 'Y' or 'N' for every item.

Indicate if each piece of electronic equipment is on board by first circling either 'Y' (yes) or 'N' (no). Remember 'N' must also be circled when no advance in technology of electronics is seen on board.

### Usage codes

ALL – used all the time in fishing

TRA – used only in transit

OIF – used often in fishing

SIF – used sometimes in fishing

RAR – rarely used

BRO – broken now but used normally

NOL – no longer ever used

OTH – other (please specify)

Usage codes show how often and how frequently a vessel uses their equipment. Knowing what equipment is on board is useful, but it is also important to know if the equipment is actually being used and at what times it is being used. Use the codes outlined above to describe how each piece of electronic equipment is used during the trip. For instance, there may be some pieces of equipment (e.g. certain radars) that are only used during transiting and are deliberately switched off during fishing. These can be recorded with the code 'TRA' (used only in transit). Watch carefully during the trip to get a good idea how each piece of equipment is used, especially when fishing.

When choosing between two codes, **choose the best or most informative code**. Sometimes two usage codes may seem possible for one piece of electronic equipment. If this happens, record the usage code that best describes how that equipment was used during the trip and record the other code in the comments section whenever possible. Otherwise, make a note about it in the journal and written report.

It may be best if the observer waits until a few sets have been completed before filling in the usage codes and first spends some time finding out how each piece of equipment is used. This can be done each time the observer visits the wheelhouse. A number of visits during different activities (when the vessel is searching, transiting, setting the net, etc.) will give the observer a better understanding of how the equipment is used.

If it is not clear how each piece of equipment is used, put a dash in the data field and state the reason why the information was not available in the comments section or in your journal, if necessary.

### First electronics section:

ELECTRONICS		USAGE	USAGE
GPS	<input checked="" type="radio"/> Y <input type="radio"/> N	ALL	DEPTH SOUNDER <input checked="" type="radio"/> Y <input type="radio"/> N
TRACK PLOTTER	<input checked="" type="radio"/> Y <input type="radio"/> N	TRA	SST GAUGE <input checked="" type="radio"/> Y <input type="radio"/> N
			OIF

State if the following pieces of equipment are on board, and if so, how they are being used.

## GPS



The GPS displays the vessel's exact position in latitude and longitude. The UTC date and time is also available on the GPS. The GPS will help observers to record positions and UTC times. The use of the GPS should be discussed during the observer placement meeting.

## Track plotter



The track plotter shows a continuous track of the vessel's movements. Important positions (fishing positions, harbours) can be logged into the track plotter, allowing the vessel to return to these exact positions. It is usually linked to the GPS and can be used with the autopilot to guide the vessel to a specific position. The track plotter may be connected to other pieces of electronic equipment and may display values such as the sea-surface temperature on its screen.

## Depth sounder



The depth sounder searches for and displays objects below the vessel. It may show the presence of fish and can be used to help navigate, especially when travelling in shallow waters or entering the harbour area.

## SST gauge



The SST (sea-surface temperature) gauge displays the temperature on the surface of the water/ocean. Sometimes, observers will not be able to see the SST gauge itself, but the sea-surface temperature will be displayed on the track plotter or on another piece of electronic equipment. In these cases, the 'Y' (yes) for SST gauge should still be circled.

### Second electronics section:

State if the following pieces of equipment are on board, how they are being used, and what their make and model is.

		USAGE	MAKE	MODEL	COMMENTS	
ADV in TEC.	EQUIPMENT TYPE .....	Y (N)	----	-----		
	EQUIPMENT TYPE .....	Y (N)	----	-----		
	BIRD RADAR	(Y) / N	ALL	FURUNO	FR 293948	
	SONAR	(Y) / N	ALL	KODEN	KD 19837	
	GPS BUOYS	(Y) / N	OIF	TAIYO	TD 1838	
	ECHO SOUNDING BUOY	(Y) / N	ALL	JRC	JFV-2501	25 OUT AT SEA AND 10 STILL STORED ONBOARD
	NET DEPTH INSTRUMENTATION	(Y) / N	BRO	FURUNO	FNZ-28	
	DOPPLER CURRENT METER	(Y) / N	ALL	FURUNO	CI-68	
	AIS	(Y) / N	TRA	FURUNO	FR 2084	
VMS SYSTEMS	1 IRIDIUM	(Y) / N	ALL	FARIA WATCHDOG	FR 1760	
	2 .....	Y (N)	---	-----		
COMMUNICATION SERVICES	PHONES	SATELLITE: (Y) / N	Phone # 1 800 45678		MOBILE/ CELL PHONE: (Y) / N	Phone # 677 78595
	OTHER	FACSIMILE: Y (N)	Fax # .....			
INFORMATION SERVICES	WEATHER	WEATHER FAX: (Y) / N	WEATHER SATELLITE MONITOR: (Y) / N	EMAIL: (Y) / N	Email address: <a href="mailto:Jadetri@gmail.com">Jadetri@gmail.com</a>	
	WEBSITES	PHYTOPLANTION	Y (N) SST	Y (N)	SEA HEIGHT	Y (N)
	www. ....	www. ....	www. ....			

## Make

The make is the name of the company that manufactured the equipment. Some examples of manufacturer names are Furuno, NEC and Trimble, etc. The make is often well displayed on the front of the equipment or it might be displayed when the equipment is first turned on. The equipment manual can be a good source for this information, so you could ask the captain or another officer to have a look at that manual.

## Model

This is the version of the piece of equipment that has been issued by the manufacturer. Generally, equipment is updated as new technology or other advances come along and new versions are given new model numbers to distinguish them from older models.

## Advance in technology

Observers can use these blank lines to note any electronic equipment that they believe are advance pieces of equipment recently introduced to the purse-seine fishing fleet. The main purpose of these data fields is to let scientists know if new technology is being used which will help the vessel catch fish quicker. Do not use these vacant lines to fill in standard or common pieces of electronic equipment that are normally found on board like radios etc. Always circle 'Y' (yes) or 'N' (no) to indicate if there were any 'Advance in technology' pieces of equipment.

### Bird radar



Bird radars are equipped with a large coloured screen. They display the presence of smaller items which cannot normally be seen with the navigational radar. This includes flocks of birds, which may be a sign that there is a school of tuna present.

### Sonar



The sonar displays solid objects in the water column below or to the side of the vessel. Sonars are more commonly seen on purse-seine vessels but may also be seen on larger longliners.

### GPS beacon



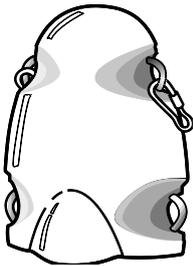
The GPS beacon transmits its exact position (latitude and longitude) to the vessel. The signals are sent by satellite.

## Echo sounding buoy



Echo (or sonar) sounding buoys transmit a range of information about the condition of the ocean around them back to a computer display on the vessel. The information is sent through a satellite. The type of information that is transmitted may include the position, sea surface temperature (SST) and sonar readings (i.e. the presence of objects [tuna] below the buoy). Echo sounding buoys help vessels monitor the presence of any tuna that accumulate around the buoy from a distance. These buoys are normally tied to FADs, especially drifting FADs.

## Net depth instrumentation



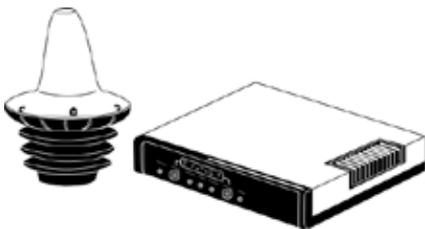
When placed on the net, these sensors can tell the captain the depth of the net and they may also indicate the temperature of the water at that depth. As the depth of the school of tuna will already be known through the use of the sonar, it is helpful to know the depth of the net and whether it has fully un-rolled before pursuing starts.

## Doppler current meter



The Doppler current meter displays the direction and strength of the current at various depths. The current's strength is displayed in units of knots and the direction is displayed in units of degrees. The captain will not set the purse-seine net if he thinks the current is too strong as the fishing net could be badly rolled up or torn.

## VMS



The VMS (vessel monitoring system) tracks the vessel's position using satellite technology and relays the position to a monitoring station onshore. This signal is transmitted to a satellite. Observers should be able to identify the MTU (mobile transmission unit) box or 'Blackbox' in the wheelhouse. The box may send out a beeping sound at constant intervals.

VMS Systems: Record the system type. Some examples of system types are on the next page:

Make: This is the name of the manufacturer.

Model: This is the manufacturer's model number for this piece of equipment.

## VMS units that meet the FFA specifications and are approved for continued use after 30 June 2014

Type	Model Name	Model N°	Software Version
E-MTU	Faria Watchdog (Iridium)	750VMS	
MTU	Thrane & Thrane Sailor 6140 (with 6194 TCU)	TT-6140 Mini-C	TT3027D Mini-C Non-SOLAS - 1.03/1.06/1.07/1.08 TT6194 Terminal Control Unit - 1.03/1.05/1.06/1.08 Using FFA/Thrane configuration guide version 1.0
MTU	Thrane & Thrane Sailor 6150	TT-6150 Mini-C	TT3027D Mini-C Non-SOLAS - 1.03/1.06/1.07/1.08 TT6194 Terminal Control Unit - 1.03/1.05/1.06/1.08 Using FFA/Thrane configuration guide version 1.0
MTU	Japan Radio Company Limited Inmarsat-C Transceiver	JUE-95VM	10.50, 3.0, 1.0
MTU	Furuno Inmarsat-C MES Transceiver (includes the Nera Mini-C model)	Felcom 16	DCE F16 V02+FFA DCE F16 V03+FFA DCE F16 V03.1+FFA
MTU	Furuno Felcom 19	Felcom 19	DCE F19 V01+FFA
MTU	Faria Watchdog (Iridium)	750VMS	
MTU	CLS Thorium	TST-100+FFA	
MTU	CLS LEO	LEO+FFA	
MTU	Satlink ELB2014	ELB2014	
MTU	Satlink ELB2020	ELB2020	
MTU	CLS TRITON ADV	TRITON ADV	Dome: 10.02.39 or later Junction Box: 1.0.2.04 or later Configuration: CLS TRITON ADV+FFA Config
E-MTU	CLS TRITON ADV	TRITON ADV	Dome: 10.02 or later Junction Box: 1.0.2.49 or later Configuration: CLS TRITON ADV+FFA Config
MTU	SKYWAVE IDP	IDP 690	
MTU	SKYWAVE ST-6100	ST-6100	

\*This list was updated on 17 June 2019

## Communication services



The vessel may have access to a variety of communication services, such as telephone, mobile/cell phone and email, via satellite technology.

Ask the captain for the contact details for the vessel and record them in the data fields.

For phone and fax, remember to record all access numbers – that is, the numbers that go before the vessel's actual number. The access numbers show which ocean the vessel is in.

### Phones – satellite

Circle 'Y' (yes) if the vessel has a satellite phone on board. Write down the phone number for the boat and remember to include the access number (area code) as well.

Record other communication services present on board, such as facsimile, mobile/cell phone, weather fax and satellite (see below).

### Information services

Information services – weather: These services provide the vessel with up-to-date information on the weather.

### Weather – fax



Vessels can receive weather reports and weather maps by fax using Inmarsat C. The reports may be received daily or on demand.

### Weather – satellite monitor



A new piece of equipment on some purse seiners are computers that receive real-time data on the weather conditions. Ocean currents and cloud cover can be displayed. Using this data, purse seiners can plot a better course to the most favourable fishing ground.

### Information Services – fishing: These services provide the vessel with fishing information.

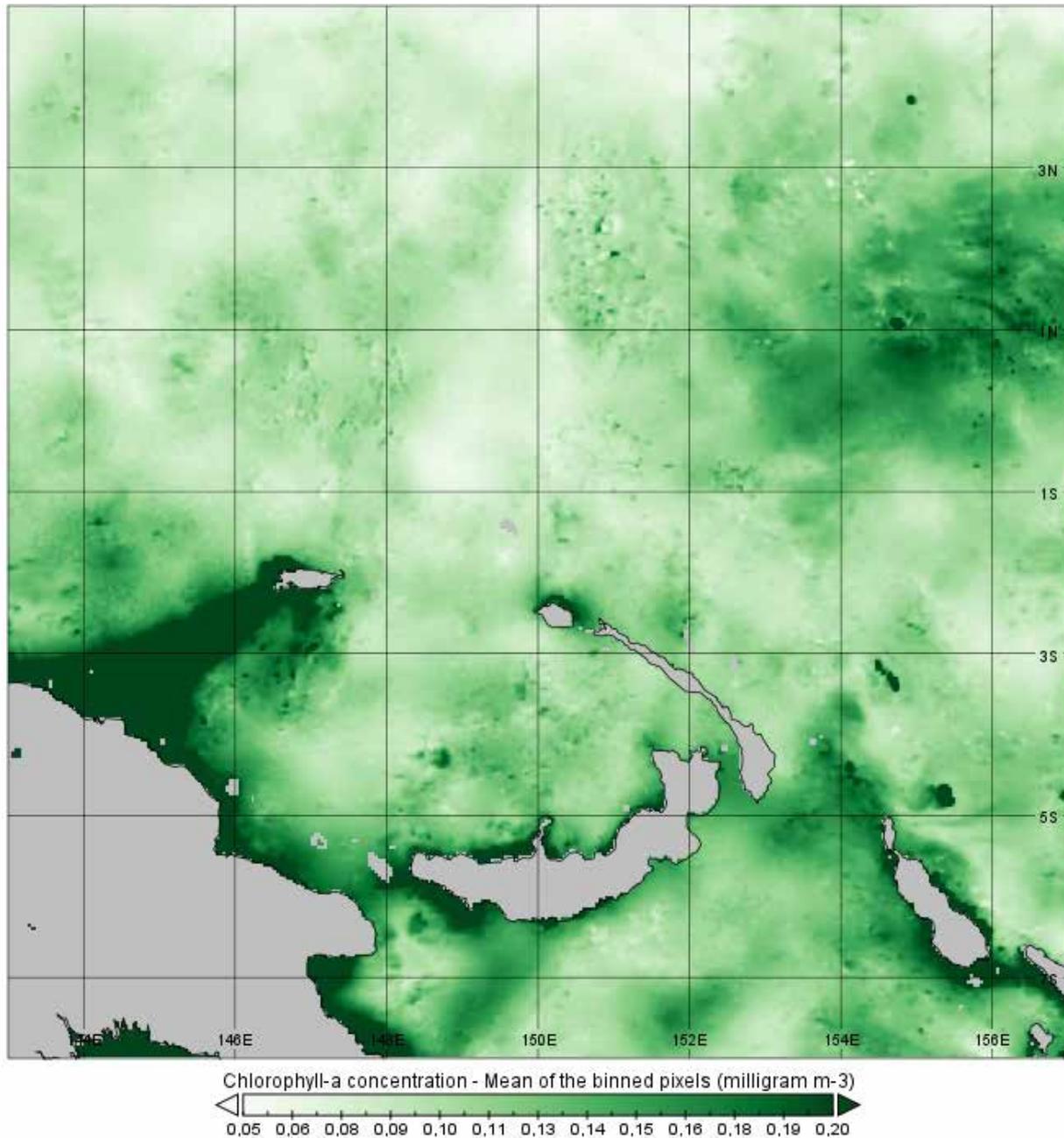
These information services provide the vessel with information that will help it find productive fishing grounds. The majority of these other services map oceanographic conditions and the information is often accessed through a website. The observer may see this information on the vessel's computer (if the website is being accessed directly), or the information may be printed out from a computer email. Observers are asked to record the name of the website (www) which provides the information.

### Phytoplankton

Phytoplankton are minute plant-like organisms which smaller vertebrates feed on. These small vertebrates are a food source for tuna-like species. Fishers look for high levels of phytoplankton, or abrupt changes in phytoplankton, hoping to find large numbers of tuna. The information is usually provided as a map with different levels of phytoplankton marked with different colours. The map shown here gives the concentration of phytoplankton in the water in milligrams (mg) in each cubic meter of water (m<sup>3</sup>).

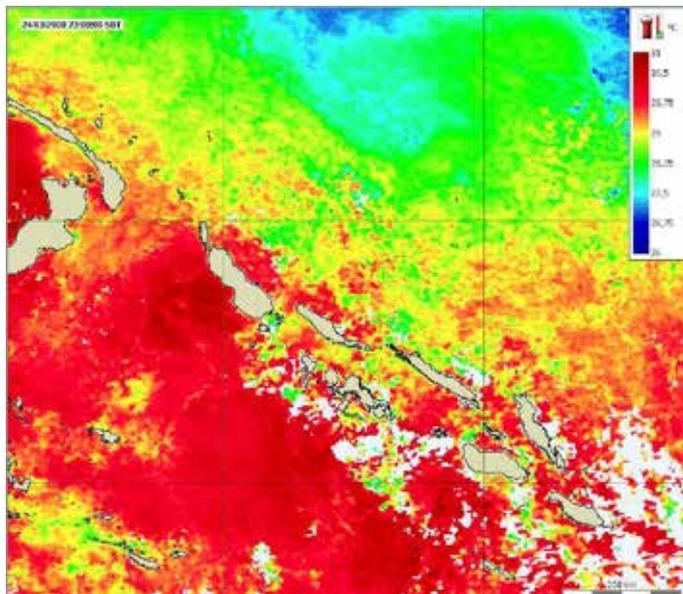
Circle 'Y' (yes) if the vessel is receiving this information and enter the name of the website that provided the information into the data field. Otherwise, circle 'N' (no).

Chlorophyll-a concentration - 7 April 2021  
COPERNICUS Marine & Monitoring Environment Service <https://marine.copernicus.eu/>



## SST

The sea-surface temperature gives vessels a good idea where tuna can be found as Pacific tuna prefer certain temperatures. Areas where different sea-surface temperatures come together can indicate an ocean current or eddies where tuna like to accumulate. The information is usually provided as a map with different sea-surface temperatures shown in different colours.



Circle 'Y' (yes) if the vessel is receiving this information and enter the name of the website that provided the information into the data field. Otherwise, circle 'N' (no).

## Sea height

Differences in sea height can indicate oceanic fronts (where two or more ocean currents come into contact) and these areas are often rich in marine life and perhaps tuna fish. The information is usually provided as a map showing the direction of the currents and the difference in sea height is indicated by different layers of colours.

**Caution!** Remember to circle 'N' (no) for all the data fields on this line if there were no fishery information services available.

Note that the above information can be found in the vessel computer and you will need to check with the captain or fishing master. There may be printouts and copies that show the website the vessel accessed to obtain this information.

## Observations/comments: Other gear/unusual use of gear

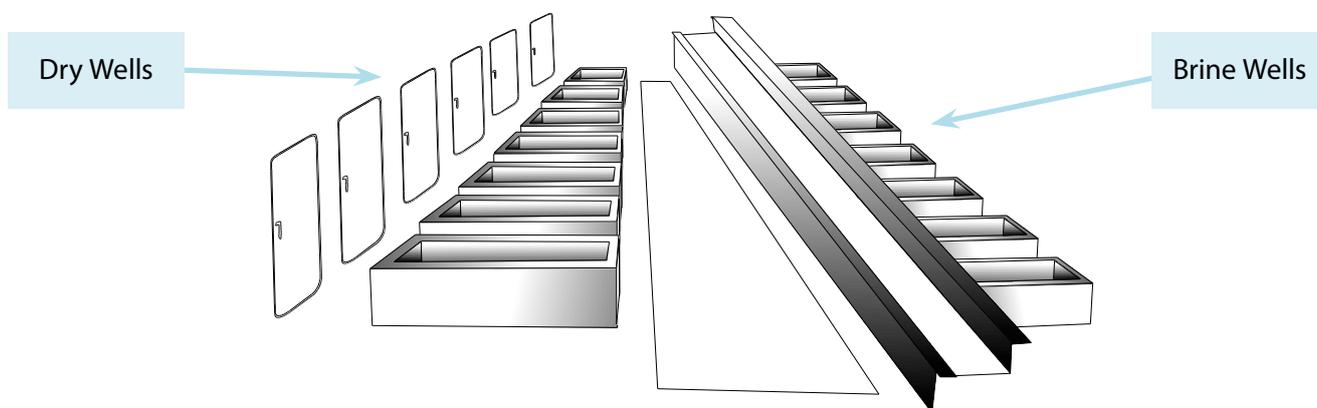
Observers will find that this comment area becomes easier to fill out as they become more experienced. Observers are asked to note down anything special about the vessel, the equipment or crew. Pay special attention to any new electronic equipment or new fishing gear, as well as any new or unusual techniques for using fishing gear or electronics. New advances in technology or fishing practices may result in higher catches for a vessel, or a fleet of vessels, so it is important we learn about them straight away. Write a brief note on the form about these observations. Use the journal to expand on your observations. Compile all your journal notes in the written report at the end.

## Form PS-1 (page 2) General Information

### Data submitted

Observers must fill in one PS-1 (page 2) form during every trip. Every workbook will have two PS-1 (page 2) forms supplied. Fill in the first form. The second form is only supplied as a back-up form. If a second or third workbook is filled in, there is no need to fill in another PS-1 (page 2) form.

When you first board the boat, ask the captain or the chief engineer for a copy of the vessel's well plan and their crew list. This will help when filling out the data fields on the PS-1 (page 2) form. The well plan shows the number of storage wells that the vessel has and gives an estimate of where they are located. Keep an eye out for 'dry wells'. These are often found in the vertical walls on either side of the storage deck, especially on Taiwanese, Japanese or Chinese purse-seine vessels. Tuna may be transferred here after their initial chilling in the brine wells.



### Total possible fish storage capacity (in metric tonnes):

TOTAL POSSIBLE FISH STORAGE CAPACITY (in metric tonnes):	→	350	mT
--	---	-----	----

Calculate the maximum amount of tuna the vessel can hold in metric tonnes. The best way to do this is to ask the captain or the chief engineer for their vessel's well plan. Then, add up the capacity of each individual's storage well. Exclude any wells that are not operational (broken).

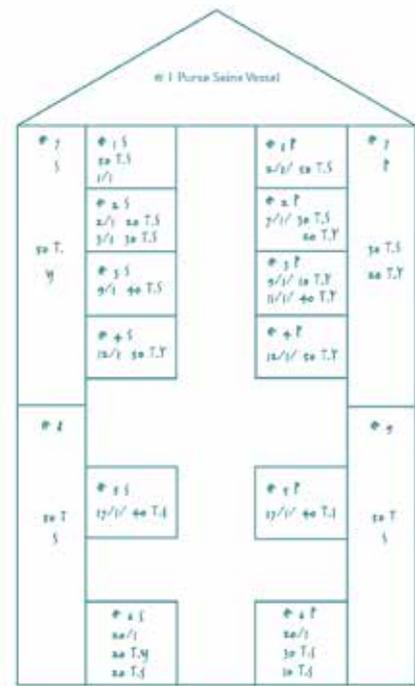
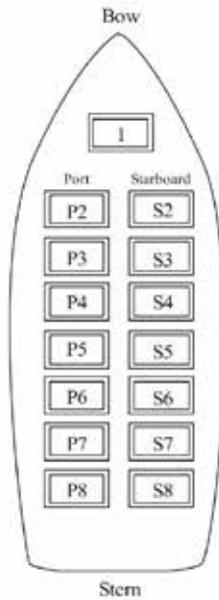
**Caution!** Don't forget to take the capacity of the dry wells into account.

#### Convert short tonnes to metric tonnes

All tonnages must be recorded in metric tonnes.

To convert short tonnes to metric tonnes, multiply the short tonne figure by 0.9842.

*Note:* A short tonne is an imperial measurement (may be used by the US fleet).



Typical well plans supplied by purse-seine vessels

### Fish well details

The well plan on the right (above) is typical of a vessel with dry wells. Well number one (1) can be seen in the bow of the boat. This can be recorded as a central well 'C'.

The intention of the well content data fields is to capture the normal behaviour of the vessel with regard to the storage of non-tuna items and whether this behaviour affects their ability to store tuna.

At the start of the trip, check with the chief engineer and person looking after the fish wells to see if any of the wells are being used to store any types of goods such as fuel, fresh goods or other goods. Record this information in the comments area, journal and trip report.

### Well No.

There is a number on each well. Use a copy of the vessel's well plan to identify each well.

### Port (P), starboard (S) or central (C)

Record if the well was on the port (P) or the starboard (S) side of the board. You can record C if the well is a central well or placed in the front of both #2 wells (see well #1 in the drawing above).

Note: If the observer stands facing the bow of the boat, then the wells on their left-hand side are the port wells and the wells on their right-hand side are the starboard wells.

### Capacity

Record the total capacity of the well in metric tonnes. Get this information from the captain, the chief engineer or the vessel's well plan, if necessary.

Note: This is not a record of the amount of goods in the well, but rather the total capacity of the wells.

### Comments and drawings of well pattern

Make comments and refer to vessel well plan to complete this data field. A general drawing of the wells and capacity for port and starboard can be included in this field.

Example of crew details fields filled below:

CREW	NAME	YRS.EXP	NATIONALITY	COMMENTS
CAPTAIN	<i>David Hugh</i>	20	USA	License No. -----
MASTER	<i>vacant</i>	----	-----	License No. -----
NAVIGATOR	<i>Lorenzo Jojo</i>	12	PH	
MATE	<i>David John</i>	8	SB	
CHIEF ENGINEER	<i>Murry Texter</i>	15	NZ	
ASSISTANT ENGINEER	<i>George Poave</i>	10	SB	
DECK BOSS	<i>Peter Jim</i>	7	SB	
COOK	<i>Fernando</i>	12	PH	
HELICOPTER PILOT	-----	----	-----	
HELICOPTER MECHANIC	-----	----	-----	
RADIO OPERATOR	<i>Fred Amosa</i>	3	SB	
SKIFF MAN	<i>Sam Kaunta</i>	12	SB	
WINCH MAN	<i>Clement Isoa</i>	6	SB	
TRANSLATOR	-----	----	----	

CREW	NAME	YRS.EXP	NATIONALITY	CREW	NAME	YRS.EXP	NATIONALITY
	<i>James Vidal</i>	0	SB				
	<i>Ian Mani</i>	0	SB				
	<i>George Boapi</i>	3	SB				
	<i>Titus Clement</i>	7	SB				
	<i>James Powai</i>	3	SB				
	<i>Joseph Hendrix</i>	10	SB				
	<i>Christopher Jack</i>	6	SB				
	<i>Jude Liu</i>	2	SB				
	<i>Manasseh Solovake</i>	15	SB				
	<i>Jimmy Rodger</i>	4	SB				

**Crew – name**

Ask the captain or another officer for the crew's list to help fill in the crew section of the form. Most purse-seine vessels will have crew lists readily available on board and will be happy to share them with the observer. The crew list will show the name of every crew member, all of the officers, and the captain and fishing master. It may also contain the observer's name. The nationality of each crew member will also be available on the crew list. It might be helpful if observers fill in this information soon after they board the vessel as it will help them to get to know the names of the crew and build a relationship with everyone on board.

The names of all the crew and officers must **be filled in** on the form. Attach the crew list to PS 1 page 2. The crew list does not usually supply the number of years of experience that crew members have.

**Yrs. exp. (Years' experience)**

Ask the captain, the officer and other members of the crew how many years of experience they have on purse-seine vessels. It might take you a while to collect this information and you will have to build up some friendships before you get good information. Remember, the information that is required is the number of years' experience on purse-seine vessels, we are not interested in the numbers of years fishing or on other types of boats or using other types of gear. Some captains and other officers are reluctant to give this information, so you can just mark a dash in the data field and make a comment if you cannot get an answer. However, this information is important, so we do ask observers to make the effort to collect this data.

Note: for crew with less than 6 months of experience, record 0 (zero) and crew between 6 months to under 12 months, record 1 year.

### Nationality

Fill in the nationality for the captain, officers and all the crew. This is the same nationality as marked on their passport. You should be able to get this information from the crew list.

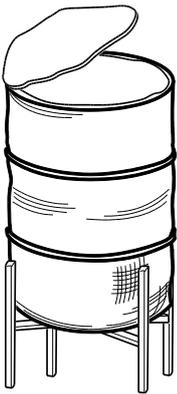
### Waste disposal

Circle 'Y' or 'N' to indicate if there were waste disposal units on board.

The different types of waste disposal units that may be seen on fishing vessels are drum to burn rubbish and rubbish being collected and stored to be unloaded in port at the end of the trip. Explain how waste is being kept and later disposed.

<b>WASTE DISPOSAL SYSTEM ?</b>	<input checked="" type="radio"/> Y / <input type="radio"/> N
DESCRIBE waste disposal system especially for fish offal, but also other waste.	
<i>damaged fish and offals discarded during net hauling and at the end of the set, both from the work and the wet deck. Incinerator was used to burn other general waste produced by the vessel during the trip. Other bio degradable and food scrapes discarded to sea.</i>	

### Drum to burn rubbish



### Safety equipment

Observers should check the safety equipment as soon as they board the boat. It is important for the observer's own security to know where all the safety equipment is located. A priority is to ask where the observer's lifejacket is located. Keep an eye out for all safety equipment throughout the voyage, but especially during the first day. More safety equipment may be seen later when the observer gets to know their way around the vessel and can develop better relationships with the officers and crew. Collect as much safety equipment information as possible without intruding. For example, do not search for lifejackets in personal storage areas – ask first!

SAFETY EQUIPMENT					
LIFE JACKET AVAILABILITY (circle one)	PROVIDED FOR OBSERVER: <input checked="" type="radio"/> Y / <input type="radio"/> N / <input type="radio"/> O			Number of LIFE BUOYS / LIFE RINGS	
	SUITABLE SIZE: <input checked="" type="radio"/> Y / <input type="radio"/> N			8	
	<input checked="" type="radio"/> Easy	Moderate	Hard		
LIFE RAFTS					
Number of people and Inspection due date(D) or last date of inspection (L)	1	2	3	4	
	Number 12	Number 12	Number 12	Number	
	YY / MM (L or D)	YY / MM (L or D)	YY / MM (L or D)	YY / MM (L or D)	
	20/12 D	20/12 D	20/12 D		
EPIRB (406)	Total No. 2	No. with Exp. Batteries 1	EPIRB (other)	Total No. ....	No. with Exp. Batteries .....

## Life jacket



Observers should:

Circle 'Y' (yes), if they are provided with a lifejacket by the vessel.

Circle 'N' (no), if they are not provided with a lifejacket by the vessel.

Circle 'O' (own), if they have their own lifejacket provided by the observer programme.

Suitable Size:

Circle 'Y' (yes), if the life jacket provided to the observer (by the vessel) is a suitable size.

Circle 'N' (no), if the life jacket that was provided to the observer (by the vessel/fisheries) is not a suitable size.

If the lifejacket is damaged this can be mentioned in the journal and trip report.

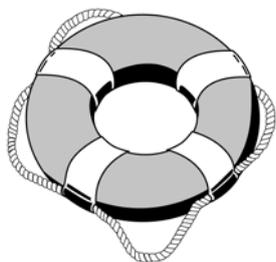
### Availability

Select one of the choices: *Easy/Moderate/Hard* to indicate how accessible the lifejacket is. To answer this question, observers might like to think about how they would get the lifejacket if they were inside the vessel or working on the deck and there was an emergency.

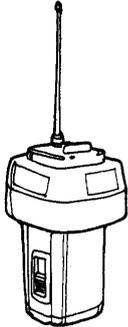
### Life buoys/life rings

#### EPIRBs

EPIRBs are 'Emergency Position Indicating Radio Beacons'. They work by sending signals to satellites, overhead airplanes or emergency radio stations, depending on the type of EPIRB used. Current models of EPIRBs emit the exact GPS location so rescue teams can fly straight to the EPIRB, somewhat removing the need to 'search' for the



source of the signal. EPIRBs are often placed inside the wheelhouse door. The captain and crew should also be asked if they have any hand-held or personal EPIRBs.



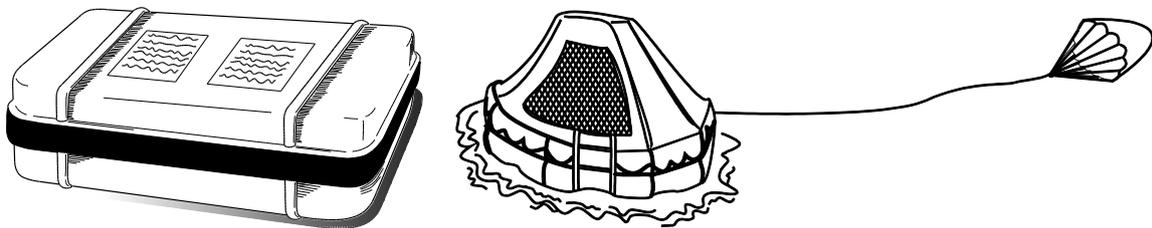
The **406 MHz** signal frequency has been designated internationally for distress use only. The signal from the EPIRB is picked up by satellites. The signal can help to locate the EPIRB and also identifies the vessel.

When filling in the forms, record the total number of 406 EPIRB(s) and record the number of expired EPIRB(s). Write down the type of any EPIRB seen on board (i.e. 406 or 121.5/243) and then record the total number of that type of EPIRB found on the vessel. Also, record the expired other types of EPIRB(s).

**Caution!** EPIRBs may also be located inside life rafts. Do not open up life rafts to check for EPIRBs and do not count EPIRBs if they cannot be seen.

### Life rafts

Life rafts will be kept outdoors where they can be easily thrown into the sea in case of an emergency. Information about the carrying capacity and the service expiration dates will be printed on a label or a sticker. Check this information and record it on the forms. If the information can't be found, or the label cannot be read due to sun damage etc., put a dash in these data fields and make a comment in the written report on why the information was not available.



# Form PS-2 Daily Log

## Data submitted

A PS-2 form must be filled in every day the observer is on board the vessel. The first PS-2 form will be filled in on the day the observer boards the purse-seine or transit vessel. The last PS-2 form will be filled out on the day the observer disembarks from the transit or purse-seine vessel. More than one PS-2 form may be filled in for one day, especially if there is a lot of activity during the day. If the observer boards the purse-seine vessel and stays on board for a day or two before the vessel leaves port (when the trip start location and time are filled in on the PS-1 (page 1) form), a PS-2 form will be filled in. If the observer travels to the purse-seine vessel by means of another transit vessel then they should start their PS-2 form the day they join the transit vessel.

## Header details

The header details must be fully filled in on every completed form (for information on observer name, vessel name, observer trip ID number and page number, see 'Header details' pages 3).

START OF DAY			
SHIP'S DATE	20 05 21	SHIP'S DATE	05 30
SHIP'S DATE	20 05 20	SHIP'S DATE	16 30
ALL MUST BE RECORDED			

## UTC time and date

Since vessels use a variety of times, observers are asked to collect the Universal Time Coordinated (UTC) time and date. The UTC date and time can be obtained from the vessel's GPS. This is done once a day at the first record of the day on the PS-2 forms.

The UTC time is available on the GPS. However, it may not be displayed on the first screen, so observers may have to ask the captain or a crew member to help them locate the UTC time on the GPS. Observers should not use the vessel's electronic systems without permission. During the placement meeting, the captain will be asked to show the observer how to obtain the UTC time. Keep in mind that the GPS may have two or three different times on it, so look for the time and date marked UTC time and date.

At the beginning of every day, fill in the 'Start of day' data fields. Fill in the 'Ship's date' and the 'Ship's time' data fields initially (see 'Ship's time', page 5). After this, the observer will need to convert the ship's time to UTC time. This allows us to convert the ship's time to UTC time even if the vessel crosses a time zone. Generally, the UTC time is found by looking at the GPS (see 'GPS' page 15).

### Monitoring vessel activity on board purse-seine vessels

The 'Start of day' time should be recorded when the observer first goes to the wheelhouse in the morning. The observer must be present in the wheelhouse before any early morning sets (some may be as early as 03.00 hrs). Otherwise, observers only need to go to the wheelhouse soon after the engine starts in the morning, or if the activity has not changed during the night, then the observer should aim to make their 'start of day' record around dawn. It is fine to make the first visit at a more reasonable time if there is not much change of activity in the morning.

Observers on purse-seine vessels are required to be fully functional and alert from approximately one hour before sunrise until they finally retire, around three hours after sunset. Of course, these are only general guidelines and if a significant activity (a set for instance) takes place outside of these times, observers are also required to be alert and to monitor the activity.

Since vessel activity often changes around sunrise it is recommended that observers make their first activity record well before sunrise. Observers are also advised to ensure that the last record of the day reflects the main activity of the vessel after they retire. During the day, observers are asked to remain active and to make frequent visits to the bridge so they can verify the true activity of the vessel, keep an eye on the ocean for schools or floating objects, species of special interest or vessel sightings.

SHIP'S TIME	05 30
UTC TIME	16 30

Make a record on the PS-2 form every time there is a change in the vessel's activity. State the ship's time to indicate the time the activity started. There is no need to make another activity record until the vessel activity changes again. The end of the activity will be indicated by recording the start of the new vessel activity.

### Position (latitude and longitude)

LATITUDE (dd°mm.mmm')	N S	LATITUDE (dd°mm.mmm')	E W
03 51 535	S	156 14 790	E
03 41 488	S	156 06 271	E

The latitude and longitude positions can be recorded from the vessel's GPS (see 'GPS', page 15). Record the latitude (dd° mm.mmm) and longitude (ddd° mm.mmm) to three decimal minutes. Be sure that the GPS is recorded to decimal places of minutes and not to seconds. Remember to always record the direction: N (north) or S (south) and E (east) or W (west).

**Caution!** If the vessel is active in the area close to the equator (i.e. zero degrees latitude), pay particular attention to the latitude indicators, north (N) and south (S). The vessel may move between the north and south hemispheres quite quickly. You should also pay extra attention if the vessel is fishing close to the 180 degrees longitude, the international date line.



“I can’t get the vessel’s position – is this a problem?”

Yes. Observers should always have access to the vessel’s GPS and generally there is no excuse for not collecting the necessary position information. If the observer has been denied access to the GPS, they should make a full report in their journal, noting the exact date and time of the incident and the name of the person who denied them access to the GPS. Additionally, indicate the infringement at the bottom of the PS-2 form by circling the GEN-3 question (see 'Dealing with infringement issues' on page 101). If the position was not available due to an instrument failure, or the observer being denied access to the GPS, then the latitude and longitude data fields should be marked with a dash and the reason stated in the comments section on the same line, as well as in the journal.



“I was still on deck measuring fish when the set ended and the vessel started searching again – how can I get the position for this new activity?”

It is not always possible to be in the wheelhouse when a new activity starts. If it was not possible to get the position shortly after the activity started, then record the same position that was recorded for the set position. This way, we will know that the position that was recorded is not the exact position but an approximation.

**Caution!** Observers **must record the exact position for every set made**. Normally, vessels go on standby before making the set and observers have plenty of time to prepare.

### EEZ code

A full list of country codes is available in the workbook’s codes page. They can be used to fill in the EEZ (exclusive economic zone) code. Observers are encouraged to use the map chart available in the wheelhouse to help them decide which EEZ they are in. Being aware of the position of the vessel will help observers be aware of any possible infringements.

### Exclusive Economic Zone (EEZ) map



## Activity codes

The activities undertaken by purse-seine vessels have been classified and given a code. Use these codes to record the vessel's activity.

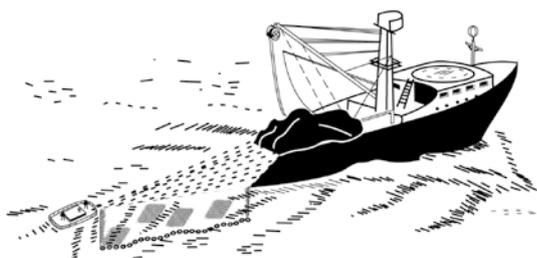
### Make a record on the PS-2 form every time there is a change in the vessel's activity.

Make a record every time there is a change in the vessel's activity. No additional activity records are required. However, even if there is no change in the vessel's activity during the day, observers are advised to make a minimum of three records on the PS-2 form to confirm the vessel activity in the early morning, at mid-day and late evening. For instance, if the vessel was transiting all day or still in port, a minimum of 3 activity records is required. Also, if the vessel is engaged in a lot of activity in the morning but then stops and drifts at mid-day, observers are encouraged to record another activity code around late evening.

These activity codes (for example, codes 1, 7, 8, 9, 10D, 10R, 12 and 14), indicate the start of very specific events. If these activity codes are repeated on the line directly below it will look like this activity has started again. If any of these activities take a long time and the observer would like to confirm the vessel's activity (as discussed above), a comment should be made to confirm the vessel's activity.

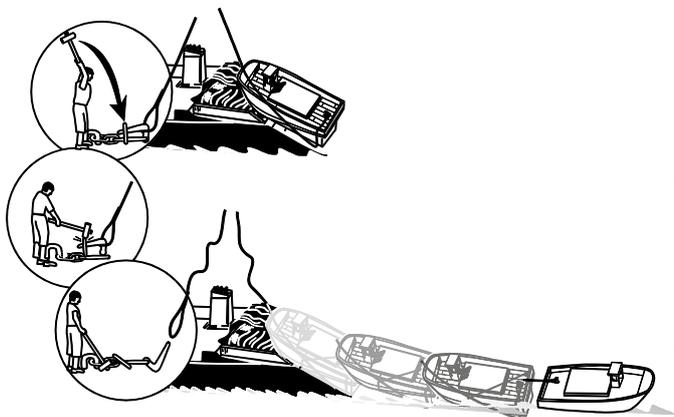
SHIP'S TIME	LATITUDE (dd°mm.mmm')	N S	LONGITUDE (ddd°mm.mmm')	E W	EEZ CODE	ACTIVITY CODE	WIND (kts) (°)	SEA C-S-M-R-V	HOW DETECT	SCHOOL ASSOC
0530	03 51 535	S	176 14 791	E	KI	2	03 045	C	---	---
1230	03 41 488	S	176 06 271	E	KI	2	03 045	C	---	---
1810	03 48 631	S	175 57 844	E	KI	2	03 050	C	---	---
2156	03 48 159	S	175 36 789	E	KI	11	03 055	C	---	---

Note: Record the activity of the purse-seine vessel only. The PS-2 form should not be used to record the activity of any auxiliary vessels such as tender vessels, skiff, speedboats or towboats.



### Activity code 1 – Set

Before making a set, the vessel will always **investigate** (activity code 8 or 9) the school of tuna and decide whether it is worth making a set or not. The crew will be on stand-by when the vessel is investigating the school of tuna. The observer is advised to be alert and to look out when schools of tuna are being investigated in case the vessel decides to make a set.



The start of the set is indicated by the captain shouting "Let go". The pelican hook is then released and the skiff slides into the water. Use *ship's time* to record the start of set time. It is important that this same *ship's time* is used to record the 'Start of set time' (observer) on all the forms that record information about this same set (PS-3, PS-4 and PS-5 forms). This start of set time links all the information gathered about the set in the database. The end of set will be indicated by the skiff coming on board again, at which point the observer should record another activity code to indicate the next activity and the end of the set time.

**Caution!** The ship's time for the next activity code which is made immediately after the set should be the same ship's time as recorded for the 'End of set time' on the PS-3 form.

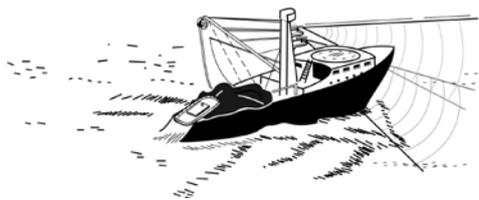
**Caution!** The vessel will normally investigate a school of tuna before setting on it so activity code 1 – set would normally be recorded directly below an investigation activity code (i.e. activity code 8 – investigate free school, or code 9 – investigate floating object).

**Caution!** Do not add another record on the PS-2 form *until the skiff is on board* and the set is completely finished. Once the skiff is on board, a new vessel activity will commence. This new activity may just be drifting initially. On some rare occasions, due to breakdown etc., the skiff may not come back on board the catcher vessel until much later. This may even be the next day. In these extreme cases, the end of set is still defined as the time that the skiff comes back on board. If the skiff does not come on board until the next day, the next PS-2 activity code will be recorded on a new PS-2 form with the next day's date for the ship's start of day record.

With activity code 1:

- A 'How detected' code **must** be recorded on the same line.
- A 'School association' code **must** be recorded on the same line.

#### Activity code 2 – Searching



One of the main activities the vessel will undertake during the trip will be searching – actively looking for tuna. Searching starts as soon as the fishing vessel reaches the fishing ground and transiting ends. When the vessel is searching, the crew (stationed in the crow's nest or the bow of the boat) will use binoculars to look for the tuna. Searching may also be done from the wheelhouse using

binoculars, and also the bird radar. Additionally, a vessel may search for tuna in locations well beyond the vessel by checking any FADs and echo sounding buoys they have deployed. For instance, if a vessel is steaming at night to a FAD marked with one of these buoys, this action is still considered searching.

It is likely that once the vessel reaches the fishing ground, they will continuously search for fish the whole time, unless they switch to one of the other activities listed here. When a vessel is transiting and no longer searching, its fishing gear will be stored away (see activity code 3 – transiting, below).

With activity code 2:

- The 'How detected' and 'School association' codes are not required, just mark a dash in these data fields.

#### Activity code 3 – Transit



Moving vessels that are not actively searching for tuna are known to be in transit. Generally, observers will only record a transit activity code when the fishing vessel is steaming to and from the fishing grounds or going through a prohibited fishing ground. The boom should be lowered, the net covered and binoculars left covered and unmanned to indicate that they are not actively searching for fish.

With activity code 3:

- The 'How detected' and 'School association' codes are not required, just mark a dash in these data fields.

*Activity code 4 – No fishing – breakdown*



This activity code can be used when the catcher vessel has stopped due to an equipment failure. Explain the nature of the breakdown in the comment's column.

Do not use this code if the vessel continues to move and search for fish while some parts of its equipment are faulty. This code is best used when there is a problem with the main engine and the vessel cannot move.

However, it is probably not the most informative code if the net is damaged and the vessel continues to move and search for fish while the crew carry out repairs to the net.

With activity code 4:

- The 'How detected' and 'School association' codes are not required, just mark a dash in these data fields.

*Activity code 5 – No fishing – bad weather*

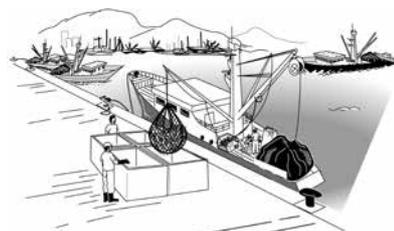


Excessive winds or rain may stop vessels from searching or making sets. When there is a lot of rain, vessels may not be able to see schools of tuna and they may decide to stop and drift until the rain passes. Additionally, strong winds or currents may prevent a vessel from making a set and they may decide to drift until conditions improve. Such situations can be recorded using activity code 5. Explain the type and strength of the bad weather in the comment's column.

With activity code 5:

- The 'How detected' and 'School association' codes are not required, just mark a dash in these data fields.

*Activity code 6 – In port – please specify*



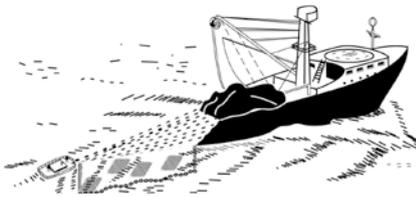
Generally, the very first and last activity code recorded by the observer will be activity code 6, as normally observers will board and disembark from their catcher vessels in port. Always specify the name of the port in the comment's column. If the vessel goes to port in the middle of the trip, both the name of the port and the reason the vessel went to port should be stated in the comment's column.

If the observer finds themselves in port for a number of days in the middle of the trip, they should still fill in a minimum number (three) of activity records on the PS-2 form each day. This is for consistency.

With activity code 6:

- The 'How detected' and 'School association' codes are not required, just mark a dash in these data fields.

Activity code 7 – Net cleaning set



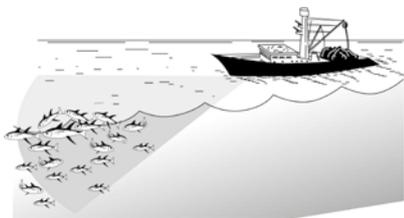
Net cleaning sets are uncommon and if they take place, it is generally at the end of the trip. Some US and Korean vessels like to set their net at the end of the trip to clear it out and to store it properly, taking the time to look for any damage etc. They may also be made at some point during the trip if there are serious problems with the net (i.e. it is tangled). Net cleaning sets are similar to ordinary sets, but there will be

no schools of tuna encircled by the net. Ordinarily, a vessel should not investigate a school of fish or a floating object before making a net cleaning set.

With activity code 7:

- The 'How detected' and 'School association' codes are not required, just mark a dash in these data fields.

Activity code 8 – Investigate free school



When a vessel comes across a school of tuna, they will often stop to investigate (study or watch closely). The captain will spend some time judging the size, speed, movement, direction and stability of the fish. If there is a good chance that the vessel can catch the tuna, a set will be made. Record any free school investigations with activity code 8.

At times there will be a lot of free schools in an area and it may be difficult for an observer to decide which school is actually being investigated by the vessel. Keep an eye on the captain and try to spot which school he is investigating. If he switches his attention to investigate another school of tuna, even for a short while, then you will need to record a new 'Investigate free school' activity code. Add code 2 between the two different schools: code 8 and code 2, then another code 8 below code 2 (see example below).

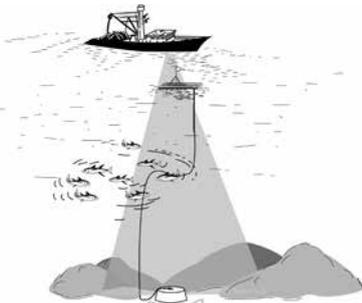
SHIP'S TIME	LATITUDE (dd°mm.mmm')	N S	LONGITUDE (ddd°mm.mmm')	E W	EEZ CODE	ACTIVITY CODE	WIND (kts) (°)		SEA C-S-M-R-V	HOW DETECT	SCHOOL ASSOC
1030	03 51 535	S	176 14 791	E	KI	2	03	45	C	---	---
1035	03 41 488	S	176 06 271	E	KI	8	03	45	C	1	1
1040	03 48.631	S	175 57 844	E	KI	2	03	50	C	---	---
1045	03 48 590	S	175 36 789	E	KI	8	03	55	C	1	1

Use activity code 8 to indicate the time spent investigating a school and then use a different activity code as soon as the captain stops investigating the school and switches his attention to a new school; normally, activity code 2 – searching, will be used to show the activity between activity codes. When there are a lot of schools around, the time between investigating two schools may be very short, perhaps just the time for the captain to switch his eyes between one school and another. Still, it is still necessary to record these short changes in vessel activity so that each school that is investigated is recorded separately.

With activity code 8:

- A 'How detected' code and a 'School association' code must be recorded.

### Activity code 9 – Investigate floating object



As schools of tuna are often found with floating objects, vessels will investigate most floating objects they come across. This activity can be recorded using activity code 9. It is important that the observer checks to see whether there are tuna with the floating object or not. Sometimes it will be obvious as tuna will be seen breaking the surface. At other times it will be necessary for the observer to ask the captain if there are tuna present. The captain will use the vessel's fish finder and sonar to check for the presence of tuna. Only make a record when there is a school of tuna present.

With activity code 9:

- A 'How detected' code must be recorded with activity code 9.
- A 'School association' code must be recorded with every activity code 9 if there is a school of tuna with the floating object.

### Activity code 10D – Deploy – raft, FAD, payao

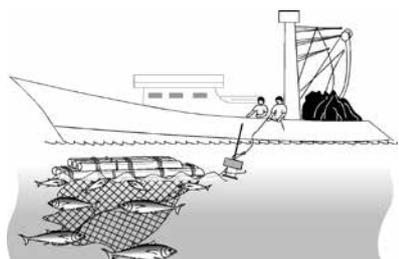


This activity code will be used if the vessel deploys (puts into the water) a man-made object (a raft, FAD or payao), with the intention of attracting tuna to them. Vessels may deploy rafts, FADs or payaos at any time during the trip. Some vessels deploy a large number of these rafts at the start or end of the trip. Other vessels may choose to deploy a few rafts during the trip. These floating objects may be anchored to the sea-floor or generally left to drift freely on the surface. Give a full description of any floating object that was deployed by the vessel in the journal and written report.

With activity code 10D:

- The 'How detected' and 'School association' codes are not normally required, just mark a dash in these data fields.

### Activity code 10R – Retrieve – raft, FAD, payao

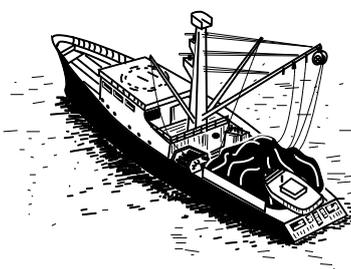


If a vessel decides to retrieve (or pull back on board) any of their man-made floating objects, the activity code 10R can be used to record this activity. Retrieving rafts, FADs or payaos is an activity often seen at the end of set. The vessel may feel that the man-made object will no longer be productive (attract fish). This should be recorded after the end of the set (after the skiff is on board even if the raft is retrieved before the end of the set). Additionally, anchored FADs may be retrieved if they are broken or have drifted too far away from their anchored position.

With activity code 10R:

- The 'How detected' and 'School association' codes are not required, just mark a dash in these data fields.

### Activity code 11 – Drifting at day's end



At the end of the day a vessel generally changes its activity. If they are in a good fishing ground and feel there is a good chance there will be schools of tuna around in the morning, one option for the vessel is to just drift in the same area. This is a common end of day code. The end of the day may or may not start around sunset. Use code 13 if the vessel finishes the set at 1100 hrs and drifts for the rest of the day (refer to code 13 below). Record code 11 as your last record in the evening, around 1800 hrs, if the vessel continues to drift.

With activity code 11:

- The 'How detected' and 'School association' codes are not required, just mark a dash in these data fields.



#### *Activity code 12 – Drifting with floating object*

If a vessel finds a floating object which has tuna associated with it during the day, they often choose to return to the floating object and drift with it during the evening. Use activity code 12 if the vessel drifts with and is actually tied to the floating object during the evening and throughout the night. If the seiner drifts close or far away from the FAD, use code 13 and make comment(s) about whether it drifts far or close to the FAD.

With activity code 12:

- A 'How detected' code **must** be recorded with activity code 12.
- A 'School association' code **must** be recorded with activity code 12 if there is a school of tuna with the floating object.

#### *Activity code 13 – Other reason (specify)*

This activity code may be useful if the vessel is not fishing, and the observed activity is not listed under the activity codes. Some examples where this activity code might be used could be the transfer of crew, for instance, or when the purse-seine vessel is tied to another one for an evening of recreation, such as karaoke. Always specify in the comments section the reason why the vessel was not fishing.

With activity code 13:

- A 'How detected' code and a 'School association' code should be marked with a dash for activity code 13.



#### *Activity code 14 – Drift with fish aggregating lights*

Under activity code 14, the purse-seine vessel will use its own lights to attract tuna. Lights may be hung over the side of the vessel or lowered into the water at a depth of 20 m or deeper.

**Caution!** Only use this activity record when the purse-seine vessel has used fish aggregating lights. Do not use this activity code if a tender vessel or another vessel has put lights under a floating object for the night. Activity codes refer to the catcher vessel activity only.

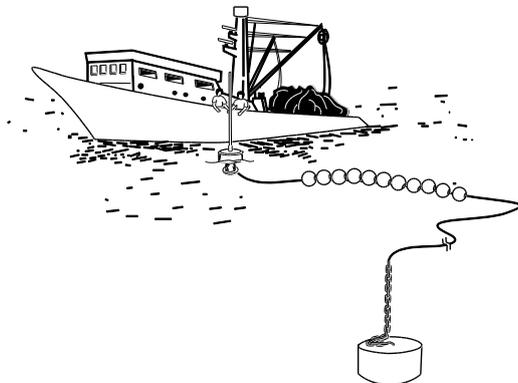
With activity code 14:

- Observers need to consider if a 'How detected' code and a 'School association' code should be recorded with activity code 14.
- If the vessel investigates a FAD and found tuna associated with it, a 'How detected' and 'School association' from activity code 9 should be applied and recorded for activity 14, see example below.

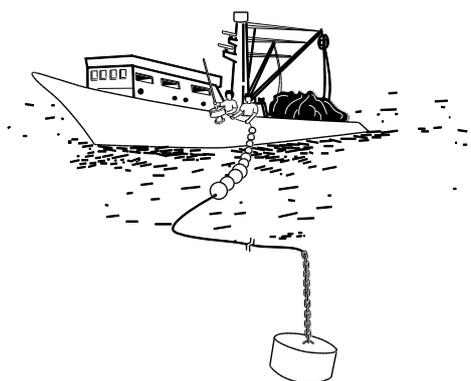
SHIP'S TIME	LATITUDE (dd°mm.mmm')	N S	LONGITUDE (ddd°mm.mmm')	E W	EEZ CODE	ACTIVITY CODE	WIND		SEA C-S-M-R-V	HOW DETECT	SCHOOL ASSOC
							(kts)	(°)			
1735	03 51 535	S	176 14 791	E	KI	9	06	45	S	7	5
1845	03 51 488	S	176 14 271	E	KI	14	06	45	S	7	5

Activity code 15R – Retrieve radio buoy (to change only)

Activity code 15D – Deploy radio buoy (to change only)



Record an activity 15R every time the vessel retrieves a radio buoy from a floating object to change it. This code should not be used if the radio buoy is taken back on board permanently and not replaced. Record the radio buoy number that was retrieved on your GEN-5 form under 'Buoy number'.



Record an activity 15D every time the vessel deploys or puts a new radio buoy on a floating object. Record the radio buoy number on your GEN-5 form.

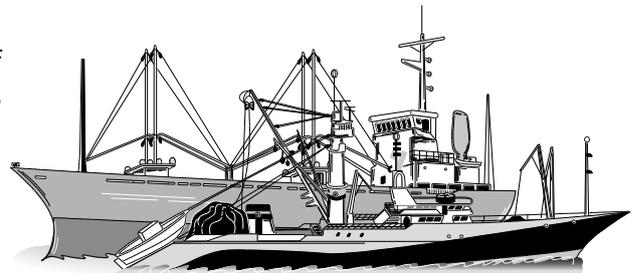
Activity codes 15D and 15R must be used together; normally, your recording would look like this!

SHIP'S TIME	LATITUDE (dd°mm.mmm')	N S	LONGITUDE (ddd°mm.mmm')	E W	EEZ CODE	ACTIVITY CODE	WIND (kts) (°)		SEA C-S-M-R-V	HOW DETECT	SCHOOL ASSOC
1030	03 51 535	S	176 14 791	E	KI	9	06	45	S	7	5
1035	03 51 488	S	176 14 271	E	KI	15R	06	45	S	7	5
1040	03 48.631	S	175 57 844	E	KI	15D	03	50	C	7	5

- Observers need to consider if a 'How detected' code and/or a 'School association' code should be recorded with activity codes 15R or 15D.
- Apply the same detection and association codes for activity 9 to activity 15R and 15D (see example above).
- If there was no school with the floating object, record code 9 for association.
- The buoy/payao number can be recorded on the GEN-5 form.

#### Activity code 16 – Transshipping or bunkering

Activity code 16 is used to record any movement of items to or from the purse-seine vessel. Transshipping is the act of transferring or receiving fish from one vessel to another, while bunkering is the act of transferring or receiving fuel or other goods from one vessel to another. Transshipping and bunkering activities are often restricted activities as per national marine legislation. Many countries ban these activities in their waters and require vessels to come to port to carry out these activities. Other countries allow the activity but with certain reporting obligations. For this reason, it is important for observers to record all such activities on their PS-2 form.

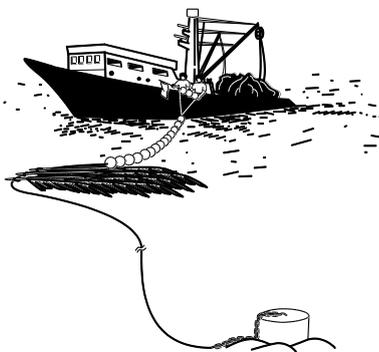


Make a note in the comment's column stating whether the vessel was transshipping or bunkering and note the type of goods that were being transferred. More information can be recorded in your journal initially.

With activity code 16:

- The 'How detected' and the 'School association' codes are not required, just mark a dash in these data fields.

#### Activity code 17 – Servicing FAD or floating object



Use this activity code if the purse-seine vessel approaches a FAD or floating object and services it. Servicing means fixing, adding new material, repairing or adjusting the floating object in any way.

- With activity code 17: Observers need to consider if a 'How detected' code and a 'School association' code should be recorded with activity code 17.
- The common practice is the vessel investigates the FAD before the code 17 (see example below).

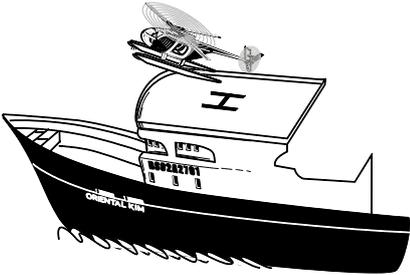
SHIP'S TIME	LATITUDE (dd°mm.mmm')	N S	LONGITUDE (ddd°mm.mmm')	E W	EEZ CODE	ACTIVITY CODE	WIND (kts) (°)		SEA C-S-M-R-V	HOW DETECT	SCHOOL ASSOC
1030	03 51 535	S	176 14 791	E	KI	9	06	45	S	7	5
1035	03 51 488	S	176 14 271	E	KI	17	06	45	S	7	5

### Activity code 18 – Drifting – No fishing

Use this activity code when the fishing vessel drifts to engage in an activity while it is not actively engaged in any fishing activity, for example, awaiting transshipping or transferring of crews.

### Activity code H1 – Helicopter takes off to search

### Activity code H2 – Helicopter returned from search

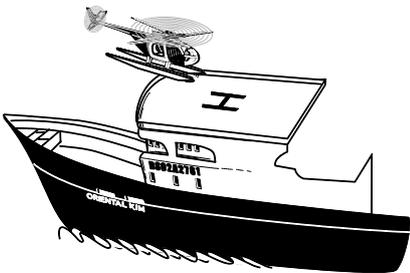


The helicopter activity codes start with the letter H and they record the activity of the helicopter only. It is helpful to understand that these work independently from the other activity codes and do not indicate a change in the purse-seine vessel's activity. So, when a helicopter activity code is recorded, it will not indicate that the previous vessel activity has ended.

Record H1 when the helicopter takes off to search and record H2 when the helicopter comes back to the boat. Normally when we see an H1 code, we expect to see an H2 code recorded a bit lower down on the PS-2 form. If the helicopter does not come back to your catcher vessel but stays on board another catcher vessel, make a comment on your form.



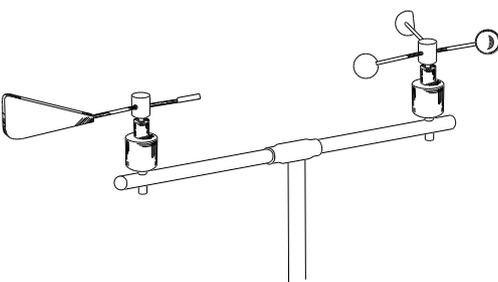
**“The vessel is investigating a log, but crew are still up in the crow’s nest checking another free school. I’m confused about which activity code I should use.”**



**Choose the best or most informative code when choosing between codes.** Use a comment to show that another activity code was possible or was occurring at the same time. In this scenario, the observer could put the activity code 9 into the data field and note down a comment like “searching continues from crow’s nest” in the comment’s column.

**Caution!** Never record two activity codes into the same data field.

### Wind speed (kts) and wind direction (°)



Wind speed should be recorded in knots. The wind speed can be obtained from a wind speedometer in the wheelhouse. Check to ensure the wind speed is displayed in units of knots. Many wind speedometers show the wind speed in units of meters per second. The unit ‘meters per second’ can be converted to knots by multiplying by 2 (meters per second X 2 = knots). The wind speed can also be judged using the sea state guide (‘Beaufort Scale Guide’) at the back of the workbook. Observers will be better able to judge the wind speed from the sea states as their experience improves.

### Wind – direction

Wind direction is defined as the direction from which the wind is blowing. East wind, for example, would cause a balloon to follow a westerly direction. NW wind is a wind that would carry a balloon toward the opposite direction, SE. Use the vessel compass to assist in getting the wind direction if there is no wind indicator or gauge on board.

## Sea states

Use the 'Beaufort Scale Guide' available at the back of the workbook to judge the sea state.

## How detected

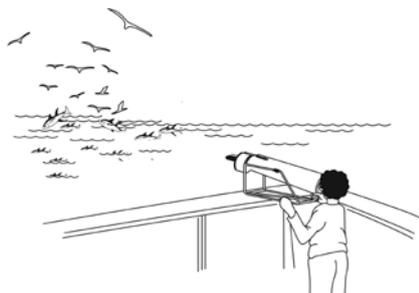
The 'How detected' codes record how the school of tuna or the floating object was first found or detected. Use the school detection codes below to outline how the vessel found the tuna school/object or what first made the vessel change course to inspect the school or object. The 'how detected' code should not be used to record any schools of rainbow runner or other schools of small fish that might be associated with a floating object. These codes are for tuna only.

If more than one method was used to find the tuna, then record the 'how detected' code that shows what first made the vessel change its course to inspect tuna or object. For example, if the vessel changed its course after receiving the position of a school of tuna from the helicopter but then subsequently used the bird radar to pin down the exact position of the tuna when in the general vicinity of the position given by the helicopter, then record the original reason the vessel changed its course i.e., code 2 – Seen from helicopter.

If more than one code seems possible, **choose the best or most informative code** and make a comment noting any other possible codes in the comment's column.

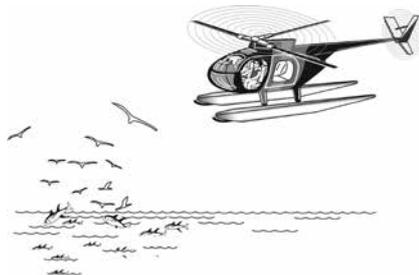
## How detected codes

### 1. Seen from vessel



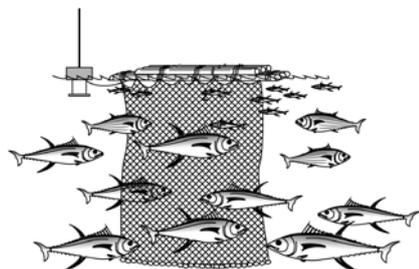
The school of tuna or the floating object was first sighted from the vessel, generally by a crew member using binoculars. Often a flock of birds will be seen from the vessel and when the vessel moves closer to the birds, they will see the school of tuna. The presence of birds often indicates the presence of a surface school of tuna which are feeding on baitfish.

### 2. Seen from helicopter



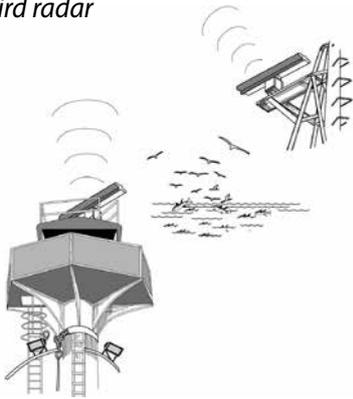
The school of tuna, or the floating object, was first seen by the pilot or co-pilot flying in the helicopter. Helicopters may fly some distance away from the catcher vessel and this makes it difficult for the observer to know if and where the helicopter has spotted a school of fish. Observers are requested to stay alert when the helicopter is away from the vessel and follow up on any deliberate changes in direction and/or speed of the vessel when the helicopter is away flying. This will help them decide if a school of tuna was originally detected by the helicopter. Observers should also politely ask the helicopter pilot when he returns to the purse-seine vessel whether he spotted any schools of fish.

### 3. Marked with beacon



The school of tuna, or the floating object, was first seen after the vessel picked up a signal from the beacon attached to the floating object.

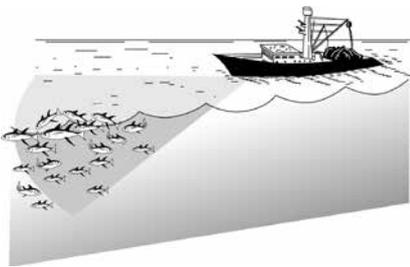
#### 4. Bird radar



The school of tuna was first seen after one of the officers initially spotted a flock of birds on the bird radar screen. The vessel then headed in the direction of the flock of birds at which point the school of tuna was sighted. A bird radar can detect a flock of birds more than 20 miles away from the position of the vessel.



#### 5. Sonar/depth sounder



The school of tuna was first seen after the sonar or depth sounder was used to check for tuna underneath a floating object. The floating object may have been sighted by the vessel and later the sonar and the fish finder/depth sounder was used to locate the tuna at a certain depth. Often, tuna cannot be sighted at the surface, which may indicate that there is no tuna associated with the floating object, but with the help of the sounder and sonar, the tuna may be revealed at a located depth.



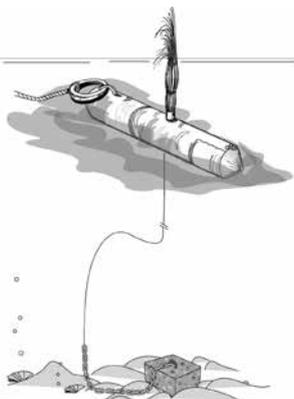
**Caution!** Do not use 'How detected' code 5 when the sonar/depth sounder is only used to investigate a floating object that has already been detected using a different method.

#### 6. Information from other vessel



The school of tuna, or the floating object, was first seen after the vessel received information from another vessel and then decided to steam directly to it. Observers may first notice a change in direction of the vessel after the captain has been on the radio. Sharing information between vessels is common, especially if vessels have the same flag and are owned by the same company.

#### 7. Anchored FAD/payao (recorded)



The floating object was first seen after the vessel steamed directly to its recorded position (latitude and longitude). Observers should have access to the vessel logs or charts in the wheelhouse that document the anchored FAD positions. Sometimes, the position of the anchored FADs is accessed through the track plotter.

Tuna regularly swim towards, and together with, floating objects that drift in the ocean. The type of object can vary widely, from a drifting coconut to a large whale. Fishers take advantage of this knowledge and construct floating objects of their own to attract tuna and mark them with a radio buoy so they can return to them repeatedly. Others choose to permanently anchor these rafts, FADs or payao to the sea floor.

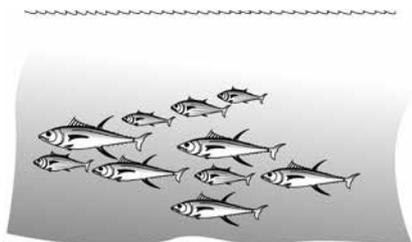
The presence or absence of a particular type of floating object with a tuna school is known as its 'school association'. Tuna caught from different school associations may vary in average length and in species composition. Scientists need to know the type (if any) of the floating object which was with the school before they can analyse the observer's data properly.

School associations 1 and 2 are known as 'free' schools. There are no floating objects with these schools of tuna. All the other school associations (3-7) are known as 'floating object' schools.

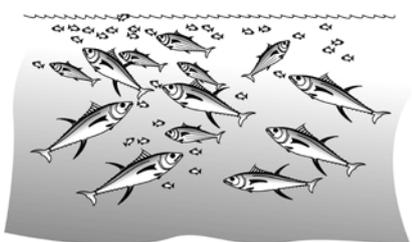
Free schools will be seen breaking the surface of the ocean. Tuna schools associated with floating objects may also be seen breaking the surface; however, they may remain below the surface and can only be seen by using the sonar or fish finder. For this reason, observers need to be active on deck and in the wheelhouse when floating objects are being investigated. This will ensure they are fully informed about whether any tuna is swimming with the floating object.

**Caution!** Ensure the length measurement sampling you do on deck is useful. Always indicate the school association of the tuna you sample by filling in the school association on the PS-2 form.

### 1. Unassociated (free school)



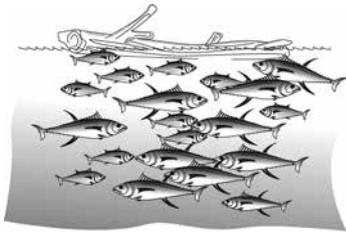
The school of tuna is not swimming with, or linked to, any other object. They will be seen breaking the surface of the water during the daytime. They may also be moving at speed. No other objects (floating objects or bait fish) will be connected to the school of tuna.



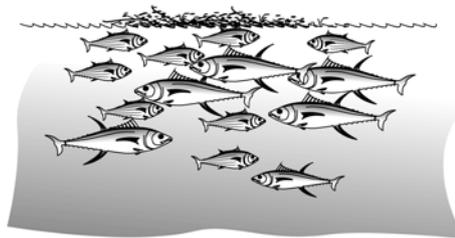
The school of tuna will be linked to natural baitfish. The baitfish will be seen breaking the surface. The observer should be able to spot the difference between these and the larger tuna. The captain may also know if there are baitfish with the school of tuna when he checks the school with his sonar.

### 3. Drifting log, debris or dead animal

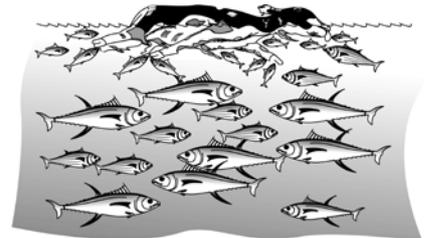
The school of tuna is linked to, and swimming with, naturally occurring objects, for instance, a tree, accumulated flotsam, debris or a dead animal. These objects have not been deliberately placed into the sea to aggregate tuna, but the tuna have aggregated around them naturally.



*Drifting/floating log*

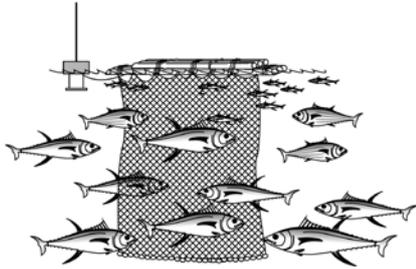


*Debris*



*Dead animal*

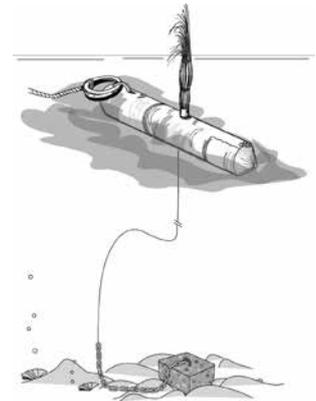
*4. Drifting raft, FAD or payao*



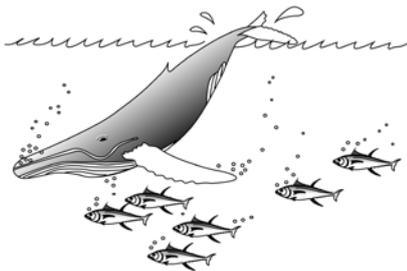
The school of tuna is linked to, and swimming with, a man-made device which was deliberately placed in the water to attract tuna. These objects are not anchored to the seabed and float around freely. They may be made from a variety of materials like bamboo, wood, metal or steel, and will be in various forms and shapes. Netting and other material may be added to increase their total surface area below the water.

*5. Anchored raft, FAD or payao*

The school of tuna is linked to, and swimming with, a man-made device deliberately placed in the water to attract tuna. The object has been anchored to the seabed. Typically, the floating parts of these objects are made from metal and are marked with a payao number.

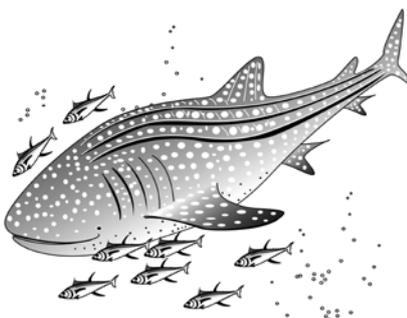


*6. Live whale*



The school of tuna is linked to, and swimming with, a live whale. Observers may only notice the blow of the whale as many whales escape from the purse-seine net before it is closed.

*7. Live whale shark*



The school of tuna is linked to, and swimming with, a whale shark. Live whale sharks are a distinct species but are often not seen by the observer until the net is closed.

8. Other (please specify)

If the school of tuna is linked to, or swimming with, another type of object that does not fall into any of the previous categories, then this school association code can be used. Remember to always mark down the type of object that was seen in the comment's column.



**“I marked down the school association as ‘1. Unassociated (free school)’. It was only later, after the net had fully circled the school that I saw there were live whales inside the net. What should I do now?”**

On some occasions observers may get extra information about the school’s association after it has been initially investigated that will make them want to change their original choice for school association. If the observer wants to change the school association, record the new school association in the comments column. If for some reason there was an error made with the school association after the day the record was made, circle the error or put a line through it and record the correct code beside it with comments written into the comments section, along with a note as to how the error was found.

**Floating object and school sightings**

DID YOU OBSERVE ANY EVENTS TO RECORD ON FORM GEN-3 TODAY ?		Journal pg #
YES <i>(circle one)</i>	NO	

FLOATING OBJECT AND SCHOOL SIGHTINGS		Anchored floating objects (with NO school) (with school )		Free floating objects (no anchor) (with NO school) (with school)		Free schools		DID YOU OBSERVE ANY EVENTS TO RECORD ON FORM GEN-3 TODAY ?	
Example	Total	Tally	No.	Tally	No.	Tally	No.	Tally	No.
1111	4	-----	0	-----	0	1111	4	11	2
								1	1

The tally area of the form indicates the number of schools of tuna and/or floating objects **that the observer saw during the day**. It is not a tally of the number of schools of tuna or floating objects that the vessel investigated during the day. In this area, the observer keeps a running total of all floating objects and schools that they sighted during the day by marking down a relevant notch whenever an object or a school is seen. At the end of the day, these notches are totalled and recorded into the relevant ‘No.’ (number) box. Keep in mind that the reason we collect this data is to indicate which areas are the most ‘productive’ or have the greatest number of schools of fish. We don’t need observers to be on deck all day long looking for schools of fish. Often, there will be many days when there are no schools of fish. It is probably best if the observer casts an eye around the sea on an approximately hourly basis during the day to look for schools, floating objects, vessels or species of special interest. When you are in an area with a lot of schools, go outside more frequently to count the number of schools or floating objects.

If the observer sees a floating object, they should keep an eye on it to see whether the vessel will investigate it or not. If the floating object is investigated, and tuna are seen with the object, the observer will mark down a notch under ‘Free floating objects (no anchor) with school’. This will also be recorded in the main part of the form with activity code 9. If later the observer then sees a floating log in the distance that is not investigated, they can mark one slash under ‘Free floating object (no anchor) – (with no school)’ since it is likely that there will be no fish with the log if the vessel does not go any closer to it. At the end of the day, the observer should add up their tallies and give a total tally under each heading.

Observers may find it difficult to get an exact count of the number of schools of tuna in very productive fishing grounds as there may be a lot of tuna schools around, continuously appearing and disappearing from the surface. In these circumstances, observers are asked to do their best to record each school once. The information they gather is very useful even if, through no fault of their own, they record the same school more than once.

**Did you observe any events to record on Form GEN-3 today?**

Review the GEN-3 form at the end of every day.

If the vessel has carried out, or has attempted to carry out, any of the incidents listed on the GEN-3 form, circle 'Yes' for this question on the PS -2 form. Record the journal page number where a report on the day's infringements can be found. If there were no infringements, circle 'NO' and mark a dash in the journal page.

Refer to GEN-3 form for more information and how to fill GEN-3 pages 1 and 2.

## Form PS-3 Set Details

### Data submitted

A PS-3 form must be filled in every time the vessel makes a set and this includes sets which have no tuna catch (i.e., unsuccessful sets). Observers should take the time to ensure that every PS-3 form has a corresponding activity code 1 on a PS-2 form and that the start of set time (observer) is the same as recorded on the PS-4 and GEN-5 forms. A PS-3 form is not required for any net cleaning sets or if tuna is transferred to the boat from another vessel catch.

### Header details

The header details must be fully filled in on every completed form, including observer name, vessel name, observer trip ID number and page number.

On the PS-3 form, the words 'SET No.' is under the 'page of \_\_\_' data field. This is because PS-3 'page number' is always the same as the 'set number'. The 'page of \_\_\_\_' field is the total number of PS-3 forms filled at the end of the trip.

### Start of set date and time (Observer)

START OF SET DATE AND TIME					
OBSERVER: (see PS-2)	YY	MM	DD	hh	mm
	20	06	15	05	30

The date and time recorded here must be the exact same as the date and time recorded on the PS-2 form. This is the time the captain shouts "Let go" to start the set, the pelican hook is released and the skiff drops down into the water. This is explained under the set sequence data fields below.

### Start of set date and time (Vessel log)

START OF SET DATE AND TIME					
VESSEL LOG:	YY	MM	DD	hh	mm
	20	06	15	05	38

This date and time should be directly copied from the vessel's logsheet. The observer will need to gain access to the vessel logsheet to complete this data field.

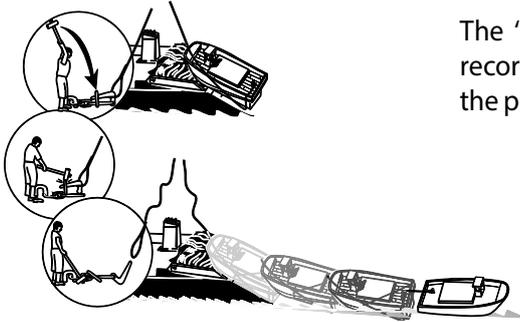
Experience has shown that the start of set date and time on the vessel's logsheet may not always correspond to the observer's start of set date and time. The times may differ by a matter of minutes, hours or even by a number of days. It has been noticed that some vessels prefer not to record sets with small catches, but they combine these catches from these sets into later sets. If the set has not been recorded on the logsheets, just mark a dash in these data fields.

**Caution!** If there are problems with the vessel's logsheet – for instance, the vessel is not using the regional standard logsheet, denies the observer access to the logsheet, fails to record any set properly or fails to fill in their regional logsheet by the end of the day – a full report on these infringements should be first made in the journal. Also, make sure you mark an X against the relevant incidents on the GEN-3 form.

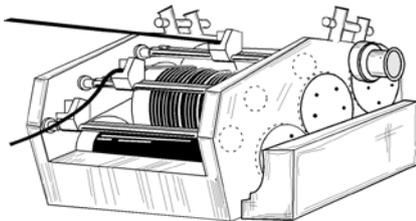
## Set sequence times

		SET SEQUENCE TIMES					
EVENT:	if SSI OBSERVED (Obs Time Sighted)	START OF SET (SKIFF OFF)	BEGIN PURSING	END PURSING	BEGIN BRAILING	END OF BRAILING / SACK ONBOARD	END OF SET (NEXT ACTIVITY STARTS)
TIME:	_____	0530	0705	0830	1005	1030	1130

The set sequence times show how long it takes the vessel from start to end of set. The faster a vessel can close its net, the better chance it has of catching tuna.

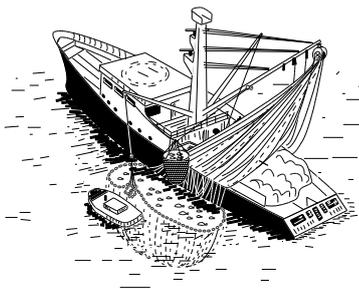


The 'Start of set (skiff off)' time must be the same time as what was recorded on the PS-2 form. This is the time the captain shouts "Let go", the pelican hook and cable are released and the skiff slides into the water.

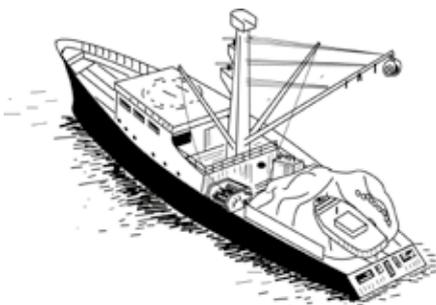


Once the school has been encircled by the net, the vessel will aim to close the bottom of the net by pursing (pulling the bottom of the net together). Pursing begins when the purse winch is started, 'Begin pursing' (winch on). By standing on the upper deck, the observer will be able to see the winch clearly without disturbing the working crew members.

The net will be fully closed when the purse rings can be seen coming up out of the water, 'End pursing' (rings up). Record the time when rings are all brought up and the winch comes to a complete stop and rings are held by the davit block. The ideal place to observe the retrieval of the purse rings is beside the controls, looking down from the upper deck.



If the set has been successful, the vessel will start brailing once the net has been fully stacked up. This can take at least an hour after the 'rings up' and gives the observer plenty of time to prepare for their sampling work. The 'Begin brailing' and 'End brailing' times will be recorded onto the waterproof PS-4 form initially. These times can then be directly copied onto the PS-3 form once sampling is finished. The 'begin brail' time is the time the first brail is moved from the sack to the vessel. The 'end brail' time is the time the last brail is brought on board and released into the hopper or the hatch.



The 'End of Set (skiff on board)' time is defined as the time the skiff comes back on board. The skiff must come back on board the vessel for the set to complete. If the skiff drifts beside the catcher vessel for a while, observers still need to wait until the skiff comes back on board before they can record the end of set time. Remember, once the set is over, make a record on the PS-2 form to indicate the change in the vessel's activity.



“The skiff didn’t come back onto the boat until the next day due to a mechanical problem, what should I do?”

The end of set time is defined as when the skiff comes back on board. If it happens that the skiff does not come back on board for a long time, the observer should still record the exact time that the skiff comes on board. If the time is after midnight (i.e. the next day), just make a note of the date in the comments section of the form for the day of the set start.

The time itself will often be enough to indicate that the set finished the next day (e.g. 0315hrs). Remember, do not make another record on the PS-2 form until the skiff comes back on board.

**Caution!** Don’t forget to fill in the ‘end of set time’ data field in your set sequence times. This is a very common error made by observers. Always check this data field at the end of the day.

### Set catch details

From this point on, any information you record on the PS-3 form will be filled in after the set. Once the net is closed and the rings are up, observers should place their workbook in a secure area of their accommodation and prepare themselves for sampling on deck and locate their PS-4 forms etc. You will need to complete the PS-4 form first, before you can complete the PS-3 form. Some PS-4 calculations are required (sum of all brails) before you can proceed with the PS-3 form.

### Brail capacity

Fill in the capacity of the brail here. Capacity is the total volume that the brail can hold in metric tonnes. Note the reference to the different brail types written below the data field. If different brail types are used on board, these should have been recorded on the PS-1 (page1) form. There are four types of brails on PS-1 which observers can refer to. These are long handle (LH), heavy frame (HF), Spanish type (SP) and Japanese type (JP).

### Sum of brails

SUM OF ALL BRAILS	
	see back of form

The ‘sum of all brails’ value should be copied directly from the PS-4 form. This can be done once the set is over and the PS-4 calculations have been completed by the observer. If the vessel uses two different brail types during the same set, then there will be two separate ‘sum of brails’ values.

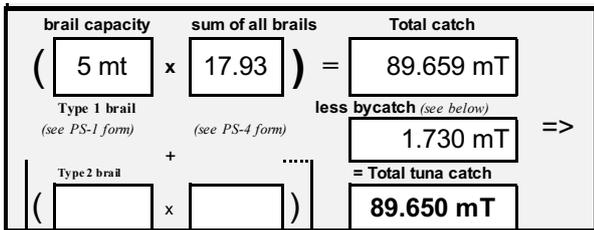
The ‘sum of all brails’ data fields as seen on the PS-4 form.

<b>brail capacity</b>	<b>sum of all brails</b>	<b>Total catch</b>
( 5 mt x 17.93 ) =		89.659 mT
Type 1 brail (see PS-1 form)	(see PS-4 form)	less bycatch (see below)
		1.730 mT =>
Type 2 brail ( [ ] x [ ] )		= Total tuna catch
		89.650 mT

### Total catch

Once you have recorded the brail capacity and sum of all brails, some multiplications are required to get the ‘Total catch’ of marine species that have come on board.

In the example below there is only one brail and it has a capacity of 5 metric tonnes. The sum of all brails (i.e. total number of full brails) is 17.93. So, the total catch of all species is 87.92 metric tonnes.



### Less bycatch

To find out how much tuna came on board, we need to subtract the total amount of bycatch, an estimate of all bycatches that came on board and the bycatches discarded during net hauling, sacking and brailing.

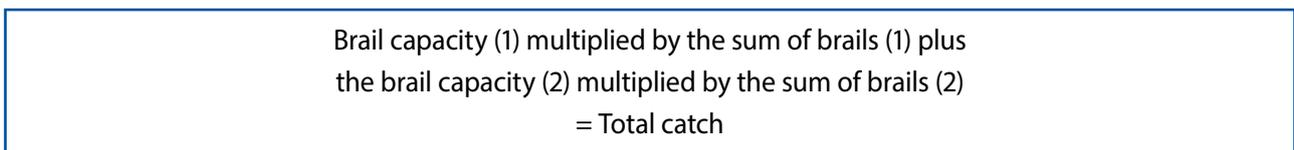
Subtract the value calculated for the 'total weight of bycatch' which you should have added up and recorded at the bottom of the bycatch area of the form. In this example below, the total bycatch weight is 1.730 metric tonnes of WAH, MSD, RRU, FAL, OCS, CNT and BUM.

BY-CATCH (ALL NON-TARGET SPECIES LANDINGS)						
SPECIES CODE	FATE CODE	OBSERVER (mT)	No.	VESSEL LOG (mT)	No.	COMMENTS / SSI TREATMENT
WAH	RCC	0.1	5	-----	4	Kept for crew consumption
MSD	DUS	0.5	-----	0.3	----	
RRU	DUS	0.1	----	---	----	
FAL	DPA	0.18	3	0.1	3	released from the net
OCS	DPU	0.15	2	---	2	tangled and released
CNT	DUS	0.2	----	----		estimated of 3 piles all up
BUM	RHG	0.5	2	----	2	2 large blue marlins
Total weight of bycatch:		<b>1.730</b>		<b>0.4</b>		

### Total tuna catches

As mentioned, when you subtract the bycatch figure (i.e. 'less bycatch') from the total catch you will get the 'Total tuna catch'. This total tuna catch will include all the tuna in the catch, whether they are subsequently retained or discarded. It does not, however, include any tuna that may have escaped.

If there is a second brail capacity, you will have to do one more multiplication.



Here the brail capacity is the same as 'type of brail'.

In the example below, the vessel has two brail sizes. One has a capacity of 5 metric tonnes and one has a capacity of 3 metric tonnes. We need to multiply each of the brail type's capacity by the sum of all brails for the relevant brail.

- The 5 metric tonne brail has a 'sum of all brails' value of 17.93 brails.
- The 3 metric tonne brail has a 'sum of all brails' value of 6.75 brails.

When we do the calculation below:

(5 mT x 17.93 brails) = 89.65 mT + (3 mT x 6.75 brails = 20.25 mT). Add 89.65 mT + 20.25 mT = 109.90 mT. It should be recorded on the form like the example below.

brail capacity	sum of all brails	Total catch
( 5 mt )	x ( 17.93 )	= ( 109.900 mT )
<small>Type 1 brail (see PS-1 form)</small>	<small>(see PS-4 form)</small>	<small>less bycatch (see below)</small>
+	=	=>
( 3 mT )	x ( 6.75 )	= Total tuna catch
<small>Type 2 brail</small>		

### Observer's breakdown of total tuna caught

This area of the form allows observers to give their best **eye-estimate** of the percentage or proportion of each tuna species that is in the catch. They are also asked to break down their eye-estimate by further categorizing the yellowfin and bigeye into 'large' > 75 cm long and 'small' sizes < 75 cm long.

An example of the breakdown below:

OBSERVER'S BREAKDOWN OF TOTAL TUNA CAUGHT											
<small>- circle YES or NO for each species</small>											
SKIP-JACK		YELLOWFIN					BIGEYE				
		SMALL (< 75 cm)		LARGE (> 75 cm)			SMALL (< 75 cm)		LARGE (> 75 cm)		
YES	(%)	YES	(%)	YES	(%)	NUMBER	YES	(%)	YES	(%)	NUMBER
NO	70	NO	5	NO	20	-----	NO	1	NO	4	-----

1. Start by circling either 'Yes' or 'No' to indicate whether SKJ, YFT and BET were present in the sack during net stacking and brailing.
2. Then write down an eye-estimate of the percentage of the SKJ, YFT and BET that was in the tuna catch.
3. You are then asked to further break down the YFT and BET eye-estimate into small size < 75 cm and large size > 75 cm.

An example is if you noted that:

- 25% of the tuna overall were YFT (5% of the tuna overall were small YFT < 75 cm and 20% large YFT > 75 cm)
- 5% of the tuna overall were BET (1 % of the tuna overall were small BET < 75 cm and 4% for large BET > 75 cm)

Time and experience will help make the job of eye-estimating the percentage of each target tuna species and their size categories for yellowfin and bigeye easier.

Scenario one: Only skipjack are in each of the brails that come on board.

The majority of sets that come on board will contain only one species and the majority of these sets will contain only skipjack. This scenario (only skipjack landed), is an easy one to record. Just circle 'Yes' for skipjack and record the percentage as 100%. All other data fields will be circled 'NO' and marked with a dash in the % and number fields.

Scenario two: Only yellowfin in each of the brails that come on board.

Some sets will only contain yellowfin. In this case, the observer will circle 'Yes' for yellowfin and 'No' for the other two species – skipjack and bigeye. They will then need to decide what percentage (or how much) of that yellowfin is large > 75 cm and how much is small < 75 cm. Remember, the percentage of large and small yellowfin in the brail might change during the brailing process, and the amount of tuna in each brail might change. For instance, there may be more full brails with large yellowfin at the start and in the middle of the brailing process and more brails that are not full and with a higher proportion of small yellowfin toward the end of the brailing process. Observers will have to keep this in mind and adjust the percentage of small and large yellowfin accordingly.

### **Recording the tuna catch (Target tunas)**

In the main part of the PS-3 form observers are asked to give an **eye-estimate** of the amount of each species that was caught and to record the individual species amounts under their relevant final fate code. Records are separated into target tunas and bycatch ('All non-target species' and 'All species of special interest' [SSI], whether they are landed or not). They are also asked to look at the vessel's logsheet to transcribe what catches the vessel recorded on its logsheet.

The references below have been put together to help observers provide good eye-estimates.

#### ***Recording purse-seine catch eye-estimate amounts***

#### **Convert short tons to metric tonnes**

All tonnages must be recorded as metric tonnes on the PS-3 form. To convert short tons to metric tonnes, multiply the short ton figure by 0.9842. This may be needed if you are working on a US vessel as the brail capacity and vessel records are often given in short tons and not metric tonnes.

See the box below on converting kilograms to metric tonnes when dealing with small amounts of target tuna.

#### **Converting kilograms to metric tonnes**

1kg = 0.001 mT

10 kg = 0.010 mT

15kg = 0.015 mT

100kg = 0.100 mT

1000kg = 1.000 mT (1 metric tonne)

For instance, one large yellowfin will weigh approximately 20 kg. This can be recorded as 0.020 mT.

## Record values, not symbols

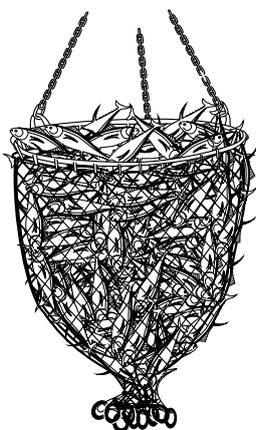
**Caution!** When recording amounts do not use:

- mathematical symbols like 'less than' or 'greater to' (i.e., < 5 mT, > 1 mT)
- dashes (i.e., 20-30 mT)
- brackets {(SKJ / YFT / BET) = '15 mT'}

These may result in vague data and the data may not be useable. Record one metric tonne value for each eye-estimate amount up to three decimal places.

## Notes on eye-estimating landed amounts and percentages

*First judge the amount:*



To eye-estimate large amounts, use large reference objects, like the capacity of the brail for instance. Compare the amount of fish to the reference object. For instance, compare the capacity of the brail against the amount of fish that you are eye-estimating. If the brail has a capacity of 3 metric tonnes and it looks as if all the fish on the deck would fill up at least half of the brail, then record an eye-estimate amount of 1.5 metric tonnes.

For smaller amounts, use smaller reference objects. It can be useful to refer to the average weight of some of the individual marine species when looking for a reference object for a smaller amount of bycatch. For instance, a 120 cm yellowfin usually weighs around 30kg.

A full-size weight-length table for target tuna is included below. When trying to eye-estimate a small amount of bycatch on deck, decide if the entire weight would be equivalent to the size of a half, one or two 130 cm size yellowfin.

Length (cm)	Weight (kg)			
	BUM	FAL	WAH	RRU
50			1.8	1.2
75			4.1	4.0
100	11.3	10.7	7.2	9.3
125	33.9	35	11.1	17.9
150	74.0	81	16	
200	135.7	156		
250	222			

### INDIVIDUAL WEIGHT IN KGS. CONVERTED TO ESTIMATED MEASUREMENT IN CENTIMETRES (GUIDE ONLY)

Kgs	.5	1	1.5	2	2.5	3	3.5	4	5	6	7	8	9
Skipjack	<33	33-37	38-43	44-47	48-50	51-53	54-55	56-59	60-63	64-66	67-69	70-72	73-74
Yellowfin	<33	33-38	39-43	44-46	47-49	50-52	53-55	56-58	59-63	64-66	67-69	70-75	76-78
Bigeye	<33	32-37	38-41	42-45	46-48	49-51	52-54	55-58	59-62	63-64	65-67	68-73	74-76

Kgs	10	11	12	13	14	15	16	17	18	19	20	21	22
Skipjack	75-76	77-78	79-80	81-82	83	84	85	86					
Yellowfin	79-80	81-82	83-84	85-87	88	89-90	91-92	93-94	95	96-97	98-102	103-105	106-108
Bigeye	77-78	79-80	81-82	83-85	86-87	88-89	90-91	92-93	94	95-96	97-98	99	100-101

Kgs	23	24	25	26	27	28	29	30	31	32	33	34	35
Yellowfin	109	110-111	112-113	114	115-116	117	118-119	120	121	121-123	124	125	126
Bigeye	102-103	104	105	106-107	108	109-110	111	112	113	114-115	116	117	118

Kgs	36	37	38	39	40	41	42	43	44	45	46	47	48
Yellowfin	127-128	129	130	131	132	133	134-135	136	137	138	139	140	141
Bigeye	119	120	121	122	123	124	125	126	127	128	129	130	131
Kgs	49	50	51	52	53	54	55	56	57	58	59	60	61
Yellowfin	142	143	144	145	146	147	148	149	150	151	152	153	154
Bigeye	132	133	134	135	136	137	138		139	140	141		142

*Then judge the proportion:*

Common sense will go a long way to help observers judge which proportion of the total amount should be assigned to each species or species/fate code combination.

Eye-estimating proportions can be done by first working out the proportions in a randomly selected unit of the catch and applying these proportions to the total catch. Make sure that the species proportions don't change dramatically between the random units and that they are consistent throughout the catch. In the photograph below we show how observers can project an imaginary grid onto the bycatch on deck. As long as the bycatch is evenly mixed, the bycatch in one unit can be calculated and multiplied by 37. However, in this case it seems as if the catch in units 1-18 is similar, so judge what is in unit one and multiply by 18. Then judge what is in unit 19 (which looks similar to the catch in units 20 to 30), and multiply by 12, and finally judge what is in unit 31 (which looks similar to the catch in units 32 to 37) so multiply by 7. It is not an exact science, but it will give you a good, educated estimate.

For instance, during the brailing sequence, the majority of the catch may be large yellowfin in the first unit (brail), while the majority of fish in the last few brails may be smaller skipjack. In this case, the proportions should not be judged from one brail only.

At times the bycatch will be spread out on deck and you may be able to judge the proportion of each bycatch from one area on deck. Look out for pockets where the proportions change considerably.

*Use an imaginary grid to estimate the proportion of each species in the total by catch.*

#### **Pile of bycatch species on a purse-seine work deck without imaginary grid**



**Eye-estimations of amounts and proportions will improve with experience!**

*'Proportions' is defined here as harmonious relation of parts to each other or to the whole. The relation of one part to another or to the whole with respect to magnitude and quantity.*

Pile of bycatch species on a purse-seine work deck with imaginary grid



The section on bycatch is filled below as an example.

**Target tuna**

SKJ YFT BET

The target tuna data fields are on the right-hand side of the PS-3 form. We will have a look at these data fields first.

Skipjack (SKJ), yellowfin (YFT) and bigeye (BET) are the main target species for purse-seine vessels and observers are asked to record all landings and any subsequent discards of these under the 'Target Tuna' section of the form. Any target tuna that has escaped before the net was fully closed should also be recorded. Two records of target catch are required. One is the observer's record and the other is the vessel's record.

For Box A (see table on next page), record the observer's estimate of total of each target species caught. To do this, refer to your total tuna catch data field, which has already been filled in (see table below) and calculate an estimate for each species by multiplying the total tuna catch by the observer's percentage breakdown.

brail capacity ( 5 mt )		sum of all brails x 17.93		Total catch = 89.659 mT		<b>OBSERVER'S BREAKDOWN of TOTAL TUNA CAUGHT</b>									
Type 1 brail <small>(see PS-1 form)</small>		(see PS-4 form)		less bycatch <small>(see below)</small> 1.730 mT		<small>N.B.: these calculations include all the tuna in this catch, whether retained or discarded</small>									
Type 2 brail ( )		+		= Total tuna catch 89.650 mT		<b>SKIP-JACK</b>		<b>YELLOWFIN</b>				<b>BIGEYE</b>			
						SMALL (< 75 cm)		LARGE (> 75 cm)				SMALL (< 75 cm)		LARGE (> 75 cm)	
						YES (%)	YES (%)	YES (%)	NUMBER	YES (%)	NUMBER	YES (%)	NUMBER		
						NO 70	NO 5	NO 20		NO 1		NO 4			

In this example we have used the total tuna catch amount of 87.92 mT and re-calculated it with the eye-estimate of the percentage of each tuna species in the catch.



## Vessel record

After the set, the observer is asked to refer to the vessel's logsheet and transcribe the vessels records. The information on the logsheets should be directly copied onto the PS-3 form. There may be some challenges with this work. At times, the start of set date and time on the vessel's logsheet may not always correspond to the observer's start of set date and time. Some detective work may be needed before the observer can identify the set that corresponds to their own recorded set, although vessel reporting has improved over the years. Some vessels may not fill in their logsheets until late in the evening or the next day, which makes things harder for observers.

Record the fate code and then the metric tonne amount directly under the fate code. If the observer has recorded discards with the same fate code, try to record the vessel's discards with the same fate code directly below. If the vessel has recorded a discard with a zero amount, record zero (0), not a dash. The PS logsheet outlines four tuna discard codes. After reading the information on the logsheet, record the most appropriate observer fate code that corresponds to the information written on the logsheet and then transcribe the vessel's record onto your PS-3 form.

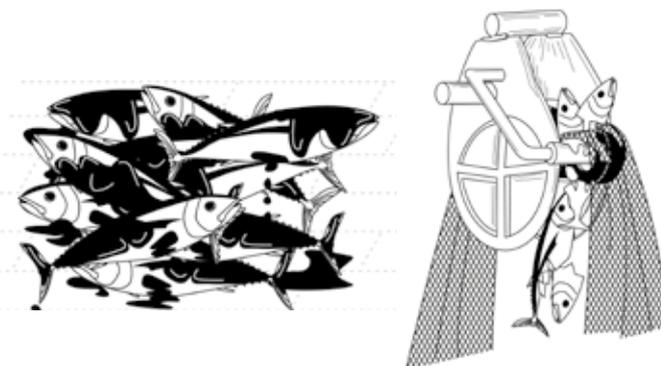
**Caution!** If you mark 'zero' into the vessel (mT) data fields, it suggests that the vessel recorded a 'zero' on the logsheet. If they recorded nothing on the logsheet, observers should record this as a dash on the observer forms.

The most common discarded fate codes for landed target catch are:

**DGD:** Discarded – gear damage; **DPQ:** Discarded – poor quality; **DVF:** Discarded – vessel fully loaded; **DOR:** Discarded – other reason (specify).

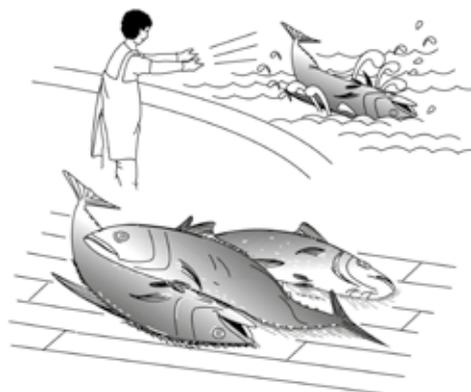
**DGD** – Discarded – gear damage

For target tuna that are discarded due to damage by vessel gear (i.e. the net, power block, wires, brail, etc.)



**DPQ** – Discarded – poor quality

Use this code for target tuna that are discarded due to their poor quality (e.g. often soft flesh after being out in the sun too long, or remaining in the net and sack for too long due to gear failure or a very large catch).



**DVF** – Discarded – vessel fully loaded

All vessel fish wells are filled to maximum capacity with tuna.

**DOR** – Discarded – other reason (specify)

If target tuna has been discarded for a reason not listed in the fate code, record it with this code and clearly record the reason the tuna was discarded.

Under WCPFC rules for 'Catch retention', target tuna species may not be discarded if they are too small '**DTS** – Discarded – too small'. However, if this practice is observed, the observer should use the DTS code and make a full report in their journal and final written report.

**DTS** – Discarded – too small

If the target tuna were discarded because the captain considered them to be too small (normally under 35cm), use this fate code.



Paragraph 27 of the WCPFC Conservation and Management Measure CMM 2008-01 states that the only conditions under which a purse-seine vessel can discard tuna are:

Reason	Equivalent Observer Code
Fish damaged/unfit for consumption	DPQ
Vessel fully loaded	DVF
Gear failure	DGD
Other reason	DOR

Don't forget to record any tuna that were retained for crew consumption in this area of the form.

**RCC** – Retained for crew consumption

If any of the tuna have been taken off the deck for later consumption by the captain, crew or observer, use this fate code.



**Box B** below allows you to calculate an observer total for the total amount of target tuna that were discarded or consumed by the crew.

To do this add up each of the observer records.

- a. Observer best eye-estimate
- b. Observer best eye-estimate
- c. Observer best eye-estimate

Equals B, 'Observer's totals'

Example below:

<b>B. OBSERVER totals (mT)</b> discards + RCC (a+b+c):	0.20	0.50	0.06
---	------	------	------

**Caution!** Do not include the vessel totals in these calculations.

Directly below Box B you can fill in any other tuna that have been retained on board. Some vessels have been known to gill and gut tuna for later sale (sashimi etc.) This practice is not common, but if you see it, you can record it in this area or any other fate codes and eye-estimates of tuna being retained that are not RWW or RCC, which should have already been recorded.

Tuna kept onboard for later unload if not RWW	FATE			
	OBS (mT)	-----	-----	-----
	VES (mT)	-----	-----	-----
Tuna kept onboard	FATE	<b>RWW</b>	<b>RWW</b>	<b>RWW</b>
	OBS (mT)	<b>61.34</b>	<b>21.48</b>	<b>4.34</b>
	VES (mT)	65.00	19.00	1.00
	Due to gear break bycatch mitigation	ESC	ESC	ESC
estimates	OBS (mT)	0	0	0
	VES (mT)	-----	-----	-----

Now give your final record of the total amount of target catch tuna that have been retained on board. You can see this in the example above, recorded under the RWW fate code.

Finally, **record any tuna that might have escaped**. It is quite common for tuna to escape from the net before it is closed. The captain, fishing master or other officers present on the bridge during setting will have this information. Ask them for their estimate of how much tuna escaped. If they know the total amount, but not the amount by individual species, use the observer's breakdown of species by percentage.

Tuna may escape before the net is closed if the gear breaks (the net for instance) or via a bycatch mitigation device (panels in the net to let certain species escape). In the example above, no tuna escaped during this set. Consider all of these before you record.

## Bycatch

Any marine species that is encircled by the net (other than skipjack, yellowfin or bigeye) should be recorded at least once under the 'Bycatch' section with its appropriate 3-letter FAO species ID code.

- Record all bycatch species that have landed on deck. Record a 3-letter FAO species ID code for each species. See 'species code' (below) and identification ID manual for more guidance.
- You may have to record the species code more than once if a species was processed under more than one fate code.
- Observe how each bycatch species is handled or processed. Assign the appropriate fate code to each of the landed bycatch species on PS-3 forms. Some species may have more than one fate code. For instance, a few rainbow runners may be retained for crew consumption (RCC), while an additional half a metric tonne may be discarded as unwanted species (DUS).
- Give an eye-estimate of the total amount of each bycatch species for each of its fate codes.

## Species code

Use the Food and Agriculture Organisation (FAO) 3-letter species codes to record any species that are encircled by the net. These codes are marked in the species identification sheets and the species lists that were provided during training. If necessary, further copies can be obtained through the observer coordinators, SPC or FFA. If unsure of the correct species code, there are two options.

1. *Use a species group code.* A species group code designates a group that contains a number of similar species without indicating the actual species. Usually (but not always), this is a scientifically recognised family group. Some species codes are:

BIL – Billfish  
BAR – Barracuda  
MAR – Marlin  
TUN – Tuna  
SKH – Shark  
TTX – Turtles  
BRZ – Pomfrets and ocean breams

**Caution!** Observers are urged to record the actual species code and not group species codes whenever possible. Observers using group codes will normally be helped by the debriefer and given some further guidance to find the correct species code. While it is expected that new observers will use group codes from time to time, experienced observers should avoid using group codes. However, group codes can be useful if bycatch are discarded quickly and the observer didn't get a good chance to check the species.

2. Use the 3-letter code 'UNS – Unspecified' when the correct species or group code is not known. A further description of the species must then be provided.

#### How to provide further descriptions for unspecified (UNS) or group species codes.

- 1) Take some photographs of the fish. Take more than one photograph, especially if you think it is an uncommon fish or species.
- 2) Bring the specimen back to shore for further identification. For sharks it may be helpful to collect some of the teeth. Note whether the teeth came from the upper or lower jaws and from the front or back of the jaw.
- 3) Draw the species and write a full description in the written report. When photographing, drawing or describing unidentified species, pay special attention to:
  - the overall body shape
  - the colour of the fish
  - where the fins are attached to the body
  - the position of the fins in relation to other fins
  - the size of the fins, and the number of fin spines and rays
  - the height of the dorsal fins (especially for marlin)
  - height and shape of the first dorsal fin – round or triangular (especially for sharks)
  - the presence or absence of the lateral line and its shape
  - the scales of the fish (whether smooth, hard, sharp, etc.)
  - any other distinctive feature of the fish
  - the shape and size of the teeth (long, triangular, serrated, etc.)

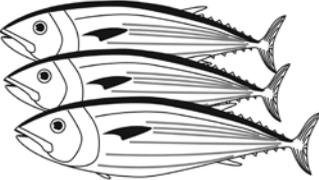
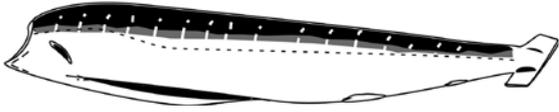
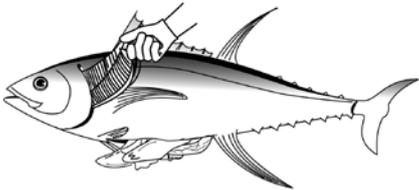
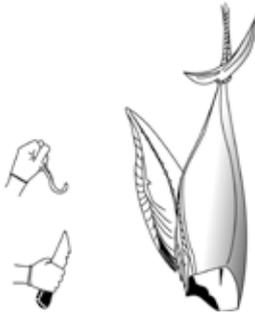
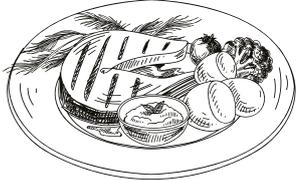
**Caution!** Do not write local names into the data fields. If the FAO species code is not known, record the code 'UNS' (unspecified) into the data field and record the local name in the comments section. Work with the debriefer at the end of the trip and try to determine the correct species code. Correct the species codes on all forms before they are submitted.

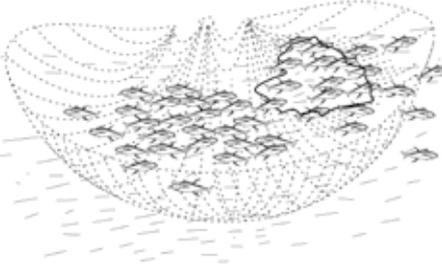
**Caution!** If more than one unknown species is encountered, use the observer's own numbering system to separate out the different unknown species (i.e. UNS #1, UNS #2, UNS #3). Use the comments area to make some notes that will help with re-coding these species later, i.e. 'large orange fish', 'long fish big teeth'. Leave the blank data field empty so the correct species code can be recorded in there later.

*Note:* Further descriptions for all UNS codes must be supplied (see box above). Short comments on the LL-4 form are not sufficient.

#### Fate codes

A full list of fate codes is listed on the PS-3 form.

<p><i>RWW: Retained – whole weight</i></p>	<p><i>RHG: Retained – headed and gutted (Billfish)</i></p>
	
<p><i>RGG: Retained – gilled and gutted (kept for sale)</i></p>	<p><i>RPT: Retained – partial (fillet, loin, trunk)</i></p>
	
<p><i>RCC: Retained – crew consumption</i></p>	<p><i>ROR – Retained other reason (please specify)</i></p>
	<p>Apply to species with retained fate code not listed here.</p>
<p><i>RFR – Trunk and fins retained (shark only)</i></p>	<p><i>DFR – Discarded fins retained</i></p>
	
<p><i>DUS – Discarded – unwanted species</i></p>	<p><i>DSD – Discarded – shark damage</i></p>
<p>Apply only to bycatch species, for example RRU, MSD, DOL, WAH, GBA, etc.</p>	

<i>DWD – Discarded – whale damage</i>	<i>DPQ – Discarded – poor quality</i>
Code commonly used in longline fisheries	
<i>DOR – Discarded other reason (specify)</i>	<i>ESC – Escaped</i>
Apply to species with fate code not listed here.	

### Recording the bycatch amounts

#### Observer (mT) (Number)

Record the amount of each marine species in their species/fate code combination as an eye-estimate of the total weight (mT) or as an eye-estimate of the total number. Choose the most appropriate unit. There is no need to record both weight and number. Mark a dash in the other data field. Generally, if only a handful of fish are landed, the amounts should be recorded in numbers, while if there are large amounts, it is better if the observer gives an eye-estimate of the total weight in metric tonnes.

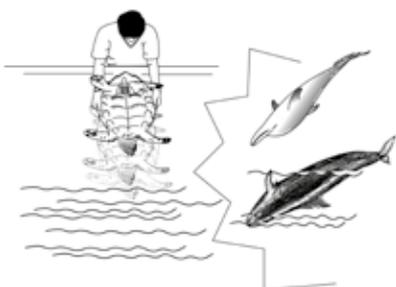
#### Vessel log (mT) (Number)

At the end of the day, check the vessel’s regional purse-seine logsheet and see if any bycatch species for the set have been recorded. Check under the ‘discards – other species’ heading. Directly copy the information from the logsheets.

Be careful that data is properly copied and that the correct weight or number units are recorded by the observer.

#### Pay attention to any species of special interest (SSI).

The species of special interest are: all turtles, all marine mammals, the whale shark, and all birds. If any of these species are encircled by the net, they should be always be recorded on the PS-3 form.



**Bycatch (All non-target species and all SSI landings)**

BY-CATCH (ALL NON-TARGET SPECIES LANDINGS)						
SPECIES CODE	FATE CODE	OBSERVER		VESSEL LOG		COMMENTS / SSI TREATMENT
		(mT)	No.	(mT)	No.	
WAH	RCC	0.1	5	-----	4	Kept for crew consumption
MSD	DUS	0.5	-----	0.3	----	
RRU	DUS	0.1	----	---	----	
FAL	DPA	0.18	3	0.1	3	released from the net
OCS	DPU	0.15	2	---	2	tangled and released
CNT	DUS	0.2	----	----		estimated of 3 piles all up
BUM	RHG	0.5	2	----	2	2 large blue marlins
Total weight of bycatch:		<b>1.730</b>		<b>0.4</b>		

Record any SSI that land on deck in this data field on the PS-3 form. Estimate total weight and number. Use the SSI's fate code to record condition status when discarded (see above example).

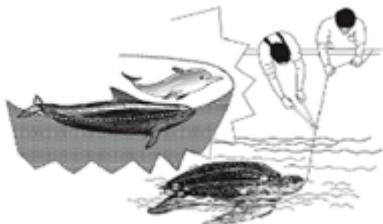
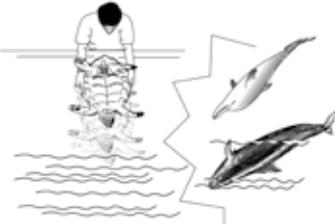
*Note:* No SSI can be kept on board (injured turtle may be while recovering).

*Note:* Landed SSIs are no longer recorded on the GEN-2 form. Use the new PS-4 to record the length and sex of landed SSIs (sharks etc.)

SPECIES OF SPECIAL INTEREST <i>Interactions with primary gear (not landed)</i>					COMMENTS / SSI TREATMENT	
SPECIES CODE	GEAR INTERACTION CODE	OBSERVER		CONDITION		
		(mT)	No.	Captured	Released	

Record any SSI you see in the net but are not landed on deck in this area (see above table). Use the gear interaction codes (see below), instead of the normal fate codes here. Under the condition data field, record their condition as: A0 – alive; A1 – alive and healthy; A2 – alive, injured; A3 – alive but dying; D – Dead U – unknown.

Normally only the following fate codes will be used with species of special interest:

<b>DPA (Discarded – species of special interest – alive)</b>	<b>DPD (Discarded – species of special interest – dead)</b>
	

**DPU (Discarded – species of special interest – unknown condition)**

If a set is unsuccessful, with no tuna and few other fish like marlins, sharks, rainbow runner or other small species such as mackerel scads, a PS-3 form must still be filled in. The header details, set sequence times, non-target landings, queries section and comments section will be filled in.

### Transferred catch



**“The vessel has taken some target tuna on board from another purse-seiner’s net (set sharing). How do I record this?”**

Tuna or any other marine species that are transhipped onto the purse-seine vessel from another vessel should not be recorded into the catch details section of the PS-3 ‘Set Details’ form, even it happens at the end of the set or before the skiff comes on board. Any transhipment of tuna should be recorded on the PS-5 form, but records on the GEN-1, PS-2 form and perhaps the GEN-3 form will also be required.

### Tags – How many tags were recovered?

Record how many tags were recovered during the set in this data field.

<b>How many Tags were recovered?</b>		<i>Record species and tag numbers. Fill tag recovery forms!</i>
--------------------------------------	--	---

Additionally, in the comments data field, fill in 3-letter FAO code to indicate what type of fish was tagged and record the tag number. Use the tag recovery form, which can be found at the back of your workbook, to record further details of the recovered tagged tuna.

Encourage the crew member that found the tag to return the tag to the name and address marked on the tag. Explain to them there will be a reward, often a t-shirt or a cap. Electronic tags may have large cash rewards.

The observer should also try to contact the organisation that has tagged the fish. Send all the relevant information when contacting the organisation. This will ensure that this valuable information gets back to the tagging organisation, and who knows, the observer might get a reward also!

If more than one tag is found in a set, then use the comments area to record the information on any second tag and fill in a new tag recovery form.

### Comments

Comments are encouraged on all forms. Some relevant comments that could be made at the bottom of the PS-3 form include confirmation that there was no target catch discards seen, confirmation that there were no bycatch species seen, the reason for any high numbers of target catch discards, the reason for any unexpected delays with set sequence times, etc. If you need extra space, use your journal and write the journal page number on the PS-3 form.



### What is the target no. of samples?

Observers are encouraged to take five fish from every single brail. Sometimes this is difficult to do, especially if the brailing is fast or the fish are large. Still, observers are encouraged to aim for five fish when they can. However, as mentioned, five fish may not always be possible. If an observer samples only four fish in a brail, they can try to sample six fish in the next one to make up for the amount in the previous brail.

**Notes on random selection.** This means selecting fish without being influenced by their shape, size, species or the location of the fish in the brail. Do not choose fish because they are the easiest to handle, or the smallest/lightest or because you have not measured any of that species yet. Random selection of fish is best done by adopting a good sampling method and sticking to that selection procedure for the entire duration of the trip. Some sampling methods you could try are selecting the five fish that: 1) have their tail pointing towards you; 2) have their head pointing towards you; 3) are closest to you; 4) are in the same spot and are close to each other.

**Caution!** Always collect new fish from the brail **first**, then throw back the sampled fish. This avoids measuring the same fish twice. Do not measure any damaged fish. If you find that you have selected a damaged fish (tail broken) during your random selection, just set them aside when you come to measuring the fish.

Some of the crew want to help me do the sampling, is that okay?

You must randomly select the fish yourself. Crew members are not trained to select fish randomly and may be tempted to take the largest fish out, or even the smallest one. If any of the crew members are keen to help, you can ask them to help you throw the fish back once you have measured them.



“During ‘grab sampling’ I pulled out a bycatch species, should I write it down it?”

Yes, if during ‘grab sampling’ a species other than skipjack, yellowfin or bigeye comes to hand, you should record them. Remember to write them down in the same order as you measure them.

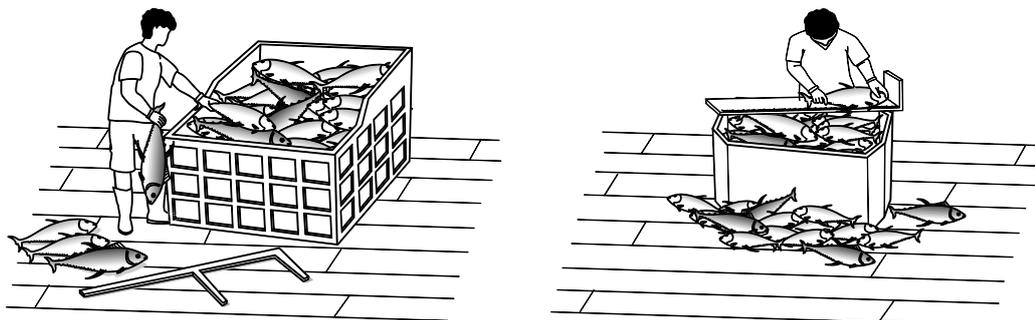


“I saw some bigeye in the brail, but none came to hand during my ‘grab’ sample. Is that correct?”

Yes. Sometimes, some of the rarer species will not-come-to hand during sampling. Observers should not worry about this but may like to write a note saying ‘bigeye seen’ under the ‘Comments on sampling protocol’ data field. Also, on PS-3, the observer indicates where there is SKJ, YFT and BET in the set (see data fields below).

SKIP-JACK		YELLOWFIN					BIGEYE				
		SMALL (< 75 cm)		LARGE (> 75 cm)			SMALL (< 75 cm)		LARGE (> 75 cm)		
YES	(%)	YES	(%)	YES	(%)	NUMBER	YES	(%)	YES	(%)	NUMBER
NO		NO		NO			NO		NO		

## SPILL



Spill sampling requires observers to get cooperation from the vessel to 'spill' or to drop large amounts of fish from the brail into a large observer sampling 'bin'. Only experienced observers are permitted to do this with some briefing and training, and if the sampling protocol is agreed with the vessel before the observer departs.

## OTHER

Additional sampling protocols may be carried out by observers. The use and selection of these sampling protocols will depend on both the experience of the observer and whether any fish are left on deck after brailing.

A list of the possible other sampling types is on the back of the PS-4 form and listed here below.

**DA** – all discards

**DT** – only discarded tunas

**BS** – bycatch – select species (one or more different species but not all species)

**SS** – Species of special interest. Include the sex with the length eg. "male" 26cm = M26, "unknown" 56cm = U56

**LB** – Live-fish Brailing – separate the samples on different pages if live fish brailing is used prior to standard brailing.

Before you start measuring fish, decide on what sample type you will use and then record the relevant sample type code in the comments box. Remember that only length measurements collected with the same sampling type should appear on the same form. If you have already done a grab sample, start a new PS-4 form before you start your 'if Other' sample. If you measure more than 120 fish for any sample type, just continue your length records on a new PS-4 form, making sure all the sampling details are correct, especially the 'PS-4 forms used for this one sample', which keeps a count of page numbering by sample type and not by form type.

*DA – all discards*

Carry out a 'DA – all discards' sample type if there is a mix of fish on deck (tuna and other bycatch) that will be subsequently discarded.

With this sampling type, observers should try to measure a selection of all species. Aim to get a representative length frequency sample for all these species. Aim to get about 20–30 fish, up to about 50 fish, of each species type. In some cases, there won't be 50 fish available and this will limit the amount of sampling you can do. Furthermore, the crew will try to discard all of the fish off deck quickly so this may limit the number of lengths you will be able to collect. It is better if observers try to get some length measurements *for each species type* left on deck, rather than concentrating all their efforts on getting 50 length measurements for one species.

**Caution!** Fish sampled under the 'DA – all discards' sample type must still be *randomly selected* before they are measured. This means that if you have decided to get some length measurements for wahoo, you need to randomly select the next wahoo you will measure and not let the size of the wahoo influence which one you select to measure.

### DT – only discarded tunas

Carry out a 'DT – only discarded tunas' if you want to get a random sample of the discarded tuna species. This sample type is similar to 'all discards', however, this time, only sample the tuna (skipjack, yellowfin and bigeye) that have been discarded. Aim to get about 20–30 fish, and up to 50 fish, of each target tuna species that has been discarded. Randomly select the fish you sample.

### BS – bycatch – select species (one or more different species but not all species)

Carry out a 'BS – bycatch – select species' if you want or have been directed to sample only one or two species of bycatch. You might choose this sampling type if there are a lot of bycatch species on the deck and you don't have time to sample them all.

SS – *Species of special interest*. Include the sex with the length, for example: "Male" 26cm = M 26, "unknown" 56cm = U 56.

LB – *Live-fish Brailing* – separate the samples on different pages if live fish brailing is used prior to standard brailing.

### Which brail size was sampled? (see PS-1)

Which brail was sampled?
BRAIL 1 <input type="checkbox"/>
BRAIL 2 <input type="checkbox"/>
BRAIL 3 <input type="checkbox"/>

Brail sizes will be defined on your PS-1 form. Most vessels will only have one brail size and observers only need to mark an X against 'brail 1' on their PS-4 form. If your catcher vessel has two brail sizes on board, it is important that you pay attention and correctly mark down which brail you are sampling on the PS-4 form. Ensure that your record is consistent with the brail capacity data field on the PS-4 form. Remember, it is always better if 'brail 1' indicates the larger brail.

### Brail times

#### Start

- The start brailing time is the time the first brail is moved from the vessel to the sack/net. You will transfer this information to your PS-3 form after the set.

#### End

- The end brailing time is the time the last brail is brought on board, dismantled and put back to its stored location. You will transfer this information to your PS-3 form after the set.

### PS-4 Forms used for this one sample

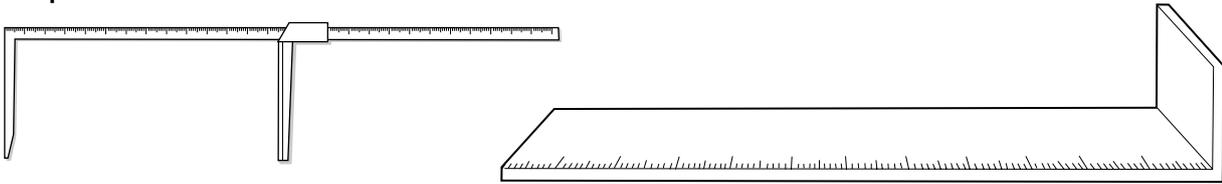
PS-4 FORMS USED FOR THIS ONE SAMPLE:		
1	of	1
(1, 2, 3)		(total)

This data field is a sub-section of the normal page numbering at the top right-hand corner, but there is no connection between the main page numbering and this 'Sample page numbering'. This data field is filled in the same manner, but here the page numbering only applies to the forms you used to complete one sample type. (i.e., one grab sample, one spill sample or one other sample).

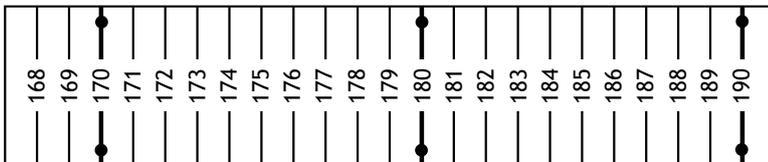
### Measuring instrument

Tick to indicate the type of measuring instrument you have used. There are three common choices: aluminium calipers, a measuring board, a deck tape and other. If you have used another type of measuring instrument tick 'other' and indicate what measuring instrument you have used in your journal and trip report.

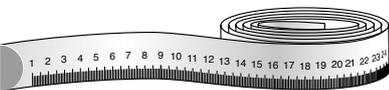
## Caliper



## Measuring board



## Deck tape



## Calibrated this set Y/N

Observers are asked to calibrate their calipers. Calipers especially, but also other measuring instruments, may get damaged by machinery or bent while they were stored away etc. To ensure your caliper is reading correctly, calibrate it before every set. Take a known length (an ordinary school ruler or builder's ruler are some examples) and measure that length with your measuring instrument. Did you get the correct answer? If not, note down the difference in the sampling protocol comments area.

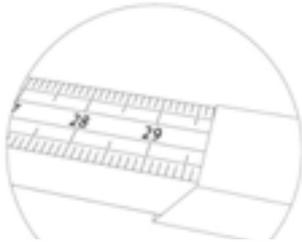
## CALIBRATING CALIPERS



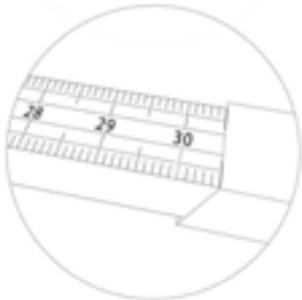
Observers are asked to calibrate their calipers before every purse-seine set. This can be done by marking a known length on the deck. For instance, use the ruler of the caliper (not the caliper itself) to mark out 30cm on the deck with a pen etc. Take time to do this properly, then measure that known length with the caliper. Or, as the drawing on the next page shows, measure a known length on a deck tape.

**IF THE CORRECT CALIPER READING IS 30 CM**

If the caliper correctly shows 30 cm, then the calibration should be recorded as zero millimetres.



The true length is 30 cm. The caliper is incorrectly reading 29.7 cm. The calibration should be recorded as minus -3 mms.



The true length is 30 cm. The caliper is incorrectly reading 30.5 cm. The calibration should be recorded as plus +5 mms.

**Comments on sampling protocol**

Describe exactly how you did your sampling. What random selection method did you use? If you were not able to get five fish per brail, explain how many fish you were able to get and if you were able to get this number consistently for every single brail. Was it hard to get your target number of fish? If you were not able to sample any of the brails during random sampling, give the reason why and indicate which brail(s) you missed (i.e., brail 1 or 2 & 3). Were your length measurements correct? If any problems occurred with the vessel’s brailing operation or your ‘other – all discards’ sampling protocol, make a note here. If you need to continue with your explanation, refer to the correct page in your journal where the rest of the comments can be found.

**Brails**

**Tallies**

Keep a record of the total number of brails that come on board. Mark a tick under the fraction (or whole number) which indicates how full the brail was. At the end of the brailing, indicate how many brails with the same fullness came on board by adding up all the ticks and recording the answer in the small box marked ‘no.’

**Pattern – Fullness**

The fullness of the brail means how much of the brail’s capacity is filled is up with fish. Some brails will be fully filled when they come in and others, especially near the end of brailing, will only have a small number of fish in them (i.e. one-quarter full). Observers are asked to judge the relative fullness of each brail as it comes in. Brail ‘fullness’ has been assigned specific codes and these should be used to fill in the fullness data field

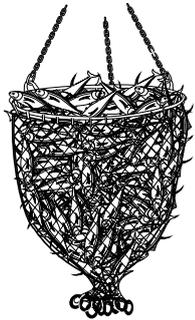
Normally, an observer will check the brail fullness, make a tick under the relative brail tallies, locate the fullness code, which is written under the brail tallies heading shown here, and record this code into the fullness data field.

**Fields with brail tally header shows the fullness code**

BRAIL	Full (1)		7/8 brails (2)				3/4 brails (3)				2/3 brails (4)				1/2 (5)		1/3 (6)		1/4 (7)		1/8 (8)		TOTAL BRAILS	SUM OF ALL BRAILS				
	No.	5	-----	No.	0	111	No.	3	---	No.	0	11	No.	2	No.	0	---	1	No.	1	No.	0		11	8.5	see back of form		
Pattern	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	More brails? Start a new form			
fullness	1	1	3	3	1	5	5	1	3	1	7																	
samples	5	5	5	4	6	5	5	4	6	5	5																	

Record the brail fullness code in the fullness data field (refer to table on previous page)

**Brail fullness**



7/8 full brail



3/4 full brail



half-full brail



1/4 full brail

The fullness codes are: 1 – full brail; 2 – 7/8 brail; 3 – 3/4 brail; 4 – 2/3 brail; 5 – 1/2 brail; 6 – 1/3 brail; 7 – 1/4 brail; 8 – 1/8 brail.

**Pattern – Samples**

<i>Pattern</i>	1	2	3	4	5	6	7	8	9	10	11
fullness	1	1	3	3	1	5	5	1	3	1	7
samples	5	5	5	4	6	5	5	4	6	5	5

Record the number of fish that you took from the brail and sampled. Record the number under the appropriate brail number. In the example above, the observer was able to take five fish from the first eleven brails.

**Total brails**

The *total brails* data field indicates the total number of brail(s) that came on board the vessel with fish inside.

This figure is calculated by simply adding up the brail tallies. Here the observer recorded eleven brails coming on board.

BRAIL	tallies:	Full (1)	7/8 brails (2)	3/4 brails (3)	2/3 brails (4)	1/2 (5)	1/3 (6)	1/4 (7)	1/8 (8)	TOTAL BRAILS
		I No. 5	----- No. 0	III No. 3	-- No. 0	II No. 2	No. 0	----- No. 0	I No. 1	No. 0

**Sum of all brails**

The *sum of all brails* indicates the total number of full brails after adding up all the full, 7/8, 3/4, 2/3, 1/2 etc. brails. Some initial calculations are required to get this figure. On the back of your PS-4 form there is an area to help calculate the sum of all brails. Transcribe your brail tallies from the front of the PS-4 form (see example above) to the corresponding boxes at the back of the PS-4 form (see the example below). Use your calculator to calculate how many full brails came on board by adding up all the parts or fractions of brails that came in. When doing your calculation, retain the three decimal places until you get to the final figure. The final answer will give the ‘Sum of all brails’ and this should be rounded down to *two decimal places*.

CALCULATING SUM OF ALL BRAILS	<b>How many ?</b>	Full	7/8	3/4	2/3	1/2	1/3	1/4	1/8	SUM OF ALL BRAILS 8.5
	Full and part brails - get these numbers from the "No." boxes of each tally box.	5	0	3	0	2	0	1	0	
	Equivalent full brails (use a calculator!)	5	0	2.25	0	1	0	0.25	0	

### Species code

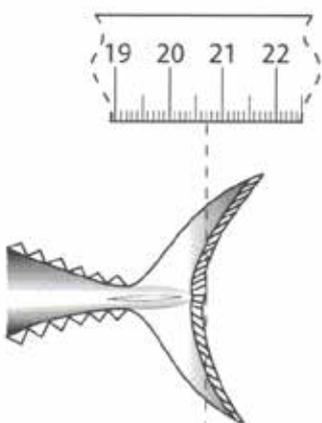
Use the FAO 3-letter species code to record the name of the species you have measured.

**Caution!** It is very important that juvenile yellowfin and bigeye are correctly identified.

**Caution!** The species codes/length measurement must be recorded in the order that the fish were measured. Do not group the length measurements by species type unless that is expected by your sampling type.

### Length (cm)

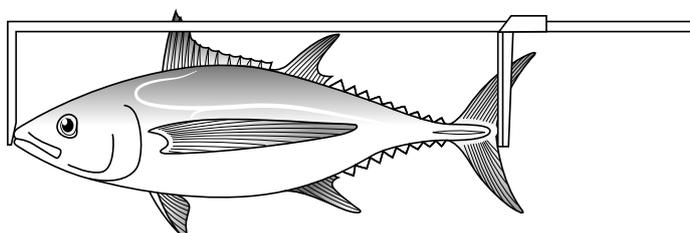
Record the length of the fish you have measured in cm. All length measurements should be rounded down to the nearest centimetre. In the example below, 20.7 centimetres is rounded down to 20 centimetres.



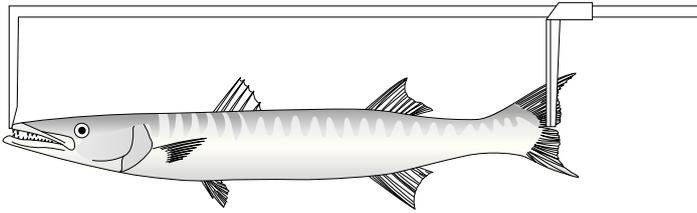
### Measuring fish on board purse seiners

The type of length measurements that can be done on purse-seine vessels is restricted to one standard length measurement for all species of fish. The PS-4 form does not allow an observer to record the length measurement code like the LL-4 and port sampling forms do. For this reason, observers are only allowed to do one length measurement type for each species type on board purse-seine vessels. These length measurements are listed below.

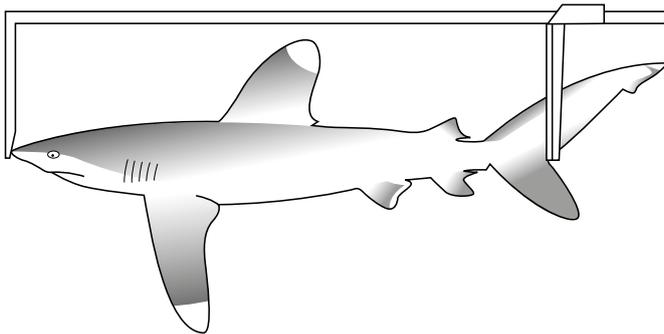
For all tuna and bycatch: **UF**



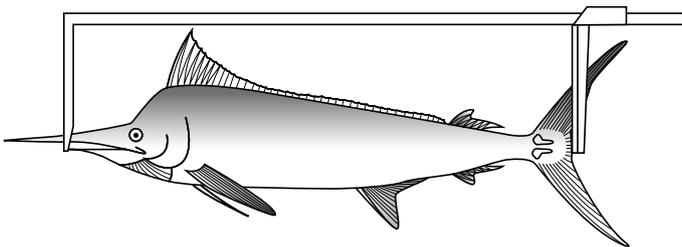
- On board purse-seine vessels, tuna and other bycatch can only be measured with a standard upper jaw to fork in the tail (UF) measurement.



- On board purse-seine vessels, sharks can only be measured with a standard tip of the snout to fork in the tail (UF) measurement.



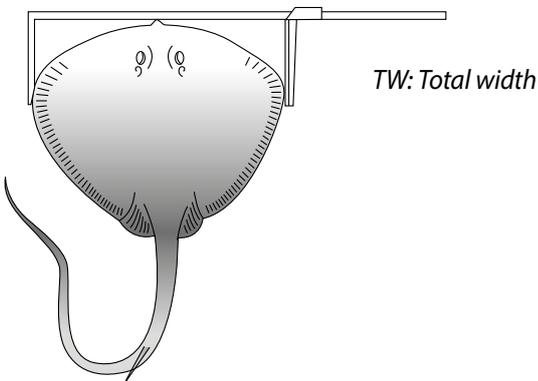
- On board purse-seine vessels, billfish can only be measured with a lower jaw to fork in the tail (LF) measurement.



For rays: **TW**

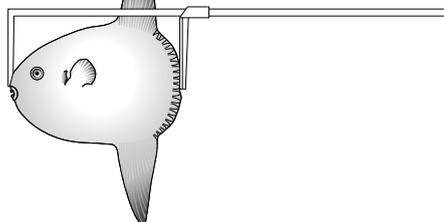
*LF: Lower jaw to fork in tail  
LF - (for all billfish)*

- On board purse-seine vessels, rays can only be measured with a total width (TW) measurement.

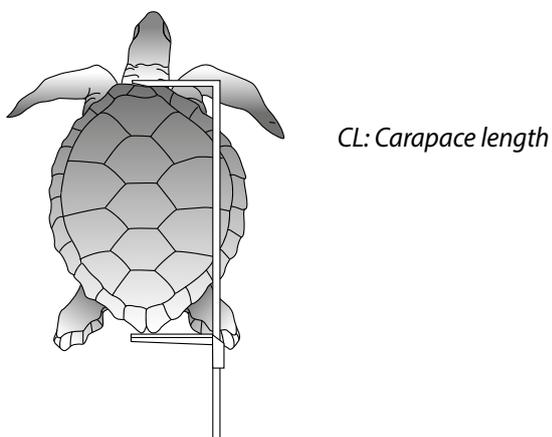


### Bycatch with no fork in their tails: TL

- On board purse-seine vessels, bycatch with no fork in their tails can only be measured with a standard upper jaw to the end of the tail measurement.



### Turtles: CL



Measure turtle using carapace length

### Column totals

This area of the PS-4 form has been inserted to help observers add up the number of target tuna species that they have measured and the sum of the lengths of each of the species they have measured. It is easier if observers first do this for every column, then add up the column totals to give the page totals at the bottom of the page.

### Page totals

At the bottom of each page, calculate the number of each species you have recorded on the page. You may have filled in more than one page during your sampling, but the page total only refers to the number of species that are recorded on that specific page.

### Page totals – Number sampled

Count the number of records for each species that have been recorded on each page.

### Page totals – Sum of lengths

Add up the lengths of each species individually and record the total in this data field.

### Page totals – Average length

Divide the 'Sum of lengths' by the 'Number sampled' for each species to get the average length of each species. Round the length down if you end up with decimal places in the average length calculation.

Example of filled PS-4 for 'Grab sample'

SPECIES CODE	LENGTH (cm)	SPECIES CODE	LENGTH (cm)	SPECIES CODE	LENGTH (cm)	SPECIES CODE	LENGTH (cm)	SPECIES CODE	LENGTH (cm)	SPECIES CODE	LENGTH (cm)
1 SKJ	56	21 SKJ	60	41 SKJ	58	61		81		101	
2 SKJ	62	22 SKJ	59	42 SKJ	60	62		82		102	
3 SKJ	59	23 SKJ	53	43 SKJ	54	63		83		103	
4 SKJ	82	24 SKJ	47	44 SKJ	61	64		84		104	
5 YFT	101	25 SKJ	49	45 YFT	99	65		85		105	
6 YFT	99	26 SKJ	54	46 SKJ	50	66		86		106	
7 SKJ	58	27 YFT	107	47 SKJ	47	67		87		107	
8 SKJ	59	28 SKJ	63	48 SKJ	59	68		88		108	
9 SKJ	66	29 SKJ	58	49 BET	72	69		89		109	
10 BET	57	30 SKJ	57	50 SKJ	62	70		90		110	
11 SKJ	112	31 SKJ	82	51 SKJ	55	71		91		111	
12 SKJ	64	32 SKJ	67	52 SKJ	50	72		92		112	
13 SKJ	53	33 SKJ	54	53 SKJ		73		93		113	
14 SKJ	45	34 SKJ	48	54 SKJ		74		94		114	
15 SKJ	48	35 YFT	98	55 SKJ		75		95		115	
16 SKJ	123	36 SKJ	64	56 SKJ		76		96		116	
17 YFT	88	37 SKJ	59	57 SKJ		77		97		117	
18 SKJ	65	38 SKJ	61	58 SKJ		78		98		118	
19 SKJ	48	39 SKJ	57	59 SKJ		79		99		119	
20 SKJ	52	40 SKJ	59	60 SKJ		80		100		120	
No. / sum of lengths		No. / sum of lengths		No. / sum of lengths		No. / sum of lengths		No. / sum of lengths		No. / sum of lengths	
column totals	15	817	SKJ	18	1051	column totals	10	556	SKJ		
	4	523	YFT	2	205		1	99	YFT		
	1	57	BET	0	0		1	72	BET		
						<b>OTHER SPECIES</b>					
		SKJ	YFT	BET							
<b>Number sampled :</b>		43	7	2							
<b>Sum of lengths :</b>		2424	827	129							
<b>Average length :</b>		56	118	65							

**Example of filled PS-4 'Other sample'**

SPECIES CODE	LENGTH (cm)										
1	RRU	56	MSD	35	DOL	102					
2	RRU	62	MSD	34	DOL	100					
3	RRU	59	MSD	36	DOL	98					
4	RRU	67	MSD	37	DOL	95					
5	RRU	65	MSD	34	DOL	90					
6	RRU	64	MSD	30	DOL	87					
7	RRU	63	MSD	32	DOL	90					
8	RRU	60	MSD	32	DOL	93					
9	RRU	62	MSD	34	DOL	94					
10	RRU	61	MSD	35	DOL	107					
11	RRU	60	MSD	37	DOL	117					
12	RRU	65	MSD	36	DOL	113					
13	RRU	64	MSD	54	DOL	109					
14	RRU	67	MSD	40	DOL	110					
15	RRU	62	MSD	34	DOL	123					
16	RRU	61	MSD	32	DOL	121					
17	RRU	60	MSD	31	DOL	127					
18	RRU	67	MSD	34	DOL	123					
19	RRU	65	MSD	34	DOL	124					
20	RRU	60	MSD	35	DOL	121					
No. / sum of lengths		No. / sum of lengths		No. / sum of lengths		No. / sum of lengths		No. / sum of lengths		No. / sum of lengths	
column totals		SKJ		Column totals		SKJ		Column totals		SKJ	
		YFT				YFT				YFT	
		BET				BET				BET	
<b>OTHER SPECIES</b>											
Number sampled :		SKJ	YFT	BET	RRU	MSD	DOL				
Sum of lengths :					20	20	20				
Average length :					1250	706	2144				
					62	35	107				

Note: to comment on the sample type, use the codes on the back of the form. In the case above, use code BS which is 'Select species' (the selected species are RRU, MSD and DOL). The PS-4 form used for this sample is page 1 of 1. There is no need to fill in the brails, fullness and sample data fields under sampling details.

The bottom fields on 'Other species' should be filled in, while the column totals for target species should be left blank.

# Form PS-5 Well Transfer Reconciliation

## Data submitted

A PS-5 form must be filled in every time tuna is transferred into a well, out of a well, or between wells on the purse-seine vessel. Records may also show if tuna are discarded from the wells due to spoilage or any unloading to a carrier vessel or cool storage.

**Caution!** Observers are not required to stay on board and observe the final vessel unloading if they are scheduled to depart the vessel. An observer's trip ends when the vessel comes alongside the wharf or drops its anchor and generally observers are free to close their workbook at that stage. However, if the observer is staying on board for another trip or multiple trips, they can record all well transfers using this form. Note that when a new observer trip starts (after a full or partial unloading), a new observer workbook should be started, which will mean a new PS-5 form.

## Header details

The header details must be fully filled in on every completed form (for information on observer name, vessel name, observer trip ID number and page number, see 'Header details' on page 3).

Every distinct well transfer should be recorded as one line of data on the PS-5 form. If a well is involved in a transfer of tuna, whether the well is being unloaded or used to receive tuna, this will require one line of data on the form. If there are multiple wells involved in the transfer, then each well will be represented by one line of data.

## Date

This is the date the well transfer took place. It should be consistent with the ship's date used on the other observer forms.

## Time

This the time the well transfer started. Use ship's time and the 24-hour clock.

## Well activity code

The well activity codes explain where the fish came from and where they were transferred to. This might include fish that were not loaded into your vessel's well but were transferred directly from the brail to another boat. There are eight well activity codes that describe the types of transfers that can take place.

### **FS** Received from a set on this vessel

This is one of the most common type of well transfer activities. During the brailing process, the tuna are released at the top of the chute and they move quickly down the conveyers into the wells. One or more of the brine wells may be filled up with the catch taken during the vessel's set. A record is required for each well that receives fish. The tuna may be sorted by species and/or size before it is placed into the wells. If this is observed, it can be noted in the comments column.

### **CR** Retained from a set solely because of catch-retention rules

Tuna that are retained under WCPFC catch-retention rules to be discarded once unloading of the catch is done. They may be small-size tuna that are not commercially viable.

### **WT Transferred between wells**

Tuna may be transferred from one well to another during the fishing trip. The most common reason for this type of transfer is to move tuna that has already been properly chilled in the brine wells to the 'dry' well to make room in the brine wells before more tuna is taken on board. There may be other reasons tuna is transferred, i.e. a malfunctioning well, for instance. Consider stating the reason the tuna was transferred in the comments column.

### **UL Unloaded to cannery or cool store**

Tuna may be unloaded (taken off the boat) from the purse-seine vessel directly into a cannery or cool store. 'UL' is the correct code to record if this type of well transfer activity takes place. Normally, unloading takes place after the observer has left the vessel, so may not be a common observation for observers. Observers are not required to be present for unloading at the end of the trip, but if they are staying on board, they can use this code to record the final unloading.

**Caution!** An observer's trip is from one partial or full unloading to the next partial or full unloading. If you observe a full or partial unloading, then your trip will end and you need to start a new workbook if you stay on board.

### **TR Received into well from another vessel**

This is not a common practice on most purse-seine vessels. The main thing to look out for here is that when tuna is being moved from one vessel to another, a net is used to move the fish and not the brail. A 'net', often called a cargo net, usually holds about one metric tonne of tuna.

### **TG Given from well to another vessel's hold**

If the purse-seine vessel takes fish out of one of their wells and transfers it to another vessel (purse-seine, carrier boat, etc.), then use this code. Again, this practice is not common on regular purse seiners, but is a feature of the Filipinos fleet in PNG. A net will be used to transfer the tuna. Be careful to make a full report on this activity as any transshipment at sea is illegal in most EEZs, although in certain circumstances and certain national jurisdictions it may be allowed.

### **SR Received into well from another vessel's net (fishing net)**

When a purse-seine vessel's wells are fully loaded and they still have tuna in their fishing net, they may share their tuna with another vessel, normally one from another fishing company. The vessels will tie up alongside each other and often the brail is used to retrieve the tuna from the net and moved with separate winches to the receiving vessel.

### **DC Discarded into the sea from well due to spoilage etc.**

This well activity is not common. Tuna will only be discarded back into the sea when there has been a system failure or if too much tuna were caught and there wasn't enough time to get all the tuna on board before they spoiled. Explain more about the breakdown or any other reason for failure in your journal and refer to the page number in the comments section. Refer to the 2009-02 Conservation and Management Measure on the Application of Catch Retention for rules regarding catch retention (outlined below).

Where the operator of a vessel determines that fish should not be retained on board because they are 'unfit for human consumption', the following definitions shall be applied:

- a. "unfit for human consumption" includes, but is not limited to fish that:
  - i. is meshed or crushed in the purse-seine net; or
  - ii. is damaged due to shark or whale depredation; or
  - iii. has died and spoiled in the net where a gear failure has prevented both the normal retrieval of the net and catch and efforts to release the fish alive; and

- b. “unfit for human consumption” does not include fish that:
- i. is considered undesirable in terms of size, marketability, or species composition; or
  - ii. is spoiled or contaminated as the result of an act or omission of the crew of the fishing vessel.

**Unloading** is to take cargo (tuna) off a vessel.

**Transshipment** is a sub-category of unloading and it means to transfer cargo (tuna) from one ship to another.

### Source

Record the source of the tuna, or where the tuna that will be transferred is coming from. The source is defined at the bottom of the form and explains where the tuna that was transferred originally came from. The tuna may come from the ‘net’ (i.e. the fishing net, a well or from another vessel) where the observer will not have access to the well numbers (in this case record the vessel’s name). The form fixes the type of source code that can be recorded with each well activity code. For instance, if you record ‘FS - Received from a set on this vessel’ as the well activity code, the source must be recorded as ‘NET’.

### Destination

Record the final destination of the tuna that was transferred. The destination codes are defined at the bottom of the form and show the next destination for the transferred tuna. The tuna may be transferred to another well, another fishing vessel or to land (normally a cannery or loining facility).

The form fixes the type of destination code that can be recorded for each well activity code. For instance, if you record ‘FS – Received from a set on this vessel’ as the well activity code, then the destination code must be a well number.

### Metric tonnes moved

Record the total amount of tuna that was transferred in metric tonnes. If necessary, see ‘converting short tons to metric tonnes’ on page 51.

### Vessel change (+ / - / 0)

Indicate if the vessel has more, less or the same amount of tuna on board after the well transfer.

### Vessel change

Adding tuna to the wells                    +

Taking tuna out of the wells               -

The amount of tuna on board is the same after the well transfer    0

The form also fixes the vessel change symbol that can be recorded for each well activity code. For instance, if you record ‘FS – Received from a set on this vessel’, the vessel change symbol will always be a plus ‘+’.

### New cumulative total

Calculate the total amount of tuna on board the vessel after the well transfer has taken place. Use your last ‘new cumulative total’ and either add or subtract the amount in the ‘metric tonnes moved’ data field as appropriate.

## Recorded on logsheet

State by marking either 'Y' (yes) or 'N' (no) on the form to show if the well transfer was properly recorded on the vessel's logsheet. Vessels are asked to record the well numbers where they stored their catch after every set. They are also requested to record all well transfers on their logsheet. Always ask to see the vessel's logsheet at the end of every day.

A copy of the instructions is on the back of the SPC/ FFA standard regional purse-seine logsheet.

Well numbers: Print the number of the wells in which the catch from the set was stored initially and note any transfers amongst wells with arrows, for example: 'S4 > P3, P2, P5' and 'S4, S5 > P3'.

## Example of filled PS-5

DATE	TIME	WELL ACTIVITY (CODE)	SOURCE	DESTINATION	METRIC TONNES MOVED	VESSEL CHANGE ? (+ / - / 0)	NEW CUMULATIVE TOTAL	RECORDED ON LOGSHEET? Y / N	COMMENT
20/05/16	1125	FS	NET	P5	30	+	30	Y	<i>From set, on logsheet</i>
20/05/16	1520	FS	NET	P1	35	+	65	Y	<i>See PS-3 form</i>
20/05/16	1520	FS	NET	P2	30	+	95	Y	<i>See PS-3 form</i>
20/05/16	1520	FS	NET	S3	15	+	110	Y	<i>See PS-3 form</i>
20/05/17	2220	WT	P1	S1	30	0	110	N	<i>Not observed, see jnl page 52</i>
20/05/18	0810	TR	Yasu# 2	S7	40	+	150	N	<i>See journal page 58</i>
20/05/20	1545	TG	S1	Ying#9	30	-	120	N	<i>See journal page 62</i>
20/05/21	1125	FS	NET	P7	35	+	155	N	<i>From set, not on logsheet</i>
20/05/23	1805	SR	Yasu# 8	P2	20	+	175	N	

## Observer journal

Observers are required to maintain a journal with a detailed daily record of activities, events and information during their trip out at sea.

The purpose of the journal is to provide both general information and information about specific events that is not captured on the forms or a better description than what can be included on the forms. The journal is used by debriefers to verify information and by compliance officers to assess incidents and compile case reports. As such, the journal is a very important document and record of the trip.

The journal is a freestyle document, giving observers freedom to describe the operation of the vessel and other oceanographic or social features of the trip. The journal should include personal observations and information relevant to the daily operation of the vessel, as well as more sensitive information about possible vessel operational non-compliance. The journal is different from the trip report because it is a chronological record – that is, it is used to record events in a time sequence of hours and days. The trip report, on the other hand, is a summary of events under various subject headings.

The journal is a legal document and is often used as evidence in prosecutions, so observers must be careful to keep to the facts in their entries. Observers must not show any prejudice or bias against the crew. The credibility or honesty of observers is important, and they must be honest in their entries. Remember the journal is confidential and keep it secure.

While the journal is meant to be freestyle, there are some standards to follow, as described below:

## **Consistency**

### **Maintain regular daily entries.**

You should make an entry every day with some details of what happened or why nothing happened. There are no weekends on a fishing vessel, so write a description of what happens each day. Your journal must be daily from the day you board. You may also include your days travelling to the vessel if relevant. It is important to get into the habit of writing in your journal from the start. A daily weather report is one way of developing this habit.

Start a new page each day even if there is still space on the page for the previous day. If using the pre-printed journal template, use at least one half-page section and start a new section for each day. You may use more than one page or section if needed.

## **Readable/legible**

*Be neat*

## **Handwriting**

Try to keep your handwriting clear and tidy – remember, you are writing for someone else to read.

## **Thought process**

When writing, keep your sentences clear and short to focus your descriptions on what is important. Your thought process should be logical and easy to follow for the readers of your journal.

## **Use paragraphs**

Separate your writing into subject paragraphs. Each event or incident should be separated into a paragraph by line spaces. This makes it easier to read and find events or incidents.

## **Use headings**

Use headings to identify important events or incidents. A heading is just a couple of words that describe the subject. Underline each heading and place it immediately above the start of the first paragraph about an event. Headings make it easier for the debriefer or other officers to find an event when reading the journal.

## **Relevant**

Keep to the facts. Focus your writing on reporting the relevant facts. You can include descriptions of events or incidents that happened during the day, or general descriptions of the operation or weather etc. In particular, be clear about what you saw. If you were told some information you think is relevant, then indicate that you were told this but did not witness it yourself.

## **Event**

An event or occurrence is something that happens or is regarded as happening, especially something important. An event may be planned, such as 'start of haul', or unusual, such as 'whale interaction'.

## **Incident**

An incident is a unique event that is unexpected. It may affect a normal operation and often has a negative sense, such as 'breakage of mainline' or 'bunkering at sea'. Incidents can also be given a ranking of further significance where they are described as critical incidents or infringements. These are generally recorded on the GEN-3 form.

A critical incident is an incident that is serious and should be reported to your debriefer as soon as possible after you disembark, preferably before the vessel departs or another placement is made. Critical incidents can include poor hygiene or safety issues.

Some incidents may be infringements, such as a breach of fisheries regulations, or criminal offences. For example, the fishing operation may breach regulations by fishing in areas where it is not allowed. Serious incidents include attempts to harass or intimidate you (or even offer you gifts).

All incidents are events, but not all events are incidents.

### **Description**

Your descriptions of events and incidents should be clear, concise and factual. This is particularly important if the incident is critical, or if you are describing an infringement, as your journal entry may be used for a prosecution.

If you report an event or incident, it is important that you describe what happened. You may not be able to remember all the details if asked after the trip, so it is important to record details that you think are significant as soon as possible. You can take notes on a pad to record facts/details such as time or location etc.

The main purpose of the journal is so that you can record facts/details that you need to remember and that may not be recorded elsewhere on your forms. If you report a critical incident, you **MUST** provide a description. Think of it as being evidence of the incident you witnessed. It is no good saying that the boat did something bad today, then not continuing to say exactly what it did (unless reporting it while on board might be dangerous for you).

### **Implication**

An implication is what you predict to have been the outcome of an event or incident without actually seeing the outcome. This should be based on what you have seen. You should make it clear that this is what you think might have happened, but you did not see it. For example, if you see an interaction of an albatross feeding on the bait and then it suddenly disappears, you may suggest you think it was hooked during the interaction.

### **Use prescribed formats**

Journals must keep to a standardised format. The reason for this format is that the journal is a legal statement and is probably going to be read by your debriefer and possibly by compliance officers or scientists to verify the information you report. To make sure it includes the details they need, and that your journal is clear, you must include the following information:

#### **Date**

The date in the standard format should be written at the top of every page and should include the day of the week, e.g. 2020/07/23 Thursday.

#### **Record times of events**

Since the journal is a time sequence of events that happen during the fishing operation, it is essential to record the times when events start and end (or their duration), if possible. Always keep 'time' in mind when observing anything that is happening on board.

Times can be recorded in a left-hand column on each journal page, or in the first sentence of a paragraph. If you are using a lined exercise book, the simplest way is to record the time of an event to the left of the margin on the left side of each page beside the relevant paragraph.

#### **Page numbers**

Every journal page must be numbered. It is best to put the page number at the bottom margin of the page. The reason for this is to check that all the pages are there. Sometimes pages fall out of books or pages may be missed in the scanning process when sent to SPC.

Journal page numbers are referred to in your forms, so you need to keep them up to date as you go so you can refer to them.

## Signature

Your journal is a legal record, so you should sign every page. Signing verifies your record is a true statement. Put your signature at the bottom of each page.

## Extra detail, relevant diagrams and illustrations

If you can explain something better by drawing it, then do so with a brief explanation of what it is or what it is used for.

## Tag recovery

The tag recovery form records information on any tags that were recovered during the trip or tags that were already on board when the observer boarded the vessel but were not yet recovered. The form can be used to report tagged fish, turtles or birds caught by the fishing vessel.

There are several types of tags – conventional (plastic tags), steel and electronic tags.

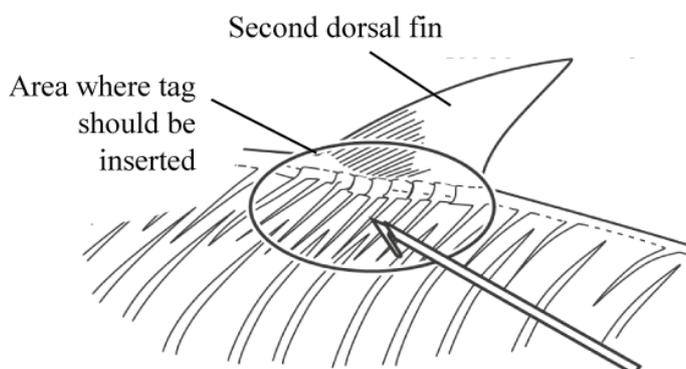
The conventional tags are inserted behind the second dorsal fin. The tags may be yellow, orange, green or white:

- An orange tag indicates that an archival tag was placed in the abdominal cavity of the tagged tuna.
- A green tag indicates that a sonic tag was placed in the abdominal cavity of the tagged tuna.
- A white tag indicates that the tagged fish received an injection of strontium chloride (SrCl<sub>2</sub>).



## What do you do if a tagged fish is caught during your trip?

- Ask permission to put the fish aside.
- Measure the fish. If possible, weigh the fish.
- Verify that there is no archival tag in the belly. You should be able to see the antenna of the archival tag sticking out.
- If there is an archival or white tag, do not remove the tags from the fish and do not gill and gut the fish. Place the fish aside in a freezer (or on ice). Bring the fish to the closest fisheries department office for storage and sampling of the fish. If the fish is frozen, keep the fish frozen at all times (see the reward section below).



If it is a yellow tag, remove the tag entirely from the fish. Make sure that the front arrow does not remain inside the flesh of the fish.

- Note all the required tag recovery information in your workbook. If the finder is a crew member, provide a copy to the finder (report the data on another form or a tag recovery envelope). Do not take the tag from the finder. On your tag recovery form, in the section 'Tag provided with this form' place a cross in 'No' and specify where the crew member can collect their reward. Upon arrival at port, assist the crew member to collect the reward.
- Attach the tag in the comments section of the tagging form (use sticky tape).

### What do you do if a crew member gives you a tag?



If you observe the fish with the tag inside the fish, follow the same procedure as above.

- Ask when they found the tagged fish and all possible questions to get information about the recovery. If the date when the tag was found is not precise, at least enter the month and year of the catch.
- If the crew gives an approximate date, access the vessel's logbook to find out where the boat was around that date and use the estimate section of the form to report the position.
- If the catch position cannot be retrieved, try to at least describe the region where the tagged fish was caught.
- If the tag was traded and the tagged fish was recaptured by another fishing vessel, note the observer's vessel (please note the information in the general comments section of the form).

### Reward

For each tag reported there is a reward. It is important to ensure that tag finders are given rewards quickly and are therefore happy to continue returning recaptured tags and providing SPC with the necessary information associated with tag recaptures. When any tags are recovered on board the fishing vessel, upon arrival in port, inform the fisheries office and contact SPC ([tagging@spc.int](mailto:tagging@spc.int)). Tag recoveries may also be reported on a web-based form at [www.spc.int/tagging](http://www.spc.int/tagging)

The website lists all the reward locations and contact details of the Tag Recovery Officer (TRO). A dynamic map allows users to identify the exact location of the TRO.

For a conventional tag (yellow), the reward is either USD 10 (or the equivalent in local currency), a hat or a shirt designed especially for the project.

### Rewards for returning the whole fish with the tags left inside the fish are as follows:

- For a white conventional tag, the reward for the finder is USD 100.
- For an orange conventional tag, the reward for the finder is USD 260 (archival tag and orange tag).

For these tags, the fish is bought not gilled and gutted at a rate of USD 10/kg (fish weight). To make sure the fish can be placed aside, this information must be provided to the captain/fishing company.

- If the orange tag or the white tag is removed from the fish, the reward is only USD 10. If the archival tag is removed from the fish, the reward is USD 250.
- For the whole fish with the white tag, or the orange tag (with the archival tag inside the belly of the fish), finders will receive a reward of USD 50.

### When a tag is recovered on board:

- fill in the tag recovery form as usual
- take a photo of the fish with the tag still attached to the fish (with a length reference, for example, place the fish on top of a deck tape)
- collect samples (if there is equipment on board) or keep the fish frozen at all times (or on ice).
- contact SPC immediately and coordinate the return of the fish to the local fisheries office.

### Critical tag information

#### Tag number

Find the number on the conventional tag. Be careful to copy the number correctly and write down all numbers and letters. If there is more than one tag, note the other tag number in the comments section.



#### Date when tag found

Note the date when the tag was found. If the exact date is not known, place a dash in the day field and note the month and/or year. The date for when the tag was found can be different from when the tagged fish was caught (for example, if the tag was found during well transfer or during unloading).

#### Where found

Note where the tag was first found. If the tagged fish is found on board in a well, tick 'Fishing vessel'.

#### Activity when found

Note what the tag finder was doing when the tagged fish was found.

#### Well number where found

If the tagged fish was found during unloading, note the number and position of the well, for example: Starboard well #2: S2.

REVISED SPC - Feb. 2017				
CRITICAL TAG INFORMATION				
TAG NUMBER: <b>P-234516</b>		DATE WHEN TAG FOUND: YY MM DD <b>11 08 26</b>		
WHERE FOUND:	<input checked="" type="checkbox"/> Fishing vessel	<input type="checkbox"/> Reefer / Transfer / Carrier	<input type="checkbox"/> Port Fish market	<input type="checkbox"/> Cold storage
ACTIVITY WHEN FOUND:	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> Well transfer	<input type="checkbox"/> Transhipment	<input type="checkbox"/> Unloading at port
WELL NUMBER WHERE FISH FOUND: <b>S2</b>				(If Applicable)

### Fish information

#### Species

Fill in the 3-letter FAO species code. Refer to the species identification manual if necessary. It is very important to be able to tell the difference between juvenile bigeye and yellowfin.

### **Species reliability**

How sure are you of the species code? The species code will normally be 100% accurate if the observer saw the fish and identified it. In this case, tick the 'Confirmed' box. However, if you have been given a tag that was recovered by a fisher during a previous fishing trip, you may like to make some remarks about how accurate the species code is. For instance, if the fisher tells you it was a yellowfin tuna, how accurate do you think that is? Ask the fisher to describe the fish or to say how they knew it was a yellowfin. If you consider that the crew guessed the species of the fish, tick the 'Guessed' box.

### **Fork length (cm) and code**

Measure the fish from the upper jaw to the fork in its tail and note the length in centimetres in the length 1 field (code UF).

For turtles, note the measurement of the carapace length in the length 1 field (CL).

For seabird species, note the measurement from the wrist to the fingertips in the length 1 field (code: WL), and the bill length in the length 2 field (code: BL). Use both measurement fields.

If the length of the species has not been measured, tick the 'No length information' box and go to the next section.

### **How measured?**

When you measure the tagged species using calipers, tick 'Measuring tool'. The length measurement information will normally be 100% accurate if the observer was on board when the fish with the tag was landed. However, if you have been given a tag that was recovered during a previous fishing trip, check whether the measurement was an estimate or was taken using a tool such as a measuring board, ruler or deck tape. If the measurement was taken with a piece of string, or by eye, tick the 'Estimated' box.

### **Who measured?**

Did you measure the fish? If the crew estimated the size of the fish, tick the 'Other' box and write 'crew'.

### **Fish processed state when measured**

What was the condition of the fish when it was measured – was the fish fresh, frozen, previously frozen but then thawed (defrosted)? Was the turtle or the bird alive?

### **Weight**

If the weight of the species was not measured, tick the 'NO weight information' box and go to the next section. If a weight can be taken on board or at port, note the exact weight in kilograms and grams, for example, 2.8 kg.

### **How weighed?**

How sure are you of the weight measurement information? If there was a weighing scale available, tick the 'Measuring tool' box. If the weight was estimated by using a length/weight relation, tick the 'Estimated' box and add a comment explaining that a length/weight relation was used.

### **Fish processed state when weighed**

Was the fish processed (cut up) in any way before it was weighed? Select the state of the fish before it was weighed.

TAGGED SPECIES INFORMATION			
SPECIES: <b>YFT</b>		SPECIES RELIABILITY: <input checked="" type="checkbox"/> Confirmed <input type="checkbox"/> Guessed	
LENGTH 1 : (cm) <b>58</b>	LENGTH 2 : if applicable (cm) <b>---</b>	NO length information <input type="checkbox"/>	HOW MEASURED? <input checked="" type="checkbox"/> Measuring tool <input type="checkbox"/> Estimated
Length 1 code: <b>UF</b>	Length 2 code: <b>---</b>	WHO MEASURED? <input type="checkbox"/> Port sampler <input checked="" type="checkbox"/> Observer <input type="checkbox"/> Other.... <i>Please specify:</i>	
PROCESSED STATE WHEN MEASURED: <input type="checkbox"/> Alive <input checked="" type="checkbox"/> Fresh and dead <input type="checkbox"/> Frozen <input type="checkbox"/> Frozen then thawed			
WEIGHT: (kg) <b>6.4</b>	NO weight information <input type="checkbox"/>	HOW WEIGHED? <input checked="" type="checkbox"/> Measuring tool <input type="checkbox"/> Estimated	
PROCESSED STATE WHEN WEIGHED: <input checked="" type="checkbox"/> Whole weight <input type="checkbox"/> Gilled & gutted <input type="checkbox"/> Other.... <i>Please specify:</i>			

### Tagged species catch information

In this section, the left side of the box is for an exact date and position, and the right side of the box is for an estimated date and position.

#### Date

How sure are you of the date of capture? The date of capture will normally be 100% accurate if the observer was on board when the fish with the tag was landed. However, if you have been given a tag that was recovered during a previous fishing trip, you may like to make some remarks about the accuracy of the date of capture. Was the fisher very sure about the date? Was it captured during the last trip or a long time before you boarded? Did the fisher make a written record of the date it was recaptured (in a diary for instance)? Note this information in the comment section of the form. For an exact date of catch tick the 'Exact' box and note the year, month and day of the start of the set. If you have been given a tag that was recovered during a previous fishing trip or the tag finder cannot remember an exact date, tick the 'Estimated' box and note the first set date in the date field 'from' and the last set date in the date field 'to'. This will give the period of time when the tagged fish could have been caught by the fishing vessel.

#### Position

How sure are you of the position information? The position information will normally be 100% accurate if the observer was on board when the fish with the tag was landed. However, if you have been given a tag that was recovered during a previous fishing trip, you may like to make some remarks about the accuracy of the position of capture. How sure is the fisher of the position of capture? Did they write down any details? Note this information in the comment section of the form.

**For an exact position, tick the 'Exact' box and report the position at the start of the set.** Latitude and longitude are reported in degrees and decimal minutes. **For an estimated area of catch, tick the 'Estimated' box and enter two latitudes and two longitudes outlining an area that encompasses all of the sets during the estimated period (from the date of the first set to the date of the last set).**

Note the position that is furthest north in the box 'Latitude max.', the position furthest south in the box 'Latitude min.', the position furthest east in the box 'Longitude max.' and the position furthest west in the box 'Longitude min.'. The minimum and maximum latitude and longitude do not have to be from the same set. That is, they do not have to be both the latitude and longitude of the first set and the last set of the period of catch. One latitude and one longitude can come from two different sets. Be aware that on a chart, when facing the 180° meridian, the lines of longitude west are on the right side of the chart and the lines of longitude east are on the left side of the chart.

When selecting the minimum and maximum latitude and longitude of the area of catch, verify in which hemisphere the sets were done.

### For latitude

Fill in the latitude for the position where the fish with the tag was captured. Use the dd° mm.mmm format and remember to fill in whether this position refers to north (N) or south (S) of the equator.

- If all the sets were deployed in latitude north OR latitude south, note the highest and lowest number in degrees north, OR note the highest and lowest number in degrees south.
- If all the sets were deployed in latitude north AND latitude south, note the highest number in degrees north, AND the highest number in degrees south.

### For longitude

Fill in the longitude for the position where the fish with the tag was captured. Use the ddd° mm.mmm format and remember to fill in whether this position refers to east (E) or west (W).

- If all the sets were deployed in longitude east OR west, note the highest and lowest numbers in degrees east, OR the highest and lowest numbers in degrees west.
- If all the sets were deployed in longitude east AND longitude west, note the lowest number in degrees east AND lowest number in degrees west.

TAGGED SPECIES CATCH INFORMATION / Date and position when tagged species was caught by the fishing vessel															
DATE	Exact	<input checked="" type="checkbox"/>	YY	MM	DD	Estimated	<input type="checkbox"/>	From	YY	MM	DD	to	YY	MM	DD
			26	08	11										
POSITION	Exact	<input checked="" type="checkbox"/>	dd	mm.mmm	N/S	Estimated	<input type="checkbox"/>	Record 2 lines of latitude and 2 of longitude to form area of catch (box) in which tag was likely recovered							
	Latitude		03	56.450	N	Latitude	Min	0	.	'	Longitude	0	.	'	
	Longitude		158	25.300	E	Latitude	Max	0	.	'	Longitude	0	.	'	
or DESCRIBE FISHING AREA (if NO Latitude and longitude provided above):															

Estimated	<input checked="" type="checkbox"/>	From	YY	MM	DD	to	YY	MM	DD	
			11	03	01		11	03	15	
Estimated	<input checked="" type="checkbox"/>	Record 2 lines of latitude and 2 of longitude to form area of catch (box) in which tag was likely recovered								
Latitude	Min	dd	mm.mmm	N/S	Longitude	ddd	mm.mmm	E/W		
	Max	05	02.500	N		150	20.450	E		
		00	50.600	N		145	12.300	E		

### Or describe fishing area (if no latitude and longitude provided above)

If you cannot identify the latitude and longitude of a catch or an area of catch and the catch was close to an island, note the name of the island and how many miles away from the island the area of catch was. If the area of catch can be identified to an EEZ, note the EEZ name (country). If you have a local-area fishing map that refers to the different areas by name or as a 'number/letter format', fill in the name or the grid reference for the area the fish was captured in here.

### Fishery information

Note in this section all information relevant to the catcher vessel that caught the tagged species.

### Vessel name

Fill in the name of the vessel that the recovered tuna was captured by. Make sure to write out the name fully and include any numbers that are at the end of the name.

## Flag

Fill in the flag of the vessel that captured the fish with the tag. Fill in the nationality as recorded on the country registration certificate or vessel license.

## Fishing method

Note the fishing method used to catch the fish (if the crew do some hand-line fishing on board a longline vessel, report that it was handline and not longline).

## School type (association)

This information can be recovered from PS-2 or the vessel log sheet on school association type. Each school type is coded from 1 to 9. Code 1 – Free school; code 2 – Feed on baitfish; code 3 – Drifting log, debris, dead animal; code 4 – Drifting raft, FAD or payao; code 5 – Anchored raft, FAD or payao; code 6 – Live whale; code 7 – Live whale shark; code 8 – Other (please specify); code 9 – No tuna associated.

## Transshipment information

This section will be only completed if you find a tagged fish during transshipment. Do not fill in the transshipment section if the tagged fish was found during fishing activities on the purse-seiner.

## Name of carrier

Fill in the name of the carrier that the fishing vessel was unloading to when the tag was found. Make sure you write out the name fully and include any numbers at the end of the name.

## Date of transshipment from fishing vessel to carrier

Note the start and end dates of the transshipment. If it only lasted a day, then write the same date in both fields.

## Location of transshipment

Note the port or outside the lagoon where the transshipment took place, or if at sea, note the EEZ.

## Transshipment position

Note the latitude and longitude of the transshipment only if it happens at sea.

TRANSHIPMENT INFORMATION/ Carrier only (fill this section only if tag found during set share / transshipment / unloading)											
NAME OF CARRIER: <i>TaiXing</i>	FLAG: <i>CN</i>	DATE OF TRANSHIPMENT FROM FISHING VESSEL TO CARRIER:	YY	MM	DD	to	YY	MM	DD		
LOCATION OF TRANSHIPMENT FROM FISHING VESSEL TO CARRIER (EEZ/Port): <i>FSM EEZ</i>		TRANSHIPMENT POSITION:	dd	mm.mmm	N/S	Longitude	ddd	mm.mmm	E/W		
		Latitude	<i>05</i>	<i>09</i>	<i>112</i>	<i>N</i>	Longitude	<i>156</i>	<i>00</i>	<i>120</i>	<i>W</i>

## Finder information

### Finder name

Name the person who found the tag. Write in the full name (first name first and surname last).

The name of the finder is important so we know who to send tag return rewards to. Also, tag lotteries are conducted regularly and only tags with names of finders enter this lottery.

### Finder address

This address will be used to send the finder a reward. Remember to include any post codes if relevant. If the finder has no address, note down the company's address.

### Country of recovery

Write the name of the country that the tag was recovered in. If the tag was recovered at sea, write the name of the country of the return port.

### Recapture information received at

Note the name of the fishing vessel you are observing on. A tag may be traded between fishers. If the 'recapture information received at' vessel name is different from the name of the fishing vessel that captured the tagged fish, SPC will understand that the recapture information might be inaccurate.

### Tag provided with this form

In some cases, you can make a copy of the form to give to the finder. The finder can keep the tag to claim the reward in a major port where a Tag Recovery Officer is present. Here you need to mention if the tag was provided or not with the form in your workbook. Tick 'Yes' or 'No'. If 'No', please try to indicate in which port the finder is likely to hand back the tag for reward purposes.

### Type of reward

Normally this data field is filled in by the person you submit the tag to. Observers can leave this data field blank.

### Form completed by

If you have completed this form, fill in your name here. Write your name followed by the note, 'Observer'. You can write your trip ID number if you provide a copy of the form to the finder.

### Comments

Use 'Comments' to add to the information in the form, such as the archival tag number and whether a tagged turtle or tagged bird was released alive with the tag on. If there is a tag, attach it to the comments section (use sticky tape).

FINDER INFORMATION / finder details for lottery	
FINDER NAME: <i>Joselito Zamora</i>	FINDER ADDRESS: <i>Frabelle PNG ltd</i>
COUNTRY OF RECOVERY: <i>PNG</i>	RECOVERY INFORMATION RECEIVED AT/ON (Cannery/Company/Agency name/vessel name): <i>Obs Linsay Kovero</i>
TAG PROVIDED WITH THIS FORM: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	(tag kept by finder for reward purpose) IF NO, specify expected reward location for finder (Port/Country): <i>Madang</i>
TYPE OF REWARD: <input type="checkbox"/> Not given <input type="checkbox"/> T-shirt <input type="checkbox"/> Cap <input checked="" type="checkbox"/> Cash - amount: <i>30 PGK</i>	FORM COMPLETED BY: <i>Obs Linsay Kovero</i>
COMMENTS: IF A TAGGED TURTLE / TAGGED BIRD WAS RELEASED ALIVE, DID YOU LEAVE THE TAGS ON ? Specify below.	
	
ARCHIVAL TAG NUMBER (If applicable):	

# Form GEN-1 Vessel and Aircraft Sightings and Other Transfer Logs

## Data submitted

The number of GEN-1 forms that need to be filled in depends on the number of sightings and amount of transfer information collected during the trip. However, at least one GEN-1 form must be completed.

If there is no appropriate information for this form (that is, no vessels or aircraft were sighted, and no transfers made), then put a comment on the first GEN-1 form in the first workbook to confirm this; for example, 'No sightings noted this trip' under the vessel or aircraft sightings area, and 'No transfers this trip' under the 'Transfers by the observer's vessel' area on the first blank GEN-1 form in the first workbook. This will explain the absence of any GEN-1 data.

Remember to complete the Header section even when nothing was sighted.

## Header details

SPC/FFA REGIONAL OBSERVER		FORM GEN - 1	
VESSEL AND AIRCRAFT SIGHTINGS / FISH, BUNKERING and OTHER TRANSFERS LOGS			
REV. 2018			
OBSERVER NAME	John Smith	VESSEL NAME	Solomon Jade
		OBSERVER TRIP ID NUMB	JHS 20 - 01
		PAGE	1
		OF	1

The header details must be fully filled in on every completed form (for information on observer name, vessel name, observer trip ID number and page number, see above).

## Vessel or aircraft sightings

Information gathered about vessel or aircraft sightings can help keep a check on any IUU (illegal, unreported, unregulated) vessels and can indicate the intensity of fishing in certain areas. (VMS data can also be used when proper agreements are in place.) These sightings can provide information about activities in unregulated areas (that is, high seas areas) that is otherwise difficult to get.

### IUU vessels may include vessels that:

1. do not have a licence to fish
2. fish in an illegal manner when they do have a licence
3. are involved in fishing activities that have not been reported or have been misreported
4. are fishing without nationality, or their flag state does not monitor or regulate their fishing activities in an area of regional obligations.

As observed vessels will have paid licence fees, the captain and crew may be happy to help the observer gather information about other vessels that may not have paid fees.

## How to gather information on sightings

Once observers have left port, they should start filling in the sighting section of the form as soon as they see any other vessels or aircraft. Fill in as much information as possible about the sighted vessel/aircraft. It does not matter if all the required information cannot be filled in immediately. If it is not possible to get information for some of the data fields straight away, then leave them blank initially. If the observer's vessel gets closer, record information in the blank fields when possible and verify the information that has already been inserted. Eventually, after the observer's vessel, or the sighted vessel has left the area, put a dash in any of the data fields for which it was not possible to collect information at any time during the sighting period.

Some vessels may never come closer and there may be no opportunity to record any information other than the position of the observer's own vessel, along with the compass bearing and the distance to the sighted vessel/aircraft. This is okay. It is possible that another observer in the vicinity will also see the vessel and this information will help to pinpoint the exact position of the sighted vessel/aircraft.

If a previously sighted vessel comes much closer later on and it becomes possible to get better details, make a new record on the same vessel on the line below. At the end of the day, check that all the data fields have been filled in or dashes have been inserted. No data fields should be left blank.

### **Date and time**

Record the ship's date and time (only month and day required).

### **Observer's vessel position**

#### **Latitude/longitude**

The latitude and longitude positions can be recorded from the GPS of the observer's vessel (see page 15). Record the latitude (dd° mm.mmm) and longitude (ddd° mm.mmm) to three decimal minutes. Check that the GPS is recording to decimal places of minutes and not to seconds. Remember to record N for north, S for south, E for east or W for west.

*Note:* The position of the observer's vessel should be compatible with the compass bearing and the distance record. Therefore, make sure all these values are recorded at the same time. It is okay to fill in other pieces of information as they become available, but these three data fields should be recorded at the same time.

### **Sighted vessel or aircraft**

#### **Name**

Record the name of the sighted vessel, which is usually painted on the side of the hull or on the back of the vessel. It is very important to note down the numbers associated with the name, if there are any.

If it is not possible at any time during the sighting to see the full name, but some of the name can be seen, then record the part of the name that is clear and leave question marks for the parts that cannot be clearly seen (for example: 'Rodriguez Catcher ???' or 'C????? Maru 88'). Mention in the comments which part of the name could not be seen or was faded (for example, the number or some letters).

#### **IRCS**

Record the international radio call sign (IRCS) which, for licensed fishing vessels in this region, should be painted in large letters/numbers on the side of the vessel (see page 6).

If it is not possible at any time during the sighting to see the full IRCS, then record the part of the call sign that is clear and leave blanks for the letters or numbers that cannot be clearly identified. For example, if the call sign appears to be 'W W ' so that only certain letters are visible, such as the 'W's, and it seems likely that there are five letters and/or numbers making up the IRCS, then record it as 'W ? W ??'.

#### **Flag**

The flag of the vessel is the registered nationality of the vessel. There are several ways to find the flag of the vessel. Usually, the port of origin is written on the stern of the vessel. However, the port of origin does not always indicate the actual flag of the vessel. Sometimes the flag is painted on the side of the vessel's bridge, or it may even be flying its registered flag.

The country codes page is inside the workbook. Record the correct country code for the vessel flag from the workbook's country code page.

### **Vessel and aircraft type code**

Vessel and aircraft type codes are written at the bottom of the GEN-1 form. Use these codes to describe the type of vessel seen. If the type of vessel is not on the list, use code '31' (Other – please specify) and describe the vessel type in the comments column.

1. Single purse-seine
2. Longline
3. Pole-and-line
4. Mothership
5. Troll
6. Net boat
7. Bunker
8. Search, anchor or light boat (also known as tender vessels)
9. Fish carrier
10. Trawler
11. Light aircraft
12. Helicopter
13. Other (please specify)

Note the difference between a 'Mothership' and a 'Fish carrier'; a mothership works together with a group seine operation receiving the fish on each set, whereas a fish carrier receives an unloading from a purse-seiner at the end of the trip. Fish carriers are usually larger than motherships.

### **Other details**

#### **Compass bearing (degrees)**

The compass bearing indicates the direction to the sighted vessel/aircraft from the observer's vessel. The value is recorded in degrees (please record degrees and not N, S, E, W, NE, EWE, etc.) When recording degrees, use the three-figure notation (i.e. forty-five degrees is recorded as 045° and not 45°; five degrees is recorded as 005° and not just 5°).

Use the compass in the wheelhouse to determine the compass bearing for the line-of-sight to the sighted vessel/aircraft. The direction that the observer's vessel is actually heading in will not matter – just line up the direction to the sighted vessel and read what this line of direction is on the wheelhouse compass.

#### **Distance (nautical miles)**

Use the radar in the wheelhouse to calculate the distance between the vessel and the sighted vessel/aircraft. Ask the captain or another officer to help with this, if necessary. If it is not possible to use the radar, give a best estimate. Remember, the horizon is 6 nautical miles away from the vessel. Record the value up to one decimal place.

### Action code (seen vessel)

What was the sighted vessel that is recorded on this line doing when seen? Use the 'Action codes' marked on the bottom right of the GEN-1 form to indicate the main activity of the vessel when it was sighted.

The codes are:

FI	Fishing
PF	Possibly fishing
NF	Not fishing
DF	Dumping fish

The codes for observed exchanges between vessels (vessel transfers) are:

Receiving		Giving		
TR	Transshipping fish	TG	Transshipping fish	... (from hold in one boat to hold in other boat)
SR	Set sharing	SG	Set sharing	... (from one boat's net to another boat's hold)
BR	Bunkering	BG	Bunkering	
OR	Other, specify.....	OG	Other .....	

Notes:

- Bunkering is usually with a tanker but may be with another fishing vessel or any other vessel.
- Examples of 'Other' may be crew, food, cigarettes, salt (for brine), engine parts, etc.
- If two vessels are seen making a transfer (neither of them being the observer's vessel), then two lines will need to be filled in this section of the GEN-1 form, one for each vessel. The 'Action code' for one vessel will be a giving (?G) code and the 'Action code' for the other vessel will be a receiving (?R) code.
- If two vessels are exchanging more than one type of goods, then use the code that seems to be the most important (transfer of fish is always more important than any other transfer) and note the other items being transferred in the comments.
- Set sharing (SR and SG codes) will be used for sighted purse seiners only.
- The observer should consider whether any bunkering, transshipping or set sharing was a compliance infringement and report this (see 'Dealing with infringement issues', page 101).

### Photo frame #

Take a photo of the vessel or aircraft whenever possible. It is better to wait until the vessel is close enough to get a clear picture. Photographs of small dots on the horizon are of little use. Label the photos after they have been transferred to a computer or tablet.

### Comments

Additional information about the vessel could include its colour, overall shape, including length, notes on the name or radio call sign if these have not been clear, and any other distinguishing characteristics. These may help to identify the vessel, especially if its name or call sign are not clear or available.

### Fish transferring, fish dumping and bunkering by the observer's vessel

Use this area of the form to record all fish transfers, fish dumping, bunkering or other transfers carried out between vessels of any kind and the vessel that is hosting the observer.

1. If observers are on board a transit vessel that is involved in any of these operations, they should record the information in their journal and in the trip report.
2. Sightings of fish transfers, fish dumping or bunkering that are carried out by vessels other than the observer's vessel should be recorded in the first section of the GEN-1 form (Vessel or aircraft sightings).

*Note:* The observer should consider whether any bunkering or transhipping by their host vessel was a compliance infringement and report this.

### **Observer's vessel position**

#### **Latitude and longitude**

The latitude and longitude positions can be recorded from the vessel's GPS (see 'GPS', page 15). Record the latitude (dd° mm.mmm) and longitude (ddd° mm.mmm) to three decimal minutes. Ensure the GPS is recording to decimal places of minutes and not seconds. Remember to record N for north, S for south, E for east or W for west.

**Other vessel** (In the case of fish dumping by the observer's vessel, put a dash in the following data fields.)

#### **Name**

Record the name of the vessel that is receiving fish or other goods from the observer's vessel (or giving them to the observer's vessel).

#### **IRCS**

Record the IRCS, usually seen as large letters and numbers on the side of the vessel.

#### **Flag**

The flag of the vessel is the registered nationality of the vessel. There are several ways to find out the flag of the vessel. Usually the port of origin is stamped on the stern of the vessel. However, the port of origin does not always indicate the actual flag of the vessel's nationality. At times, the flag can be seen painted on the side of the vessel's bridge or it may even be flying its registered flag.

Some country codes are marked on the GEN-6 form. Use these codes to save space and ensure there is no confusion about the data provided.

#### **Type code**

Choose a code to describe the other vessel involved in the transfer of fish or goods. Codes for different types of vessels and aircraft are listed at the bottom of the GEN-1 form. If the type of vessel is not on the list, use code '31' (Other – please specify). Describe the type of vessel seen in the comments column.

#### **Fish transferred** (SKJ weight, YFT weight, BET weight, Mixed weight)

If the observer's vessel dumps fish, receives fish from another vessel or gives fish to another vessel, then record the weights of the fish that were involved here. Try to record accurate information on weight. Note in the comments area how the weight value was obtained, stating whether it was possible to count single fish being transferred or just cartons of fish. Record the weights under their species heading if possible. For 'Other species', record the species code in the blank data field and record the weight, or both weight and number(s).

Put a dash in the 'Fish transferred' data fields if the observer's vessel is only involved with bunkering or other forms of transfer and not with fish transfers.

### Action code (host vessel)

Choose one of the action codes at the bottom of the GEN-1 form to further describe how the observer's vessel was involved in transferring fish, dumping fish, bunkering, or other form of transfer.

If the observer's vessel dumped fish, use the 'DF' (Dumping fish) action code. In all other cases, choose between the receiving (?R) or the giving (?G) codes, depending on whether the observer's vessel received or provided the goods.

For example:

If the observer's vessel was receiving fuel from another vessel, use the action code BR (Receiving/bunkering).

If the observer's vessel was giving fish to another vessel, use the action code TG (Giving/transhipping fish).

**Caution!** Do not use the first three action codes (FI – Fishing, PF – Possibly fishing, NF – Not fishing) in this section of the form. These codes are only used for vessel and aircraft sightings.

**Caution!** Remember that a GEN-6 form (pollution report) may need to be filled in if a vessel dumps a large amount of fish, especially when in the harbour or within 3 miles of the shore.

### Comments

The comments area can be used to record further information about the other vessel's name, IRCS and flag. A further description of how the observer estimated the transferred weight could also be recorded. If necessary, continue any comments in the journal and note the journal page number in the comments.

Record only aircraft involved in fishing, such as helicopters. Do not record commercial passenger aircraft.

# Form GEN-2 Species of Special Interest – Vessel Interactions

## Description

A GEN-2 'Vessel interactions' form must be filled in for every species of special interest (SSI) that interacts with the vessel or its non-primary gear.

*Note:* All SSI interactions with the vessel's primary fishing gear are recorded on the PS-3 form.

The purpose of the new 'Vessel interactions' form is to capture any interactions by any SSI with the vessel or its non-primary gear. An interaction with the vessel or its non-primary gear is said to have occurred if the SSI has come close to the vessel/non-primary gear or if the behaviour of the SSI has been influenced by the presence of the vessel/non-primary gear – for instance, the marine mammal came close to the vessel and swam alongside it.

Non-primary gear means equipment that belongs to the vessel but is not used by the vessel to catch tuna. Primary gear on a purse seiner is the purse-seine net. All SSIs caught/trapped/entangled by the purse-seine net should be recorded on the PS-3 form.

## SSI include:

- all marine turtles
- all marine mammals (e.g. all whales and dolphins)
- all seabirds
- silky sharks
- oceanic whitetip sharks
- whale sharks
- manta and mobulid rays

Birds resting on floats are examples of non-primary gear interaction.

## Interactions with primary gear

Record all SSI interactions with the vessel's primary fishing gear on the PS-3 form.

- Primary gear on a purse seiner includes the purse-seine net only.

## No SSI interaction

If no SSI interact with the vessel during the trip, fill in one GEN-2 form with the header data fields and make a comment in the 'Description of species/interaction' field: 'No SSI interaction'.

## Header details

SPC / FFA REGIONAL OBSERVER			FORM GEN - 2	
SPECIES OF SPECIAL INTEREST - VESSEL INTERACTIONS				
<small>Revised 2018</small>				
OBSERVER NAME	VESSEL NAME	OBSERVER TRIP ID NUMBER	PAGE	OF

The header details must be fully filled in on every completed form (see 'Header details' for information on observer name, vessel name, observer trip ID number and page number, on page 3).

The GEN-2 'Vessel interactions' form has space for up to four different interactions on one form (see one interaction row below). If the interaction involves multiple animals of one species, use one row and indicate the number of

adults and juveniles involved. If more than one species is involved, use a separate row for each species. There are instructions on the back of the form to guide the observer on filling in each data field.

SSI CODE	START OF INTERACTION TIME (HH : mm)		END OF INTERACTION TIME (HH : mm)		DATE		LATITUDE		LONGITUDE			
					YY	MM	DD	(dd mm.mmm)	N	S	(ddd mm.mmm)	E
VESSEL INTERACTION CODE	Est. DISTANCE from V.		CONDITION CODE		Estimate of SSI Length				Total Numbers			
	START	END	START	END	Adults	Juveniles	Adults	Juveniles	Adults	Juveniles	Adults	Juveniles
	m NM	m NM			m	cm	m	cm				
Description of Species / Interaction												

### Vessel interaction codes

Use these codes below to describe how the SSI interacted with the vessel or non-primary gear on a purse seiner. Some of the codes are only used for longliners, tori line and bait during set.

**VESSEL INTERACTION CODES:** Use these codes to describe how the SSI interacted with the vessel or non-primary gear.

- |  |   |
|--|---|
| IBV – Interaction, beside vessel             | ICV – Collision with vessel                     |
| ION – Interaction, outside net               | ICP – Collision with propeller                  |
| ICF – Interaction, crew feeding              | ICT – Collision with tori line                  |
| IWF – Interaction – with FADs but not set on | FRB – Feeding on bait during set                |
| IDW – Interaction – dead in water            | IFO – Feeding on discarded offal                |
| OTH – Interactions – other, please specify   | IRE – Resting on vessel, floats or FADs (birds) |

## GEN-2 Species of Special Interest – Sightings Form

DATE YY MM DD	LATTITUDE		LONGITUDE		SIGHTING CODE	TALLY	TOTAL NUMBER
	(dd mm.mmm)	N S	(dd mm.mmm)	E W			
SSI CODE	Species Description						

The purpose of the Species of Special Interest – Sightings, Supplement to Form GEN-2, is to capture any sightings of Species of Special Interest made by the observer. Recording a sighting of an SSI suggests that the SSI's behaviour was not affected by the presence of the observer's vessel. Be reflective about how you record birds.

Obviously, recording every single bird you see overhead with the species group code (BIZ) is not helpful. So, think about what is helpful before recording bird sightings. Record (if you can identify them), the species you generally see during your trip. Your data should indicate the general abundance of birds by species during the trip. Recording the presence of marine mammals and birds on their migratory routes can be helpful to define, understand and evaluate their species ranges (the areas they can be found) and any impacts that changes in the ecosystem are having on their migratory routes.

### Header details

The header details should be filled in the same as with the other forms.

There are seven rows in one form and each row can be used to fill one sighting (an example of one row is on the next page).

Record one of the 'Sighting codes' to indicate the SSI behaviour when sighted.

### SIGHTING CODES

SDS – Sighting – Distance Swimming  
 SBR – Sighting – Breaching  
 STP – Sighting – Tail Slapping or Playing  
 SMG – Sighting Motionless in Group  
 SDW – Sighting – Dead in Water  
 SBO – Sighting – Bird Overhead  
 OTH – Other, please specify

### Date

Record the date of the sighting (year-month-day).

### Latitude/longitude

Record the location of the start of the sighting by recording the degrees, minutes and decimal minutes for latitude and longitude to three decimal places.

## Sighting code

SPC / FFA REGIONAL OBSERVER SPECIES OF SPECIAL INTEREST - SIGHTINGS			Supplement to FORM GEN - 2	
<small>Revised 2018</small>				
OBSERVER NAME	VESSEL NAME	OBSERVER TRIP ID No.	PAGE	OF

Use the sighting code that best describes the situation and behaviour. Remember to use comments if you need to explain further.

## Tally/total number

Use the tally box to count the number of individuals by species and then record the 'Total number' for each species in this sighting.

## SSI code

Use the standard species codes in the ID guide or on the 'green' SSI Codes page in the workbook.

## Species description

Provide more information (size, colour, markings) about the animal to help confirm the species code recorded by the observer. Briefly describe aspects of the sighting with relevant detail.

This data field is mostly useful for sightings of marine mammals (whales or dolphins). Use whichever words are necessary to describe their behaviour when sighted but be sure to use the terms below accurately if they are seen carrying out any of these behaviours:

- bow riding (swimming off the bow of the boat)
- wake riding (swimming closely behind the boat)
- breaching (launching themselves into the air head-first and then falling back into the water)
- lobtailing (tail slapping)
- logging (lying at the surface after deep dives)



**"I sighted a few seabirds flying overhead. Do you want me to record that?"**

There is no need to record every seabird that is seen flying nearby. If you are familiar with your seabirds and think this might be an unusual species, or if you notice flocks that are behaving unusually, you could record this.

Remember any interactions of seabirds, especially feeding on bait during investigation, should be recorded on the GEN-2 'Vessel interactions' form.

# Form GEN-3 Vessel Trip Monitoring Summary

## Description

The GEN-3 form is a summary of incidents that have occurred on the trip. The pre-notification requirement for observer programmes obliges observer providers to submit the GEN-3 form to WCPFC as soon as possible after the trip, preferably after debriefing. WCPFC assesses the record of incidents and potential infringements that should be further investigated. The observer must sign the GEN-3 form. Signing the form makes it a legal statement by the observer of incidents that did or did not occur on the trip.

One (and only one) GEN-3 form must be filled in at the end of every single trip. Fill in the first form in the first workbook. *Note:* A second form is included in most observer workbooks as a backup in case of a mistake.

## Header details

OBSERVER PROGRAMME:		SPC/FFA REGIONAL OBSERVER VESSEL TRIP MONITORING SUMMARY			FORM GEN - 3 (pg 1)	
REV. 2018		<b><i>This form <u>must</u> be filled in by the observer for every trip</i></b>			TRIP START DATE YY MM DD	
Observer NAME					TRIP END DATE YY MM DD	
Obs. NATIONALITY	TRIP ID NUMBER	COASTAL STATE LICENCES (IF ANY)			NATIONALITY OF BOARDING VESSEL IF BOARDED DURING TRIP AT SEA	
VESSEL NAME		COUNTRY REG. #	UVI	IRCS	VESSEL FLAG	VESSEL GEAR TYPE

The header details must be fully filled in on every completed form.

## Dealing with infringement issues

The GEN-3 form summarises incidents that were directly observed by the observer. Incidents can also be given a ranking of further significance where they are described as critical incidents or infringements.

A critical incident is an incident that is serious and should be reported to your debriefer as soon as possible after you disembark – preferably before the vessel departs or another placement is made. These incidents may include intimidation, poor hygiene or safety issues.

Infringements indicate that an incident may be in breach of fisheries regulations or may be criminal.

One of the purposes of pre-debriefing an observer is to determine if any critical incidents or infringements need to be dealt with immediately (before the vessel departs again). It is an observer's responsibility to report for a pre-debriefing as soon as possible after disembarking. Observers should ensure the debriefer is aware of any critical incidents or possible infringements so that the agency's compliance officers can be informed quickly.

Observers should not discuss possible infringements with the captain or crew of the vessel as it may cause a safety issue. If the observer sees an incident that requires a 'Yes' against any of the 31 items listed on GEN-3, they should:

1. At the bottom right corner of the PS-2 'Did you observe any events to record on form GEN-3 today?', circle 'Yes'. That is a reminder. Also make a note of the time of the incident.
2. When you have time, in private, make an entry of the incident in the journal.
3. Again, at the bottom of PS-2, under 'Journal page #', indicate the journal page number where you reported the incident.

4. At the end of the trip, record the incident in your trip report.
5. When you disembark, depending on the seriousness of the incident, if it is a critical incident or infringement, contact your agency or the observer programme in the port where you disembark and ask to schedule a pre-debriefing.
6. At the pre-debriefing, ensure the debriefer is aware of the incident.
7. Ensure you have all your material ready at your debriefing.

When reporting an incident in your journal, ensure it is described under a heading that will make it easy for the debriefer to find. You could include the GEN-3 code and a short description, for example: 'WC-C FAD Set'. Indicate the time of the incident with a description. Include relevant details such as time (use ship's time), position, name(s) of people involved, details of any conversations about the incident (especially if the observer was involved in the conversation), and whether there were communication problems. Be clear in your descriptions and unprejudiced in your facts as the information may end up being used in court.

Certain types of incident may occur frequently (for example, LC-d not recording bycatch discards). In cases where the same issue happens often, one full description in the journal is sufficient at the start. Daily journal reports can then refer to this description but should also include new details relevant to each occurrence, such as the time and position that the issues occurred, and any new descriptions or developments associated with the issue.

You can also dedicate a spare page near the back of the journal to list each incident of that type in one place: record the date, time, position and brief details of repeated incidents. Ensure the page has a title, such as 'Pollution Incidents'.

#### **Incident summary: 'Yes' or 'No' with an X**

At the end of the trip, you should check back through your PS-2 and journal to complete the GEN-3 incident summary by indicating a 'Yes' or 'No' against each listed item. There must be an 'X' in either 'Yes' or 'No' for all items. If you are not sure, use your best judgement to choose 'Yes' or 'No', and then state that you are unsure and why you are unsure. It will be easier to complete this section if you have reported the item under a clear heading with the relevant GEN-3 code.

Issues that happen frequently will still be summarised on the GEN-3 form with a single X, although they will also be listed by time/date of incident on the GEN-3 form, page 2, and regularly in the observer's journal. If you have a summary page you may refer to that, such as: 'Journal pg # 56 Pollution Summary'.

#### **GEN-3 (page 2) Brief details**

Once the GEN-3 (page 1) form has all the appropriate 'X's in place, use the GEN-3 (page 2) form to give a brief description of the incidents that occurred and the dates. Also, refer the reader to the journal pages for more detailed information about each issue.

For example, this part of the form may look like this:

SPC/FFA REGIONAL OBSERVER VESSEL TRIP MONITORING SUMMARY		FORM GEN - 3 (pg 2)
REV. 2018		
OBSERVER NAME <i>John Smith</i>	VESSEL NAME <i>Solomon Jade</i>	OBSERVER NATIONALITY <i>Solomon Islanders</i>
TRIP ID NUMBER <i>JHS 20 - 01</i>	OBSERVER PROGRAMME <i>SBOB</i>	
<p align="center"><b>IF YOU ANSWERED YES TO ANY ITEM ON THE GEN-3 FORM PLEASE EXPLAIN BRIEFLY IN THE AREA BELOW. A FULL EXPLANATION MUST BE WRITTEN IN THE OBSERVER DAILY JOURNAL AND/OR TRIP REPORT JOURNAL PAGE NUMBERS FOR THE EXPLANATION SHOULD BE RECORDED IN THE BOXES PROVIDED ON THE FRONT OF THIS FORM</b></p>		
<i>LC - b Inaccurately record "Target Species" Discards. This happened several days during this trip with discarding of the exact</i>		
<i>weight and numbers of skipjack and yellowfin were not correctly recorded,</i>		
<i>refer to page 1,5 and 7 of my journal</i>		
<i>LC - b Inaccurately record "Target Species" Discards. This happen several days during this trip with d</i>		
<i>LP- a Inaccurately record vessel position on vessel log sheets for sets, hauling and catch, refer to Journal page 8, 10 &amp; 12</i>		
<i>NR- f Was involved in bunkering activities. Refer to my journal page 20, this activity</i>		
<i>was carried out by my vessel with a tanker.</i>		
<p align="center"><b>DEBRIEFING STATUS</b></p> <p>Circle one: <input type="checkbox"/> Not Debriefed <input type="checkbox"/> Pre-debriefed <input type="checkbox"/> Debriefed</p>	<p align="center">OBSERVER SIGNATURE</p> <p align="center"><i>John Smith</i></p>	<p align="center">DATE YY / MM / DD</p> <p align="center"><i>20 / 05 / 25</i></p>

### Debriefing status

This section is to be completed back in the office before submission of the GEN-3 form to WCPFC. If the data is not yet debriefed at the time of submission, then indicate this and circle not debriefed. If only pre-debriefed or if debriefing is complete, indicate these instead. This is to let WCPFC know whether or not the incidents have been verified by a debriefer.

### Observer's signature

Please make sure to always sign off this form at the end. The form may need to be used in court and it will be important that it is properly signed off. Signing the form means: (1) the observer confirms that the information is true, and (2) it makes the form a legal statement.

# Form GEN-4 Conversion Factors

## Purpose of data collected

The reason for collecting multiple measurements on the same fish is to build up a database of comparative measurements of standardised lengths and weights for each target, key bycatch and SSI species.

Scientists use standard measurements (UF for tuna, LF for billfish etc.) and how that relates to their live weight for stock assessment. Just from knowing the relationship between the standard lengths and weights of a species, scientists can calculate things like a population's total biomass and work out how many individual fish the total catch represents, what proportion of the stock is adult or juvenile, and whether the stock is stable or suffering a decline etc.

However, sometimes it is not possible to collect the standard lengths or whole weights. This is particularly the case with port sampling or transshipment monitoring in which the fish are processed, gilled and gutted, and perhaps headed and/or tailed. Alternative lengths or weights can be collected and then the standard lengths and weights calculated by using the conversion factor data for that species.

**The GEN-4 Conversion Factor form is not a standard form and observers are only required to complete it when they have been asked to under a specific project and when they have been trained to collect the data.**

## Header details

SPC/FFA REGIONAL OBSERVER CONVERSION FACTORS				FORM GEN-4	
REV. 2018					
OBSERVER NAME		MEASURING INSTRUMENT		OBSERVER TRIP ID No.	
VESSEL NAME		MAKE, MODEL AND CAPACITY OF SCALES		SHIP'S END OF TRIP DATE (YYYY/MM/DD)	
				PAGE OF	
				SHIP'S START OF TRIP DATE (YYYY/MM/DD)	

The header details must be fully filled in on every completed form like other forms. Refer to page 69 for caliper calibrations.

## Weights and measurements collected

DETAILS OF WEIGHTS AND MEASUREMENTS COLLECTED																		
SET NO.	SHIP'S TIME	LABEL NO.	SPECIES CODE	LENGTHS (in cm.)						WEIGHTS (in kg.)					PROCESSED WGT. (kg.)	LANDED WEIGHT (kg.)	CODE	COMMENTS
				UF	US	LF	PF	PS	TL	WHOLE	HEAD	TAIL	GUTS	WET FIN				

Any fish for which there are conversion factor details on the GEN-4 form is likely to be discarded as they are not good when put back in brine water.

### Set no.

This is the number of the set of the vessel. This number should be the same as that on the PS-2.

### Ship's time

Record the start of set time.

**Label no.**

You should be given a set of labels to mark the fish so that you can collect the landed weight when it is unloaded. Write the label number so you can complete the 'Landed weight' section at the end of the trip (refer to processed weight later in this section).

**Species code**

Use the standard three-letter species codes you have been taught to record any species that are hooked. These codes are marked in the species identification sheets and the species lists that were provided during training. If necessary, further copies can be obtained through the observer coordinators, SPC or FFA.

**Lengths**

Take each of the length measurements listed on the same fish. If you are unable to collect some, put a dash ('-'). You can make a comment to note why the measurement could not be taken. Remember, as elsewhere, to round the length measurements down to the nearest whole number in centimetres.

**Weights**

You need to be able to use proper tested scales for this section. Take the weights and round up or down to the nearest kilogram (kg). Only weigh the features listed if they were cut off. For example, the head can be measured only if it is cut off, and guts only if you can collect them all and weigh them. Wet fins are the fresh (not dried) fin weight for sharks only.

**Processed weight**

This is the weight for the final processed state of the fish on the vessel, for example, RGG for tuna, RHG for billfish etc.

**Landed weight**

This is the weight of the final processed state when it is unloaded or transhipped. This is to determine if there is weight loss due to storage. Because of the type of operation on purse seiners, it might be difficult and not practical to carry out the process of landed weight unless prearrangements are made with the vessel captain, owners and other people involved during unloading. Large yellowfin and bigeye may be organised if unloading in port and wells are identified by observers.

**Comments**

Indicate anything that may have had an impact on the measurements taken, such as a particularly skinny tuna, or if you were unable to measure a length for some reason etc.

# Form GEN-5 FAD/PAYAO and Floating Objects Information Record Form

## Data Submitted

A GEN-5 form must be filled in every time the vessel investigates a floating object. Every activity code 9 on the PS-2 form should have a corresponding entry on the PS-5 form.

## Header details

The header details must be fully filled in on every completed form.

## FADs

A FAD is a Fish Aggregating Device. Fishermen found that man-made structures created the same aggregating behaviour that fish show around natural floating objects. Since the early 1900, fishers in Indonesia and the Philippines have used rafts constructed from bamboo or coconut logs, moorings of hemp or coconut fibre rope, and anchors of stone.

There are various theories on why FADs attract fish. Fish may be seeking shelter and protection and stay with FADs so they can 'hide' in the FAD. It may be that tuna use FADs to orientate themselves in a wide ocean without many reference points. Tuna are known to leave FADs during the day, often diving to deeper depths (perhaps for protection) and returning to the FADs during the night. Tuna can associate themselves with a FAD for many weeks before eventually leaving.

FADs aggregate tuna (i.e. they bring them together) to specific points in the ocean. FADs make it easier for fishers to catch tuna as they spend less time searching for the fish and thus save fuel costs. It is important that we gather information on the practice of fishing with FADs as fishers can potentially catch more tuna in less time with this fishing method.

Under the CMM 2009-02, the definition of a FAD shall be interpreted as including: "any object or group of objects, of any size, that has or has not been deployed, that is living or non-living, including but not limited to buoys, floats, netting, webbing, plastics, bamboo, logs and whale sharks floating on or near the surface of the water that fish may associate with."

Date (from PS-2)	Time (from PS-2)	Set No.	Object number	Origin of FAD	Deployment date	latitude dd°mm.mmm'	N S	and longitude ddd°mm.mmm'	E W	FAD as found	FAD lifted	FAD as left	Comments / Change details
											YES / NO		
FAD materials		net/mesh size	Attachments	net/mesh size	Max est. depth	FAD length	FAD width	Buoy number	FAD / Payao No. and or markings	SSI seen	SSI trapped		
		cm		cm	M	M	M				Y/N/U	Y/N/U	

## Date (from PS-2) and time (from PS-2)

The date and time must match the PS-2 form time that is related to the same activity (see above). Record ship's time and the ship's date, exactly as it is recorded on the PS-2 form.

PS-2 activities where a GEN-5 form must be filled in include: activity code 1 – set; activity code 9 – investigate floating object; activity codes 15D and 15R – changing buoys; and activity code 17 – servicing FAD or floating object.

## Set No.

If the FAD/PAYAO or floating object was involved in a set at any stage, record the set number in this data field. The set number should be consistent with the set number in the PS-2 form.

### **Object number**

Record an object number for each FAD the observer records. Start with object number 001. If the observer recognises that object in future activities, the same number is recorded. If an object comes on board, it still gets an object number, and if returned to the water at the same place, the number stays the same. However, if it goes to a different area, it gets a new number and a new record is created.

If the vessel is using its own number, you can record that in the 'comments/sketch/change description' data field.

### **Origin of FAD**

Try to find out the origin of the object before this current encounter. Use the codes provided on the workbooks's code page to record the origin of the FAD.

Use the 'Origin' code that best describes where the FAD or floating object came from. If you cannot find out where the FAD came from, use the code for 'unknown'. If the origin is not listed, use 'other' and describe it in comments. Also use comments for additional details.

*Note:* The difference between codes 5 or 6 and code 7 is that the FAD in codes 5 or 6 will have a radio buoy still attached, whereas the code 7 FAD (or other floating object) will no longer have a buoy attached to it.

### **Deployment date, latitude and longitude**

If deployment is not actually witnessed by the observer, try to get this information from the vessel's records, if applicable. Otherwise enter dashes.

### **Buoy number and FAD/PAYO numbers and markings**

Record any identification numbers seen on any radio buoy (or other buoy) that is attached to the floating object or FAD, or any ID numbers or other markings that can be seen on the FAD/payao itself.

If only part of an identification number can be seen, then record the parts that can be seen and show question marks for letters or numbers that cannot be read (e.g. STV-76??3H)

### **SSI seen and SSI trapped**

Circle 'Y' (Yes), 'N' (No) or 'U' (unknown) to state if any Species of Special Interest (SSI) is seen near the object and again to state if any SSI is trapped, and whether with webbing, ropes, cloth, buckets, between the bars, in a rack or other.

Use 'N' only if top of FAD (in water) and attachments (when FAD is lifted) are clearly seen.

Write the name of the SSI species in the comments area and be sure to fill in a GEN-2 form.

### **FAD as found, FAD lifted and FAD as left**

Record what an object is when it is found and whether it has changed by the time the vessel leaves it.

*Note:* Complete the 'FAD as Found' field only if the object was found in the water. If the object is a FAD being deployed for the first time, then record a dash in the 'FAD as found' field.

Circle 'YES' or 'NO' to indicate whether the FAD was lifted from the water at any time. Watch for changes being made to any found floating object before the vessel leaves it adrift again. If no modifications were made to the object, the 'As found' and 'As Left' fields should be identical. If the object is brought aboard the vessel and moved to another area, put a dash in the 'FAD as left' field. A new record will be created if that floating object is redeployed.

### **FAD materials – main materials, FAD attachments and net/mesh size**

Most materials found in the main body (or platform) of floating objects and those commonly used for attachments under FADs have codes 1 to 17 from the list under 'FAD materials' on this form.

Note that some materials can be used as main material or as attachment material so the material codes can be used twice, describing both the main and the attachment material. If many materials make up the body of a FAD, list up to 3 of them starting with the most abundant.

If the object has a component not included in the list, use code 17, 'other' and describe it in comments. If not sure of the material, use code 10, 'unknown' and describe it, if possible. If possible, get diagonal mesh measurements of the net used to make the platform and/or attachments.

### **Max. est. depth (maximum estimated depth)**

Record the estimated depth (in metres) below the surface of the water of any objects, streamers or other equipment attached to the FAD (but not including the anchor rope or chain) at the time the object is found (or deployed, if the deployment is the reason for this record). If there are any attachments at all, always make an estimate, even if estimating the depth is very difficult. Add a comment on the difficulty.

### **FAD length and FAD width**

Record dimensions (length and width) of the main body of a floating object or FAD when it is found (or deployed, if the deployment is the reason for this record). If the object has an irregular shape or is made up of multiple components, imagine a box with the object in it and record the length and width dimensions of the imaginary box.

### **Comments/change details**

Record any information that will help identify a FAD or floating object and any information that can help understand why the FAD or floating object works well or doesn't work well.

If a FAD has been changed, describe the changes with notes and refer to more information that is written in the observer's trip report and/or journal.

### **Diagrams**

A drawing of an object can be very helpful and can be drawn in the data field at the bottom of GEN-5 (see below).

**Diagrams** - label with 'Object number'

THE WCPFC recognises live whale sharks, marine mammals etc. as FADs. Just mark a dash through any data fields on the GEN-5 form that are not relevant if the FAD is a live animal.

The codes below can be found on the codes page inside the purse-seine workbook.

**Floating object 'as found' or 'as left'**

1. Man-made object (Drifting FAD)
2. Man-made object (Non-FAD)
3. Tree or logs (natural, free floating)
4. Tree or logs (converted into FAD)
5. Debris (flotsam bunched together)
6. Dead animal (specify, i.e. whale, horse, etc.)
7. Anchored raft FAD or Payao
8. Anchored tree or logs
9. Other (please specify)
10. Man-made object (Drifting FAD) changed

**FAD materials – main materials**

1. Logs, trees or debris tied together
2. Timber/planks/pallets/spools
3. PVC or plastic tubing
4. Plastic drums
5. Plastic sheeting
6. Metal drums (i.e. 44 gal)
7. Philippines design drum FAD
8. Bamboo/cane
9. Floats/corks
10. Unknown (describe)

**FAD materials – FAD attachments**

11. Chain, cable rings, weights
12. Cord/rope
13. Netting hanging underneath FAD
14. Bait containers
15. Sacking/bagging
16. Coconut fronds/tree branches
17. Other (describe)

# Form GEN-6 Pollution Report

## Data submitted

The number of GEN-6 forms that must be filled in depends on the number of 'MARPOL' incidents observed during the trip (MARPOL is the International Convention for the Prevention of Pollution from Ships). One GEN-6 form must be filled in for each observed 'MARPOL' incident, whether the incident was caused by the observer's vessel or by another vessel.

If no pollution incidents are observed during the trip, this should be confirmed by striking a line across the first GEN-6 page and writing a comment like 'No pollution incidents observed this trip', with header details completed. This will show you have not just forgotten to report pollution events.

## Header details

Fill the header details for GEN-6 form, refer to other header details filled in this guide.

SPC/FFA REGIONAL OBSERVER POLLUTION REPORT			FORM GEN-6
REVISED Dec. 2016			
OBSERVER NAME	VESSEL NAME	OBSERVER ID NUMBER	PAGE OF
- fill in one form for <u>each</u> pollution incident -			

Use one GEN-6 form to report on every pollution incident observed. This may mean filling in more than one GEN-6 form during the day. If observers run out of GEN-6 forms, they should keep a note of all pollution infringements in their journal, using the GEN-6 form as a guide to the type of information that should be noted. Compile all the information about pollution infringements in the observer's trip report.

Use the 'Incident details' section to record the time, position, weather details, etc. for each pollution infringement. Then determine which section to complete by the type of pollution that occurred (that is, 'Waste dumped overboard', 'Oil spillages and leakages' or 'Abandoned or lost fishing gear') and fill in the appropriate section.

Generally, only one of these boxes will be completed for a pollution incident as it is unlikely that a vessel will dump waste and spill oil at the same time (though it could happen). Fill in the relevant box and put a dash in the other boxes. Finally, answer the questions at the end of the form.

*Note:* The observer should consider whether the pollution incident was a compliance infringement and report this (see 'Dealing with infringement issues', page 101).

- fill in one form for <u>each</u> pollution incident -						
<b>INCIDENT DETAILS</b>						
Ship's DATE and TIME			LATITUDE	N / S	LONGITUDE	EEZ / HARBOUR
YY	MM	DD	hh	mm	(dd°mm.mmm')	E / W
WIND DIRECTION		WIND SPEED		SEA CONDITIONS (C, S, M, R)	CURRENT : (knts and direction ° )	OBSERVER'S VESSEL ACTIVITY
NAME OF OFFENDING VESSEL			IRCS	TYPE OF VESSEL	YOUR POSITION FROM OFFENDING VESSEL Compass Bearing Distance (nautical miles)	

### **Incident details**

Use the top section of the form above (Incident details) to record the time, position, weather details, etc., for when the pollution infringement was first observed. Then choose the data field box to indicate the type of pollution that occurred, that is, waste dumping or oil spillage/leakage.

### **Ship's date and time**

Fill in the date and time that the pollution infringement occurred. Use ship's time.

### **Latitude/longitude**

The latitude and longitude positions can be recorded from the vessel's GPS. Record the latitude (dd° mm.mmm) and longitude (ddd° mm.mmm) to three decimal minutes.

### **EEZ/harbour**

Mark down the name (country) of the EEZ in which the infringement occurred. A list of country codes is on the codes page of the workbook. If the offence took place in the harbour, write down the name of the harbour.

### **Wind direction**

Record the direction in which the wind was blowing when the infringement was first observed. Use the compass in the wheelhouse to work out the wind direction. For wind, this is the direction it is coming from. When recording degrees, use the three-figure notation (see below).

### **Wind speed**

Mark down the wind speed (in knots) when the infringement was first observed. Work out the approximate wind speed from the 'Observers Guide to the Beaufort Scale, Wind and Sea State' table at the back of the observer workbook. A wind speed gauge may also be available in the wheelhouse.

### **Sea conditions**

Record the state of the sea using the sea state codes provided in the Wind and Sea State table at the back of the workbook. This helps to gauge the sea state using the appearance of the sea. Again, this should be done when the infringement is first observed.

### **Current**

Ask the captain or another officer about the speed and direction of the main sea current at the time the infringement happened. The observer may be able to get this information directly if a Doppler current meter is on board and switched on. Record the speed in knots and the direction in degrees. This is the direction the current is flowing towards.

*Note:* The current direction is the direction the current is moving towards. The wind direction is the direction the wind is coming from.

### **Observer's vessel activity**

Give a one-word description (not a code) of the activity that the observer's vessel was involved in when the observer first noticed the MARPOL infringement (that is, transit, setting, soaking, hauling, transhipping, bunkering, etc.)

## Offending vessel details

If reporting on a pollution infringement by another vessel and not by the observer's own vessel, record some details on the identification of the infringing vessel. If only reporting on a pollution infringement by the observer's vessel, put a dash in all other data fields.

## Name of offending vessel

Fill in the name of the offending vessel in full. If it is not possible to see the full name but some of the name can be seen, then record the part of the name that is clear and leave question marks for the parts that cannot be clearly identified (for example: 'Rodriguez Catcher ???' or 'C????? Maru 88'). Mention in the comments which part of the name was not seen – that is, the number or some letters.

## IRCS

Fill in the IRCS (international radio call sign) for the vessel. This should be visible and marked clearly on the side of the boat. If it is not possible at any time during the sighting to see the full IRCS, then record the part of the call sign that is clear and leave blanks for the letters or numbers that cannot be clearly identified. For example, if the call sign appears to be 'W W ', but the only certain letters are the two 'W's, and it seems likely there are five letters and/or numbers making up the IRCS, then record it as 'W- W --'.

## Type of vessel

Use the list of 'Vessel and aircraft type codes' marked on the GEN-1 form to note the type of vessel responsible for the pollution. Use Type Code 31 (Other, please specify). If none of the other vessel types fit, and describe it.

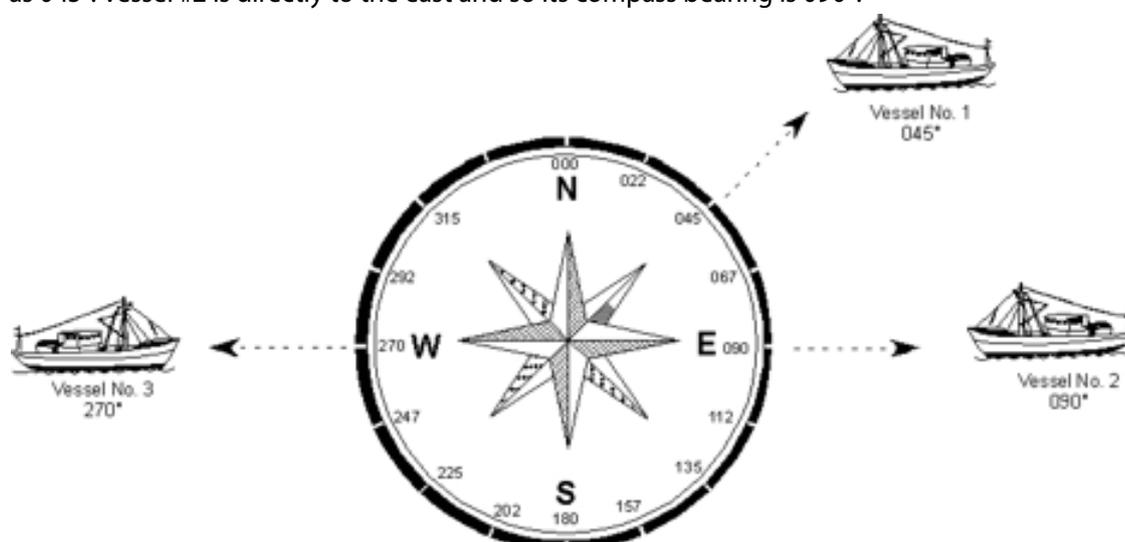
## Your position from offending vessel

To help pinpoint the position of any offending vessel, record this additional information.

## Compass bearing

The compass bearing indicates the direction to the sighted vessel/aircraft from the observer's vessel. The value is recorded in degrees. (Please record degrees, and not N, S, E, W, NE, EWE, etc.) When recording degrees, use the three-figure notation (that is, forty-five degrees is recorded as 045° and not 45°; five degrees is recorded as 005° and not just 5°). Use the compass in the wheelhouse to determine the compass bearing for the line-of-sight to the sighted vessel/aircraft. It will not matter which direction the observer's vessel is actually heading in; just line up the direction to the sighted vessel and read what this line of direction is on the wheelhouse compass.

As an example, below, the line of sight for vessel #1 is 045° on the compass. The compass bearing will be recorded as 045°. Vessel #2 is directly to the east and so its compass bearing is 090°.



### Distance (nautical miles)

Observers should ask the captain or another officer if they can use the navigational radar to find the distance of the offending vessel from the host vessel at the time the infringement was first noticed. Record the distance in nautical miles.

WASTE DUMPED OVERBOARD			
Material	<i>Tick each box that applies</i>	Describe Type	Describe Quantity
Plastics	<input type="checkbox"/>		
Metals	<input type="checkbox"/>		
Waste oil	<input type="checkbox"/>		
Chemicals	<input type="checkbox"/>		
General garbage (within 12 miles of shoreline)	<input type="checkbox"/>	<i>describe:</i>	

Fill this section in if the offending vessel has dumped any type of waste materials overboard. (If significant amounts of fish are dumped, this should also be recorded on the GEN-1 form.) If no waste materials were dumped overboard, just put a dash in this section. Other liquid pollutants that might be seen include liquid chemicals, sewage, deck washings, etc. If observed, these can be reported under the 'Waste dumped overboard' section.

Observers should always try to get a photo of any liquid pollution so it can be properly identified.

### Pollution reporting based on MARPOL Regulations

#### Waste dumped overboard

- Record all plastics dumped overboard. This includes small amounts of plastics such as monofilament line, plastic bags, bait box straps, etc.
- Record all other dumping of metal objects or mixed materials.
- Biodegradable waste (food, fish offal, sewage, etc.) should not be dumped within 12 nm of land. If a special garbage processor (comminutor or grinder) is used, then this minimum distance is reduced to 3 nm. Use discretion in reporting. It is not necessary to report when a crew member scrapes his dinner plate into the sea, but it is necessary to report on large amounts of fish being dumped near shore.
- 'Waste oil' refers to dumping of oil, generally in containers. It may include lubricants or hydraulic oil.
- The MARPOL requirement is that vessels do not dump oil within 50 nm of shore.
- 'Chemicals' refers to noxious liquids other than oil. They are generally refrigerants such as liquid ammonia or other coolants. Report any significant spills or dumping of chemicals. Be careful – ammonia can burn the skin and eyes. Avoid breathing its vapour.
- General garbage is most likely rubbish/waste from the galley or engine room, other than plastics, metals, oils, or chemicals. It may also include large personal items dumped by the crew.
- Tick to indicate the type of material that was dumped. Remember to put a dash in the data fields that have not been ticked.
- If any line is ticked, describe the material in more detail under 'Describe type'. For instance, if 'Waste oil' was ticked, describe what sort of oil, and its colour and thickness.
- If any line is ticked, describe the quantity under 'Describe quantity'. Give an idea of the volume if possible. If not (such as for an oil leak during bunkering), estimate the area that the spill covers.

## Oil spillages and leakages

'Oil spillages and leakages' refers to larger volumes than the waste oil section above and include bunker fuel and lubricants, or even oily bilge water.

Oil pollution can be identified by:

- a deadening or calming of the sea relative to the surrounding sea surface
- the presence of a silvery sheen and/or rainbow colours
- darker patches where the oil is thicker
- the presence of brown, orange, and/or yellow-coloured mousse (foam)

OIL SPILLAGES AND LEAKAGES			
Source	<i>Tick each box that applies</i>	Visual Appearance / Colour	Describe Area and Quantity
Vessel Aground / Collision	<input type="checkbox"/>		
Vessel at Anchor / Berth	<input type="checkbox"/>		
Vessel Underway	<input type="checkbox"/>		
Land based source - Describe source	<input type="checkbox"/>		
Other - please specify	<input type="checkbox"/>		

## Source

Most observations of oil will be recorded on the line marked 'Vessel underway'. 'Vessel underway' is the most suitable choice for any vessel that has left port and is present in the fishing ground. This will include transiting, searching, setting, etc.

If the oil is observed when the vessel is bunkering or has stopped other operational activities due to mechanical breakdown or repairs, use 'Other' and briefly describe the vessel's activity.

Hopefully, an observer's vessel will never be involved in a 'Vessel aground/Collision' event. If oil spillages or leakages are spotted when the vessel is still in the harbour, the observer can record the information on the 'Vessel at anchor/Berth' line. It is unlikely that observers will see oil pollution coming from a land-based source unless they are in a harbour. However, this form can also be used by port samplers or any fisheries personnel to report oil pollution.

Tick to indicate the source of the oil. Remember to put a dash in the lines that have not been ticked.

If any line has been ticked, describe the 'Visual appearance/Colour' of the oil. Make notes on the colour of the oil patch. Note if any silvery/rainbow colours, dark patches, or coloured mousse (foam, bubbles) were seen.

If any line has been ticked, describe the amount of oil spilled under 'Describe area and quantity'. The size of the observer's host vessel could be used as a size reference. For instance, the oil spill could be reported as twice the size of the area of the boat. For smaller amounts of oil pollution, use calipers or 1 square metre as an area reference.

## Abandoned or lost fishing gear

### Source

'Lost fishing gear' should be used when a portion of the primary fishing gear – net, floatlines and chain lines – is lost and the vessel makes an attempt to recover the gear but is unable to.

'Abandoned gear' should be used where gear is lost and the vessel does not attempt to recover it.

'Dumped gear' is when part of the primary fishing gear (a purse-seiner net that is damaged or old) is deliberately dumped.

### Activity

Describe the 'Activity' of the vessel at the time the gear was lost, dumped or abandoned, etc. Examples of activity include setting, search, hauling, or transiting.

Abandoned or Lost Fishing Gear			
Source	Activity	Describe Gear	Estimate Quantity
Lost during fishing			
Abandoned			
Dumped			
<i>Other comments:</i>			

### Describe gear

'Describe gear' is used to indicate what part(s) of the primary fishing gear was lost.

'Estimate quantity' is used to detail how much of the gear was lost. For instance, you could indicate the dumping of nets, chain line and rings.

Use the comments section to give further detail on the circumstances of the pollution event.

### Questions

There are three short questions to be answered at the end of every GEN-6 form.

<i>Were there any stickers/ posters displayed to remind the vessel about MARPOL Regulations?</i>	<b>Y / N</b>
<i>Did you take any photos?</i>	<b>Y / N</b>
<i>If yes, please state the number(s) of the photo frames or files.</i>	

Circle 'Y' to answer yes to any of the questions.

Circle 'N' to answer no to any of the questions.

If a photo was taken, state the photo frame number in the data field provided. Also include the journal page number, if relevant.

## Support Form 1 (Page 1) Observer Placement Meeting Records

The placement meeting between the vessel personnel (captain, vessel operators, agent) and the observer programme staff (fisheries authority representative, placement officer, observer) takes place before the vessel leaves port.

Fill in the header details – observer name, trip ID number and vessel name. The rest of the data fields can be filled in by the placement officer with the help of the observer.

SPC/FFA REGIONAL OBSERVER OBSERVER PLACEMENT MEETING RECORD				FORM SUP-1 (pg1)	
REV. 2018					
<b>TRIP DETAILS</b>					
OBSERVER NAME		TRIP START LOCATION		TRIP START DATE (YY/ MM/DD)	
OBSERVER TRIP ID NUMBER		ESTIMATED TRIP END LOCATION		VESSEL GEAR	
VESSEL NAME		FLAG	CALIPER SERIAL NUMBER	UVI and / or IRCS	
VESSEL SIZE: indicate	circle to	< 16 metres	16-25 metres	26-39 metres	> 65 metres
Personal Lifesaving Beacon (PLB)	Y / N	PLB Make:	Comments		
		PLB Model:			

The observer duties and their obligations, along with the obligations of the vessel operator to the observers, are described below. A thorough understanding of these by both the vessel operator and the observer will help ensure an effective working arrangement while on board.

The placement officer initials checklist items 1 to 11. The observer initials checklist items 12 to 17 and the captain reads and initials checklist items 18 to 25. Experienced observers should be familiar with this placement meeting. The checklist for the observer includes: observer safe work on board, vessel safety check, observer health and wellbeing, code of conduct, and the observer's compulsory 2-way communication device.

The captain's checklist includes: vessel obligations to observers, vessel current license, safety equipment, safety rules and regulations on board, and vessel's equipment.

### OBSERVER PLACEMENT CHECKLIST

A Fisheries Authority Representative/Placement Officer is to assist the observer, before and during boarding, as well as over see that information is recorded and actions taken as prescribe in this form. Please intial the space at the left of each number item to show it has been

<i>Initial :</i>	<i>Placement Officer to initial when they have:</i>
1	Set up the placement meeting
2	Assisted the observer with their personal requirements before boarding
3	Checked that the observer has been assigned appropriate accommodation and an area to store their equipment
4	Carried out a vessel safety check in the presence of the observer and Captain
5	Ensured that the Captain receives and understands the attached description (check-list) of standard observer duties and vessel obligations
6	Ensured that both parties are informed of their rights and responsibilities under CMM 2008-01 (Show and, if necessary, supply copy)
7	Reminded the observer that there is no obligation to do extra duties, but it is very much appreciated if they can help out when appropriate.
8	Reminded the Captain and Observer of importance of cooperation
9	Supplied or informed the Captain of the "Vessel on Observer Report" form
10	Informed the Captain and Observer than an observer-debriefing meeting will take place immediately upon return to port at completion of trip
11	Ensured observer's compulsory 2-way communication device is tested and working.
<i>Initial :</i>	<i>Observer to initial when they have:</i>
12	Clearly described any special sampling requirements to the Vessel Captain
13	Has been present at the Vessel Safety Check and have agreed to board the vessel
14	Confirmed that they are medically fit, informed the Captain of any special medical issues (prescription medication etc); and supplied contact details for their next-of-kin
15	Understood that they must report all gifts in their trip report.
16	Understood that in line with their Observer Code of Conduct they should not drink alcohol at any point during the entire trip.
17	Ensured observer's compulsory 2-way communication device is tested and working.
<i>Initial :</i>	<i>Vessel Captain to initial when they have:</i>
18	Read and understood the "Obligations of the Vessel Operators to Observers"
19	Shown the observer all current and valid license certificates
20	Shown the observer the location of their life jacket
21	Informed the observer of all safety regulations, procedures and muster stations
22	Shown the observer which electronic bridge equipment is used and which is not used
23	Shown the observer how to obtain position and UTC time and date from the onboard GPS and plotter to which they have access to during the trip
24	Understood that offering excessive alcohol to observers may interfere with their work duties and general conduct; and be aware that many observers are required by their programmes' Code of Conduct not to drink alcohol at any time while onboard the vessel
25	Ensured observer's compulsory 2-way communication device is tested and working.

# Support Form 1 (Page 2) Observer Placement Meeting Records

Fill in the header details for page 2 (see page 3).

<b>SPC/FFA REGIONAL OBSERVER OBSERVER PLACEMENT MEETING RECORD</b>	<b>FORM SUP-1</b> (pg2)
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REV . 2018

OBSERVER NAME	VESSEL NAME	OBSERVER TRIP ID NUMBER
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Observer checks the vessel safety equipment on board and circles YES or NO. Refer to the list of safety checks below.

<b>VESSEL SAFETY CHECK</b>		<b>COMMENTS</b>
		<small>CIRCLE ONE</small>
1	VESSEL SURVEY DOCUMENTATION (Current)	<b>Yes No</b>
2	CORRECT SIZE PERSONAL FLOATATION DEVICES AVAILABLE	<b>Yes No</b>
3	APPROVED LIFERAFT OR LIFEBOATS UNDER CURRENT SURVEY AND ADEQUATE FOR NUMBER OF CREW	<b>Yes No</b>
4	EPIRBs (Current Survey)	<b>Yes No</b>
5	DISTRESS SIGNALS AND FLARES	<b>Yes No</b>
6	FIRE FIGHTING EQUIPMENT IN GOOD ORDER	<b>Yes No</b>
7	FIRE EXTINGUISHERS (Current Checked)	<b>Yes No</b>
8	MARINE RADIO HF SSB or SUBITUTE COMMUNICATIONS	<b>Yes No</b>
9	NAVIGATION LIGHTS / VESSEL LIGHTS (Working Order)	<b>Yes No</b>
10	SOUND PRODUCING DEVICES OR BELL	<b>Yes No</b>
11	REGISTRATION DOCUMENTATION IN ORDER	<b>Yes No</b>
12	OTHER WORK RELATED VESSELS ON BOARD THAT COULD BE UTILISED IN CASE OF EMERGENCY	<b>Yes No</b>
13	NAUTICAL CHARTS AND NAVIGATION AIDS (GPS/RADAR)	<b>Yes No</b>
14	FIRST AID EQUIPMENT	<b>Yes No</b>
15	SANITATION	<b>Yes No</b>
16	PHONE	<b>Yes No</b>
17	EMAIL / FAX	<b>Yes No</b>
18	INSURANCE FOR OBSERVER WHILST ON BOARD	<b>Yes No</b>
19	VESSEL INSURANCE	<b>Yes No</b>
20	ROOM FOR CREW AND OBSERVER TO WORK SAFELY	<b>Yes No</b>

Observer did not board the vessel due to safety issue. Record the reasons in the data field below and at the bottom of page 2.

**THE OBSERVER WAS PRESENT FOR THE VSC AND AGREES TO BOARD THE VESSEL YES / NO**

(If no: record the reasons here and continue on to another attached page if necessary)

## Support Form 2 Workbook Reference Forms

### Header details

SPC/FFA REGIONAL OBSERVER WORKBOOK REFERENCE FORM		FORM SUP-2 for Purse Seine
REV . 2018		
<b>TRIP DETAILS</b>		
OBSERVER NAME	TRIP START LOCATION	TRIP START DATE (YY/ MM/DD)
VESSEL NAME	TRIP END LOCATION	TRIP END DATE (YY/MM/DD)
OBSERVER TRIP ID NUMBER		

A SUP-2 must be filled in and submitted for each observer trip. Fill in the header details for SUP-2.

A SUP-2 covers how many forms in each form category were filled in during the trip. The best time to do this is at the end of the trip. One page is filled for each support form, SUP 1 (page 1 & 2), SUP 2, SUP 3 & SUP 4.

For PS forms, count the number of pages for PS 2, 3, 4 & 5 and record the total on the 'how many pages' data field. PS-1 (page 1 & 2) is one page each. General forms (GEN) 3 is page 1 and 2 and the rest of the GEN forms should have been filled out and can be more than one page.

<b>OBSERVER PROGRAMME DETAILS</b>			
Name of placement observer programme			
Name of observer's national programme			
Cross-endorsed trips: Programme Name and Trip Id Number			
<b>SPECIAL PROJECTS</b>			
Special Projects: Name and Reference Number			
Special Projects: Name and Reference Number			
<b>FORMS MANAGEMENT</b>			
FORMS TYPE	NAME OF FORM	How Many ?	
SUP-1 (page1)	Placement Form (pg1)		
SUP-1 (page 2)	Placement Form (pg2)		
SUP-2	Workbook Reference Form		
PS-1 (page 1)	Purse-Seine General Information (pg1)		
PS-1 (page2)	Purse-Seine General Information (pg2)		
PS-2	Purse-Seine Daily Information		
PS-3	Purse-Seine Set Details		
PS-4	Purse-Seine Length Measurement		
PS-5	Well Transfer Reconciliation Form		
GEN-1	Vessel and Aircraft Sightings/ Fish Bunkering & Other Transfers		
GEN-1 supp	Vessel and Aircraft Sightings/ Fish Bunkering & Other Transfers		
GEN-2	Species of Special Interest - vessel interactions		
GEN-2 supp	Species of Special Interest - sightings		
GEN-3 (page 1 + page 2)	Vessel Trip Report (pg1+pg2) - <b>you must fill in this form!</b>		
GEN-4	Conservation Factors		
GEN-5	FAD/PAYAO and Floating Object Information Record		
GEN-6	Pollution Report		
SUP-3	Trip Reconciliation Form		
SUP-4	Advances and Claims Forms		
TAG	Tag Recovery Forms (single and mutiple tags)		
JOU	Journal	(RECORD TOTAL NUMBER OF PAGES)	
RPT	Trip Report Submitted	Yes or No	
<i>*** Observers are not required to fill in the shaded areas below***</i>			
<b>DEBRIEFING DETAILS</b>			
NAME of PRE-DEBRIEFER		NAME OF DEBRIEFER	
DATE of PRE-DEBRIEFING		DATE OF DEBRIEFING	
PLACE of PRE-DEBRIEFING		PLACE OF DEBRIEFING	
<b>WORKBOOK TRANSFER</b>			
WAS THIS COPY DEBRIEFED BEFORE TRANSFER?	YES or NO		
DATE TRANSFERRED			

## Support Form 3 Trip Reconciliation

### Header details

SPC/FFA REGIONAL OBSERVER TRIP RECONCILIATION			FORM SUP-3
REV. DEC. 2016			
OBSERVER NAME	VESSEL NAME	VESSEL CALL-SIGN	OBSERVER TRIP ID No.

Fill in the header details.

TRAVEL DETAILS									
EVENT CODE	DEPARTURE			ARRIVAL			ACTIVITY CODE	DAYS	COMMENTS
	PLACE OR VESSEL	DATE	TIME	PLACE OR VESSEL	DATE	TIME			

The trip reconciliation form covers observer travel details (see above) from the start of the observer's trip from home port to the vessel and onward at sea. It also covers the observer's return trip back to home port. The form is very useful to capture the number of days at sea and the number of days in port, and places of transit to the vessel and back to home port.

Use the event and activity codes below to fill in the two data fields. An 'Event' is something that happens during transit or out at sea, occurring at a point in time, without duration. An 'Activity' is what the observer does and it takes time, for example the number of days an observer is out at sea, such as 35 days. The total number of days for each activity be recorded under days column. Add comments for clarification in the comments column if needed.

Use the local date and time during stopovers and while travelling to the vessel and back to home port. Record ship's date and time while on board the vessel.

### Event and Activity Codes

<b><u>ALL DETAILS TO BE FILLED OUT IN A CHRONOLOGICAL ORDER</u></b>			
EVENT CODES		ACTIVITY CODES	
Observer boards plane	BP	Air Flight	AF
Observer boards ferry	BF	Ferry Trip	FT
Observer arrives in stopover port or town	OS	Observer stopover travelling to or from vessel	SO
Observer arrives in port for start of trip	OA	Observer waiting for vessel departure on shore	OW
Observer boards vessel	BV	Observer transiting home after trip	TR
Vessel departs port with observer	VD	Vessel in Port (observer onboard)	VP
Vessel arrives in port with observer	VA	Vessel at Sea (observer on board)	VS
Observer disembarks vessel	DV		
Observer transfers to a different vessel	OT	Other (describe in comments)	OR

# Support Form 4 Advances and Claims Form

Fill in the Header details for this form.

SPC/FFA REGIONAL OBSERVER ADVANCES and CLAIMS FORM			FORM SUP-4
REV. 2018			
OBSERVER NAME	VESSEL NAME	IRCS	PAGE OF

## Advance details

ADVANCES							
Advance Claim Ref No.		NAME OF OBSERVER PROGRAMME or FISHING COMPANY MAKING ADVANCE	NAME OF PERSON PROVIDING ADVANCE	SIGNATURE (of person making advance)	State TYPE of ADVANCE (i.e. cash /other)	Curr-ency	Amount
ADV #	Observer Trip ID No						
1							
2							
3							
4							

### Advance Claim Reference Number (Ref No.)

The advance claim reference number is a mixture of a 'claim' number and the observer trip ID number. Combined, these numbers help to uniquely identify each observer advance so it can be reimbursed to the person that made the advance. In the future, advances will not be reimbursed if they don't have the advance claim reference number. It is important that you notify the person making the advance of the number and get them to sign the form (see below). If possible, make sure they get a photocopy of the form after they have signed it. An example of an advance claim reference number is ADV #1: ELE 15-07.

### Name of observer programme or fishing company making advance

State the name of the observer programme or the fishing company that provided the advance. You should include the full contact details for the fishing company in your journal. Remember to record the full mailing address, the email and phone number in the journal.

### Full name of person providing the advance

Clearly record the full name of the person that gave you the advance.

### Signature of person making advance

You must get the signature of the person who made the advance. In future, the person or their observer programme or fishing company will not be paid back the advance if this form is not filled in. If the advance was sent from overseas, your observer coordinator must sign the form.

### Type of advance

State if you received cash, traveller's cheque or a bank transfer.

## Currency

State the currency that was received (i.e. US for US dollars, YEN for Japanese yen, FJ for Fijian dollars, etc.)

## Amount

State the amount that was received in figures to two decimal places.

## Claim details

OBSERVER EXPENSE CLAIMS FOR REIMBURSEMENT							
Claim item [number (#) each receipt]		Curr-ency	Amount	Claim item [number (#) each receipt]		Curr-ency	Amount
EXP #	Description			#	Description		
1				13			
2				14			
3				15			
4				16			
5				17			
6				18			
7				19			
8				20			
9				21			
10				22			
11				23			
12				24			

1. All receipts should be dated and have the name of the company clearly indicated. A cash register receipt must be clear and have the item purchased listed on the receipt. If this is not available, ask for a handwritten receipt with the company name on the receipt. Remember to record what the currency is on each receipt.
2. If no receipts are available (e.g. taxis) list these items on a sheet with full details, dates and currency, and sign the sheet.
3. Make sure all claim receipts are numbered and are placed in a separate envelope along with used and/or unused airline tickets. Send the envelope with workbooks. Under no circumstances send anything by normal or surface mail.
4. Observers can claim work related taxi/bus fares, airport tax, safety deck boots, helmets, etc. If you are not sure if you can make a claim for an item, put a claim in and your coordinator will assess the claim.
5. Safely package (preferably in a padded envelope) data and workbooks, the envelope containing receipts, photographs and/or any other items, and make sure they are hand delivered, sent by courier, or sent by express registered mail. Normal or surface mail can take months and will delay final payment. All costs of sending the packages by courier or express mail are refundable. UNDER NO CIRCUMSTANCE MAIL THESE ARTICLES BY NORMAL OR SURFACE MAIL.
6. Fax a copy of this form to your main office or as advised by your coordinator. Send the original copy with the receipts.
7. Although DSA (per diem/travel and accommodation allowances) covers accommodation, copies of hotel/motel receipts that show clearly the dates stayed, must be sent in. Do not send in receipts for food purchases or personal items.

<b>Tick one box only:</b>	<input type="checkbox"/> Please make payments to: ..... <div style="text-align: center; margin-left: 150px;"><small>(payee's name)</small></div> <div style="text-align: right; margin-right: 50px;"><small>observer's signature</small></div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 30%;"><small>(bank)</small></div> <div style="width: 30%;"><small>(branch)</small></div> <div style="width: 30%;"><small>(account number)</small></div> </div>
	<input type="checkbox"/> Please arrange for funds to be available on presentation of passport
<p>Written report and data was sent by: ..... on ..... Register ed mail .....</p> <p style="text-align: center;"><small>(hand carried, courier, express mail, etc.)</small>      <small>(date)</small></p> <p>I certify that the expense claims and dates of travel and sea days are a true account of expenses and dates of travel; and I verify that my independent report and data collection is a true and correct record of my observations onboard the vessel</p> <p style="text-align: center;">SIGNED: _____ Date: _____</p>	

#### Payment details

1. Fill in the observer bank account details: Full name, bank, account number and signature.
2. Fill in how the data, journal and trip report were sent to observer programme, for example, FFA.
3. Sign and date the bottom of the form that claims, data, journal and trip report are verified and true.

# Trip report

The purse-seine trip report template has headings and each heading has descriptions of what to look for and what to write under each heading.

The headings include: the trip background, cruise summary, data collection, vessel and crew details, fishing gear and operations, electronics, safety equipment, waste and offal reporting, fishing strategy, chain of custody, environmental conditions, catch details, sampling protocol, fish well loadings, general reporting, vessel trip monitoring, conclusion and recommendations, and acknowledgments.

Each heading is further broken down into subheadings with explanations under them. Some examples of headings, subheadings and descriptions from the trip template are outlined below:

## 1.0 BACKGROUND

Describe the primary and secondary objective of the trip and the reasons for covering this vessel. Name the placement officer (if none, name the person who sent you on the trip). Was enough time given to prepare for the trip? Was there a proper placement meeting between the captain/master, vessel owner/agent and observer? State if there were any problems with briefing, placement or boarding procedures.

## 2.0 CRUISE SUMMARY

Summarise the trip in a few paragraphs using the following guidelines:

- a) Departure, date and time, name of port (was departure delayed, and if so, why?)
- b) Total number of days at sea; total number of sets.
- c) General outline description of areas fished.
- d) Total metric tonnage of target tuna species (bigeye, yellowfin and skipjack) retained.
- e) Name each of the other species taken.
- f) Return date, time and name of return port.
- g) If this was an incomplete trip, state the reason it was not complete (i.e., the observer returned to port for any reason other than the vessel's complete unloading).
- h) Any extraordinary events, such as major breakdowns, serious injuries, rescues of others, etc.

## 4.3 Fishing gear

Briefly describe the general state of fishing gear – old, new, well maintained, poorly maintained, etc. Describe, in detail, if there was a new type of equipment or if there were advances or a significant upgrade in current electronics. Also describe if the captain or officers used any equipment in a way that was unusual compared to previous experiences. Describe the length and diameter of the purse cable. Explain why any of the data fields for fishing gear on form PS-1 were marked with a dash. Note if there were any problems understanding fishing gear information.

### Subheading under fishing gear

#### 4.3.1 Brail

Describe each type of brail. If possible, write down the brail specification (the diameter and length of the netting used). Were brails of different type or capacity used at any time during the trip? Describe all the brailing processes: how the mouth of the net was held open during brailing, such as by the skiff, boom or otherwise; what types of winches were used to move the brail; was there a short, long or no handle on the brail; did they use a hopper or was the fish brailed straight down the chutes. In particular, describe the processes involved if a brail flap was

used for live fish brailing. Submit photos or video if possible. How did you estimate the capacity of the brail(s) – for example, was there twine or other markers on the brail to help calibrate it? Note any problems obtaining any brail information that needs to be gathered. In particular, mention if there were problems finding out a metric tonne size for the brail.

#### **4.3.2 Net**

Describe here any unusual or special features of the net or strip formation (e.g. dolphin panels). Describe any mitigation methods included in any parts of the net. If possible, submit photos or sketch diagrams to illustrate the characteristic features of the net, or attach a net diagram. Ask the person who oversees the net (e.g. the engineer/deck boss/fishing master) to assist you.

### **Heading and subheading under Sampling**

#### **9.0 SAMPLING**

##### **9.1 Grab Sampling**

Describe exactly how you carried out your normal (previously called random) sampling. How were fish collected from the brail? Did the crew try to help? Was it possible to get five fish from every brail? If not, how did you recover the fish? What measuring instrument was used? Was it calibrated? If there were any calibration differences, note them here.

##### **9.2 Spill Sampling**

Were you involved in spill sampling? Describe exactly how you carried out the sampling. Did you have any problems carrying out the spill sampling protocol? Mention if there were any problems with the bin or measuring device here. Do you have any recommendations for carrying out this sampling protocol?

Observers are required to follow the exact format on the purse-seine report template.

The purse-seine observer trip report should be submitted within 7 days of the end of the trip. The observer trip report must be completed and submitted before full debriefing.

Below are sections of the observer trip report template extracted from observer Mesake Dagonayasi's trip report of Fiji.

## SPC/FFA REGIONAL STANDARD PURSE SEINE TRIP REPORT

### 1.0 BACKGROUND

Describe the primary and secondary objective of the trip and the reasons for covering this vessel. Name the placement officer (if none, name the person who sent you on the trip). Was enough time given to prepare for the trip? Was there a proper placement meeting between the Captain / Master, vessel owner/agent and observer? State if there were any problems with briefing, placement and boarding procedures.

The primary objective of the trip is to monitor and record the vessel's fishing activities in terms of set positions, success rate, catch quantity and quality, for conservation and management compliance. This is given to the relevant authority for monitoring and management of tuna stocks and vessel compliance to license conditions in terms of conservation management.

The secondary objective is to gather raw data like fish lengths, catch positions, catch quantity and quality, catch species composition, weather, moon phase, sea temperature and vessel fishing effort and strategy. This is given to the scientific community for research purposes and also the monitoring and managing of tuna stocks.

There was a proper placement meeting between the vessel Master and observer by Mr Steve Kostelnik the placement officer for the trip. There were no problems during briefing, placement and boarding procedures. Observer had enough time to prepare for the trip.

## 2.0 CRUISE SUMMARY

Summarise the trip in a few paragraphs using the following guidelines:

- Departure, date and time, name of port (was departure delayed and, if so, why?);
- Total number of days at sea; total number of sets;
- General outline description of areas fished;
- Total metric tonnage of target tuna species (bigeye, yellowfin and skipjack) retained;
- Name each of the other species taken;
- Return date, time and name of return port;
- If this was an incomplete trip state the reason it was not complete (i.e. the observer returned to port for any reason other than the vessel's complete unloading).
- Any extraordinary events - major breakdowns, serious injuries, rescues of others, etc.;

Vessel departed from Pago Pago, American Samoa at 1602 hrs on Wednesday 3<sup>rd</sup> of October, 2018. The vessel was delayed waiting for Observer and as soon as Observer boarded vessel, placement procedures were done and vessel left for fishing ground.

Vessel spent a total of forty one days at sea coming back into port on the forty-second day. It conducted a total of forty-six sets on the trip, seven of which were skunk sets.

Vessel spent fifteen days in Tokelau, two days transiting in International Waters, seven days in Cook Islands, fourteen days in Kiribati and two days in Western Samoa Waters. It brought a total of 1591 metric tonnes, 77 metric tonnes of which were yellowfin tuna, 150 metric tonnes were juvenile bigeye and yellowfin and a total of 1365 metric tonnes of skipjack tuna.

Vessel entered back into port of Pago Pago on Wednesday the 14<sup>th</sup> of November, 2018. It was a complete trip for observer from start of trip to end of trip, and there were no extraordinary events like major breakdowns or serious injuries on this trip.

## 3.0 DATA COLLECTED

The SPC/FFA Regional Purse Seine Observer Data Collection Forms were used during the trip. Ensure that the workbook reference page is filled in to show the number of pages of each form type that were filled. Was a placement form filled in. Mention who was responsible for submitting the placement form (normally the placement officer. Mention any other forms that were filled in for special projects, cross-endorsed trips etc.

All the Observer Data Collection Forms filled were numbered and tallied in the Workbook reference page. The placement form was filled in, a photo was taken of it, and the photo saved by the placement officer Steve Kostelnik, but the form remained in the workbook. There were no other special projects carried out on this trip and no other forms or cross-endorsement forms filled.

### 4.3 Fishing gear

Briefly describe the general state of fishing gear – old, new, well maintained, poorly maintained. Describe, in detail, if there was a new type of equipment or if there were advances or a significant upgrade in current electronics. Also describe if the Captain or officers used any equipment in a way

that was unusual compared to previous experiences. Describe the length and diameter of the purse cable. Explain why any of the data fields for fishing gear on form PS-1 were dashed. Note if there were any problems understanding fishing gear information.

All the fishing gears are new and maintained in new condition. The purse winch was an only one made by Broadwater Marine in New Zealand. It was designed specifically for the vessel when vessel was extended there in 2003. There were no advances or significant upgrades in electronics seen on vessel as compared to other vessels. There was also no unusual use of equipment by officers seen on vessel as observed and all are regular equipment as seen on other purse seiners. The length and diameter of the purse cable was not obtained by observer. Other details were filled in the PS-1 form.

#### 4.3.1 Brail

Describe each type of brail. If possible write down the brail specification (the diameter and length of the netting used). Were brails of different type or capacity used at any time during the trip? Describe all of the brailing process: how the mouth of the net was held open during brailing - by the skiff, boom, or otherwise; what types of winches were used to move the brail; was there a short, long or no handle on the brail; did they use a hopper or was the fish brailed straight down the chutes. Especially describe the processes involved if a brail flap was used for live fish brailing. Submit photos or video if possible. How did you estimate the capacity of the brail(s) – for example, were there twine or other markers on the brail to help calibrate it? Note any problems understanding any brail information that needs to be gathered. Especially mention if there were problems finding out a metric tonne size for the brail. Were there any changes to brail size during the trip?

There was only one heavy frame brail used on the vessel with a capacity of 6 mT. It is operated by hydraulic and winches. The diameter and length of netting used on the brail was not obtained by observer. The mouth of the net is held open by the boom and skiff and winches were used for the brail, which were emptied on a hopper, fish were sorted, discards discarded then down the chutes. There were no markers or twine on the brail to help calibrate, except on the halfway mark which has some sort of joint between the top and lower part of the brail. Observer had a lot of problems estimating total catch if it was more than hundred tons and a lot of difference between his and vessel log catch.

### 9.1 Grab Sampling

Describe exactly how you carried out your normal (previously called random) sampling. How were fish collected from the brail? Did the crew try to help? Was it possible to get five fish from every brail? If not how did you recover the fish? What measuring instrument was used? Was it calibrated? If there were any calibration differences note them here.

Tunas picked for grab sampling were randomly picked from the hopper when fishes were being sorted. For each brail, fishes were brailed into the hopper, bycatch were discarded before tunas were released down the chute. While on the hopper, five tunas were randomly grabbed and measured with the aluminium calliper. Most times only three were sampled for each brail, because observer was late in measuring five, when it is a big catch. The calliper is not calibrated before each set.

### 9.2 Spill Sampling

Were you involved in spill sampling? Describe exactly how you carried out the sampling? Did you have any problems carrying out the spill sampling protocol? Mention if there were any problems with the bin or measuring device here. Do you have any recommendations for carrying out this sampling protocol?

There was no spill sampling done on this trip.

### 9.3 Other Sampling

What other sampling protocols did you use? Describe any spill sampling that was carried out. Write more under special project if required. Explain each sampling protocol used and exactly how it was used. Most observers will use the "BA - bycatch all available species" sampling protocol during their trips. You should explain how this was carried out. If you were requested to do any other sampling by your Coordinator record exactly how this was carried out here.

Note if you used the new other sampling code 'LB' - live brail or 'SS' - Species of special interest.

Three other sampling protocol used were BS, SS, YFT/BET. This were each done beside normal grab sample which is done on every set.

BS - only selected bycatches which are mostly the big bycatches species.

SS - only species of special interest which are silky sharks<sup>20</sup> landed. This was done only once beside normal grab when there was plenty silky sharks landed.

## List of Codes

### Country Codes

AS	American Samoa
AU	Australia
BZ	Belize
CK	Cook Islands
CA	Canada
EC	Ecuador
SV	El Salvador
FM	Fed. States of Micronesia
FJ	Fiji Islands
FR	France
PF	French Polynesia
GU	Guam
ID	Indonesia
IW	International Waters
JP	Japan
TO	Kingdom of Tonga
KI	Kiribati
KR	Korea
LT	Lithuania
CN	Mainland China
MY	Malaysia
MT	Malta
MH	Marshall Islands
NR	Nauru
NL	Netherlands
NZ	New Zealand
NC	New Caledonia
NU	Niue
MR	Northern Mariana
PG	Papua New Guinea
PH	Philippines
RU	Russia
SB	Solomons Islands
TW	Chinese Taipei (Taiwan)
TK	Tokelau
US	United States
VU	Vanuatu
WF	Wallis and Futuna
WS	Samoa
PW	Palau
PA	Panama

### Species of Special Interest (SSI)

<b>TTX</b>	<b>All Turtles</b>
TTL	Loggerhead Turtle
LTB	Leatherback Turtle
TUG	Green Turtle
LKV	Olive Ridley Turtle
TTH	Hawksbill Turtle
KEZ	Eastern Pacific Green Turtle (black turtle)
FBT	Flatback Turtle
<b>MAM</b>	<b>All Marine Mammals</b>
ODN	False Killer Whale
SHW	Short-Finned Pilot Whale
SPW	Sperm Whale
KPW	Pygmy Killer Whale
DWW	Dwarf sperm whale
BCW	Cuvier's Beaked Whale
BBW	Blainville's Beaked Whale
MEW	Melon Headed Whale
MYS	Baleen Whale
BLW	Blue Whale
FIW	Fin Whale
SIW	Sei Whale
BRW	Bryde's Whale
MIW	Minke Whale
HUW	Humpback Whale

### Dolphins

DLP	All Dolphins
DBO	Bottlenose Dolphin
DCO	Common Dolphin
DRR	Risso's Dolphin
DSI	Spinner Dolphin
DSP	Spotted Dolphin
DST	Striped Dolphin
RTD	Rough-toothed Dolphin

<b>SHK</b>	<b>All Sharks</b>
RHN	Whale Shark
OCS	Oceanic White-tip Shark
FAL	Silky Shark

### BIZ All birds

DKN	Black-footed Albatross
DIZ	Laysan Albatross
ALZ	Albatrosses
SZV	Boobies and Gannets
PRX	Petrels and Shearwaters
LRD	Gulls, Terns, Skuas

### Activity and Helicopter codes

1	Set
2	Searching
3	Transit
4	No fishing – Breakdown
5	No fishing – Bad weather
6	In port – please specify
7	Net cleaning set
8	Investigate free school
9	Investigate floating object
10D	Deploy – raft, FAD or payao
10R	Retrieve – raft, FAD or payao
11	Drifting at day's end
12	Drifting with floating object
13	Other reason (specify)
14	Drifting –With fish aggregating lights
15R	Retrieve radio buoy
15D	Deploy radio buoy
16	Transshipping or bunkering
17	Servicing FAD or floating object
18	Drifting – No fishing
H1	Helicopter takes off to search
H2	Helicopter returned from search

### How detected

- 1 Seen from vessel
- 2 Seen from helicopter
- 3 Marked with beacon
- 4 Bird radar
- 5 Sonar/depth sounder
- 6 Info from other vessel
- 7 Anchored, FAD/payao (recorded)

### School Association (tuna)

- 1 Unassociated
- 2 Feeding on Baitfish
- 3 Drifting log, debris or dead animal
- 4 Drifting raft, FAD or payao
- 5 Anchored raft, FAD or payao
- 6 Live whale
- 7 Live whale shark
- 8 Other (please specify)
- 9 No tuna associated

### Fate codes

- RWW – Retained – whole weight
- RHG – Retained – headed and gutted (billfish only)
- RGG – Retained – gilled and gutted (kept for sale)
- RPT – Retained – partial (e.g. fillet, loin)
- RCC – Retained – crew consumption (on board)
- ROR – Retained – other reason (specify)
- RFR – Retained trunk – fins retained (shark only)
- DFR – Discarded trunk – fins retained (shark only)
- DTS – Discarded – too small (tuna only)
- DGD – Discarded – gear damage (tuna only)
- DVF – Discarded – vessel fully loaded
- DUS – Discarded – unwanted species
- DSD – Discarded – shark damage DWD Discarded – whale damage
- DPQ Discarded – poor quality
- DOR – Discarded – other reasons (specify)
- ESC – Escaped  
(use these fate codes for any SSIs landed on deck)
- DPA – Discarded Protected Species – Alive
- DPD – Discarded Protected Species – Dead
- DPU – Discarded Protected Species – Unknown

### Gear interaction codes

- IEN – Entangled (in gear)
- IJO – Jumped out (over net)
- ICR – Crew released from net
- IBR – Broke through net
- OTH – Other, please specify

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ISBN 978-982-00-1399-5



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