

Commentary on Provisional minimum list of fields of scientific data to be collected by the Regional Observer Programme

Text in square brackets indicates fields of data for which consensus has not yet been achieved.

Table 1. Vessel and trip information

VESSEL IDENTIFICATION				
Data item	Justification	Units	References / comments	Suggested units
Name of vessel	primary identification, IUU issues	text, numbers, symbols, as on registration papers	full names whenever possible	
Flag	identifying the jurisdiction under which the vessel is registered, IUU issues	full name of country in which vessel is registered (flagged)		
Flag state registration number	second ID item, provides clue to source of confirming information on vessel ownership, IUU issues	as issued by flag country on registration certificate		
International radio call sign (IRCS)	third ID item, IUU issues	exact		

TRIP INFORMATION

Data item	Justification	Units	References / comments	Suggested units
Date and time of departure from port	to help identify (in conjunction with vessel ID) and delineate/define trip – a unit used to catalogue data and occasionally as a measure of effort; used to link and reconcile different data types (observer, port sampling, unloadings, receipts), trip also useful unit in observer management	dd mm yy	N.B.: dates and times required are UTC but for practical purposes observers record “ship’s” time at operational level and only sufficient UTC time daily so that UTC can be calculated from ship’s time.	
Port of departure		hh mm		
Date and time of return to port ¹		full names of		
Port of return ¹		ports		

¹ This should not be an observer data requirement – not possible if observer leaves vessel before vessel returns to port – date and place of disembarkation are covered in observer information and could also be a reasonable expectation for an observer to also record as trip information

OBSERVER INFORMATION

Data item	Justification	Units	References / comments	Suggested units
Observer name	important for management of observers, verifying authenticity of observers and in data quality control	common (1 st) and family (2 nd) name in full		
Observer's ROP certification number	important for management of observers, verifying authenticity of observers and in data quality control	in full		
Date, time and location that observer embarked	used to calculate fees and other aspects of observer management	dd mm yy, hh mm, full name of port or "at sea" if transferred from another vessel – for each vessel boarded.	Not necessarily a duplication of the vessel trip information and it is important to recognise the differences, starting with clear labelling	
Date, time and location that observer disembarked	used to calculate fees and other aspects of observer management			

CREW INFORMATION

Data item	Justification	Units	References / comments	Suggested units
Name of captain	ID, important factor when considering the role of different gear types as a component of effort - indicator to fishing vessel/efficiency estimates	common (1 st) and family (2 nd) name in full		
Nationality of captain	ID, socio-economic studies	full name of country		
Name of fishing master	ID, important factor when considering the role of different gear types as a component of effort - indicator to fishing vessel/efficiency estimates – distinguish experienced/inexperienced masters	common (1 st) and family (2 nd) name in full	Ward 2007	
Nationality of fishing master	ID, socio-economic studies	full name of country		
Other crew	socio-economic studies and possible reflection of effort, monitoring access and licensing requirements to use certain nationals as crew	numbers of each nationality		

VESSEL ATTRIBUTES

Data item	Justification	Units	References / comments	Suggested units
<i>To be determined</i>				

VESSEL ELECTRONICS

Data item	Justification	Units	References / comments / suggested units
Radars	capacity for effort (standardisation studies), safety appraisal	yes or no, usage code ² , make, model, comment	only yes or no required for longline
Depth sounder			
Global positioning system (GPS)	capacity for effort (standardisation studies), to better understand any issue with observers recording positions	yes or no, usage code	suggest the unit should be availability to observer (codes: 1=full access, etc.) else little point to this as minimal costs allow all vessels to have pin-point accurate GPS Ward 2007
Track plotter	capacity for effort (standardisation studies), compliance/enforcement		
Weather facsimile	capacity for effort (standardisation studies)	yes or no, usage code	suggest remove this field and replace with field “method of weather monitoring” and provide observers with options codes (e.g.: 1=weather fax; 2=real time satellite)
Sea surface temperature (SST) gauge	capacity for longline effort, oceanographic studies	yes or no, usage code	
Sonar	capacity for effort (standardisation studies)	yes or no, make, model, usage code , comment	Inoue 1961, Ward 2007

² See [codes](#) at end of document

Radio/ Satellite buoys	capacity for effort (standardisation studies)	No. of each type – call-up, non-call-up, GPS, GPS-sounder, other	suggest tick off each type in use (forget about numbers), is there any point for longliners or regular radio buoys generally unless a ruling on compulsory buoy identification?	
Doppler current meter	capacity for effort (standardisation studies), prevailing currents affect net manageability and hook depth	yes or no, make, model, usage code, comment	Boggs 1992, Uozumi and Okamoto 1997, Mizuno et al 1997, 1999, Ward 2007	
Expendable bathythermograph (XBT)	capacity for effort (standardisation studies)		longline only, Ward 2007	
Satellite communications services	capacity for effort (standardisation studies), observer management			
[Fishery information services]	capacity for effort (standardisation studies)	information type ³	Faji et al 1990, Ward 2007	
Vessel monitoring system	verify vessel compliance with fishing areas, geographic aspect of population studies			

³ E.g.: phytoplankton; sea surface temperature; and/or sea height

Table 2. Longline information and data

VESSEL ATTRIBUTES				
Data item	Justification	Units	References / comments	Suggested units
Refrigeration Method	Socio-economic studies; some reflection of effort – capability to stay at sea			
GENERAL GEAR ATTRIBUTES				
Mainline material	effort, sink rate of gear – bycatch mitigation, characterise gear config., of wider fleet, determination of depth of gear (materials affect fishing depth and catchability) – relevance to CPUE of target species, bycatch issues, etc.			
Mainline length	characterise gear config., of wider fleet, spatial coverage of fishing effort; determination of depth of gear – relevance to CPUE of target species, bycatch issues, etc.			
Mainline diameter	characterise gear config., of wider fleet, determination of depth of gear (materials affect fishing depth and catchability) – relevance to CPUE of target species, bycatch issues, etc.			
Branch line material(s)	effort, targeting, characterise gear config., of wider fleet, determination of depth of gear – relevance to CPUE of target species, bycatch issues, etc.		Hoyle et al 2007	

SPECIAL GEAR ATTRIBUTES				
Data item	Justification	Units	References / comments	
[Wire trace]	affects catch rates so important data for target species, species of special interest (SSP) and shark CPUE studies and mitigation studies	yes / no	Ward et al.; etc (SC3-2006) diameter, is it plastic coated ?	
[Mainline hauler]	important for CPUE and mitigation studies (SSP)	yes / no,		
[Branch line hauler]	important for CPUE and mitigation studies (SSP)	usage code		
[Line shooter]	effort, depth of gear set, SSP mitigation	yes / no,	Suzuki 1977, Hanamoto 1987, Boggs 1992, Uozumi/Okamoto 1997, Mizuno et al 1997, Campbell 2005 (SC1-FT WP1)	
[Automatic bait thrower]	important for CPUE and mitigation studies (SSP)	usage code		
[Automatic branch line attacher]	important for CPUE and mitigation studies (SSP)	yes / no,		
[Hook type]	important for CPUE (target, bycatch and SSP) standardisation and mitigation studies and monitor rate of adoption for turtle/seabird mitigation		Hawaii swordfish fishery, Azores, etc. J, circle (or G), Japanese tuna, degree of offset (0, 10, 20 etc.), Kim et al 2007, Hoyle et al 2007	
[Hook size]	Important to bycatch and mitigation studies (e.g. seabirds), target CPUE, size of fish caught			
[Tori pole]		yes / no,	Yokota et al 2007	yes / no,
[Bird curtain]	data important to bycatch and SSP mitigation (especially bird) studies, CPUE implications	usage code	SC3 and WCPFC3	length, material, etc.
[Weighted branch lines]	data important to bycatch and SSP mitigation (especially bird) studies, CPUE implications	yes / no,	Hoyle et al 2007; details - location of weight (or weighted cord)	
[Blue dyed bait]	SSP mitigation (especially bird) studies, CPUE	usage code	SC-3 and WCPFC 3	
[Underwater setting shoot]		yes / no,		
[Disposal method for offal management]	data important to bycatch and mitigation studies (e.g. seabirds)	usage code		

SET AND HAUL INFORMATION				
Data item	Justification	Units	References / comments	
Date and time of start of set	effort, important operational data – CPUE vary with time of set – day/night differences	ddmmyy hhmm	Campbell et al 1997, Hoyle et al 2007	
Latitude and longitude of start of set	crucial, effort, stock assessment, ecosystem based fisheries management, sea mount studies		Hoyle and Langley, 2007	
Date and Time of end of set	effort, important operational data – CPUE vary with time of set – day/night difference, setting time and overall gear soak time	ddmmyy hhmm	Hoyle et al 2007	
Latitude and longitude of end of set	effort, stock assessment, ecosystem based fisheries management, sea mount studies, infers set shape			
[Total number of baskets or floats]	investigations of fishing methods, efficiency, effort (standardisation), length of set crucial	total number	SC-3 methods paper on standardisation	
[Number of hooks per basket or number of hooks between floats]	investigations of fishing methods, efficiency, catch rates (standardisation), effort, and where/what effort is targeting, relevant to mitigation studies and management options analyses	number	Suzuki 1977, Hanamoto 1987, Boggs 1992, Hinton and Nakano 1996, Uozumi/Okamoto 1997, Bigelow et al 2002, 2003, Campbell 2005 (SC1-FT WP-1), Langley et al 2006, 2007 SC-3 methods paper on standardisation; may need for each basket	
Total number of hooks used in a set		whole number	not required from observers if baskets and hooks per basket are collected	
[Length of float-line]	basic measure of effort – unnecessary if above two fields are adopted, CPUE standardisation	meters	Suzuki 1977, Hanamoto 1987, Boggs 1992, Hinton and Nakano 1996, Uozumi and Okamoto 1997, Nakano et al 1997, Yano et al 1998, Bigelow et al 2002, 2003	
[Distance between branch-lines]	varying typical behaviour to change fishing depth, where/what effort is targeting	meters	Suzuki et al 1977	

[Length of branch-lines]	where/what effort is targeting – depth of hook setting critical for standardisation of longline catch rates in order to obtain an index of biomass for stock assessments	metres	Suzuki 1977, Hanamoto 1987, Boggs 1992, Hinton and Nakano 1996, Uozumi and Okamoto 1997, Nakano et al 1997, Mohri and Yasuaki 1997, Yano et al 1998, Bigelow et al 2002, 2003 SC-3 methods paper on standardisation	
[Time-depth recorders (TDRs)]	fishing depth – catchability with respect to depth and temperature; indicates that information is available to calibrate other parameters that are used for assessing (critical) hook depth	yes / no, also useful to have location in basket	Boggs 1992, Mizuno et al 1996, Boggs 1996, Hinton and Nakano 1996, Bigelow et al 2002, 2003, Campbell 2005; Hoyle et al 2007	
[Number of light-sticks]	CPUE standardisation, indicates targeting – swordfish, marlin, bigeye ? night sets, investigations of fishing methods, efficiency, and relevant to mitigation studies and management options analyses			
Target species	important - relates closely to fishing method used; indicative – helps to verify and calibrate other target indicating data	tick appropriate option – tuna, shark, swordfish	Campbell 2005, Hoyle et al 2007,	
Bait species	effort – differing CPUE depending on bait – species specific CPUE, mitigation studies	FAO 3-letter ASFIS code	Ward and Myers 2006, Hoyle et al 2007, Ward 2007	
Date and time of start of haul	calculation of total soak time of haul	ddmmyy hhmm	Hoyle et al 2007	
Date and time of end of haul	calculation of total soak time of haul	ddmmyy hhmm	Hoyle et al 2007	
[Total number of baskets or floats observed]	to determine actual coverage rate of observers when data to be used in total catch estimations		SC-3	

INFORMATION ON CATCH FOR EACH SET				
Data item	Justification	Units	References / comments	
[Hook number between floats] i.e. hook number within a basket (hook location)	Fundamental purpose of observer data collection, in order to provide information on catches, stock status and fisheries impacts, as well as associated biological research; variation in species/size with hook location/depth for habitat standardisation methods for CPUE data	number	Hinton and Nakano 1996, Bigelow et al 2002, 2003, Campbell 2005, Hoyle et al 2007, Ward 2007	
Direction of haul	Needed to make sense of hook number (above)	same as setting / reverse to setting	added field - see notes Hoyle et al 2007, Ward 2007	
Species code	Fundamental purpose of observer data collection, in order to provide information on catches, stock status and fisheries impacts, as well as associated biological research	FAO 3-letter ASFIS code	Williams and Lawson 2007	
Length of fish	Fundamental purpose of observer data collection, in order to provide information on catches, stock status and fisheries impacts, as well as associated biological research; size frequency data for stock assessment and ecosystem research	truncated to whole cm.		
Length measurement code	conversion to common lengths across data sets	2-letter code ⁴		
Gender [of fish sampled]	Fundamental purpose of observer data collection, in order to provide information on catches, stock status and fisheries impacts, as well as associated biological research; biological studies for stock assessment and ecosystem research	1or2-letter code ⁵		

⁴ see [codes](#) at end of document

⁵ see [codes](#) at end of document

Condition when caught	Fundamental purpose of observer data collection, in order to provide information on catches, stock status and fisheries impacts, as well as associated biological research; mitigation management	2-letter code ⁶		
Fate	Fundamental purpose of observer data collection, in order to provide information on catches, stock status and fisheries impacts, as well as associated biological research; important for characterising discard behaviour of fleets; true mortality estimation; economics	3-letter code ⁷		
Condition when discarded	Fundamental purpose of observer data collection, in order to provide information on catches, stock status and fisheries impacts, as well as associated biological research; mitigation management, assessing survival rates of discards – target, bycatch, species of special interest – true fishing mortality estimation	2-letter code ⁸		
Tag recovery information	Fundamental purpose of observer data collection, in order to provide information on catches, stock status and fisheries impacts, as well as associated biological research; population dynamics; movement studies feeding into stock assessment	tag number, species, date, time and position caught, length and weight of fish if possible		

⁶ see [codes](#) at end of document

⁷ see [codes](#) at end of document

⁸ see [codes](#) at end of document

Table 3. Pole-and-line information and data

VESSEL ATTRIBUTES				
Data item	Justification	Units	References / comments	Suggested units
<i>To be determined</i>				
GEAR ATTRIBUTES				
Automatic poling devices				
INFORMATION ON DAILY ACTIVITIES				
Date and time of start of daily activities	for investigations of fishing methods, efficiency, catch rates (standardisation), and relevant to mitigation studies and management options analyses	ddmmyy hhmm		
Time of activity				
Latitude and longitude of activity				
Type of activity				
Numbers of school sighted per day	indications of abundance			
BAITFISHING INFORMATION				
Bait species caught	impacts on baitfish stocks	FAO 3-letter ASFIS code		
[Number of buckets of bait caught]				
SCHOOL INFORMATION				
Method of detection of school	fishing method studies, CPUE standardisation catch rates (standardisation), management options analyses	codes		
Type of school association				

INFORMATION ON CATCH PER SCHOOL FISHED				
Data item	Justification	Units	References / comments	Suggested units
Number of crew poling	Measurement of effort; socio-economic interest			
Time of start of spraying, chumming and poling	Helps to assess effort / abundance / school size.			
Time of end of spraying, chumming and poling	Helps to assess effort / abundance / school size.			
Retained catch, by species	Important stock assessment information			
Discards, by species	Important stock assessment information, particularly important in			
Tag recovery information		tag number, species, date, time and position caught, length and weight of fish if possible		
Species code		FAO 3-letter ASFIS code		
Length measurement code		2-letter code ⁹		
Length		truncated to whole cm.		

⁹ see [codes](#) at end of document

Table 4. Purse seine information and data

VESSEL AND RELATED ATTRIBUTES				
Data item	Justification	Units	References / comments	Suggested units
Vessel cruising speed	effort - searching capability, turn-around capability			
Helicopter and / or tender vessel	effort – searching capability			
GEAR ATTRIBUTES				
Maximum depth of net	indicator of fishing power/capacity/catchability			
Maximum length of net	indicator of fishing power/capacity/catchability			
Net mesh size	mitigation, indicator of fishing power/capacity			
INFORMATION ON DAILY ACTIVITIES				
Date and time of start of daily activities		ddmmyy hhmm		
Time of activity				
Latitude and longitude of activity				
Numbers of school sighted per day				
SCHOOL INFORMATION				
Method of detection of school				
Type of school association	method based impacts analyses in stock assessment; CPUE standardisation			

SET INFORMATION

Data item	Justification	Units	References / comments	
Observers record of date and time of start of set	to investigate fishing methods, efficiency, catch rates (standardisation), and relevant to mitigation studies and management options analyses; to correlate observer records to vessel records	ddmmyy hhmm		
Observers record of date and time of end of set		ddmmyy hhmm		
Vessel's record of date and time of start of set		ddmmyy hhmm as on logsheet		
Retained catch, by species	fundamental stock assessment attribute	metric tonnes ¹⁰		
Brail capacity	basic unit used by observer to assess catch	metric tonnes	consider including this field¹¹	
Discards, by species	indicates vessel/fleet discard behaviour and helps to characterise fishery generally; discard rate analyses and true mortality estimation for stock assessment	No.s or tonnes of fish depending on species and amount of catch		
Tag recovery information	movement studies feeding into stock assessment	tag number, species, date, time and position caught, length and weight of fish if possible		

¹⁰ Observer's estimate using brail counts and brail capacity for total catch and roughly estimating what proportion of total catch is accounted for by each target species. There is a pending proposal to DCC to drop the requirement for observers to give an estimate of metric tonnes for each component species and to more simply use a code that will indicate relative abundance of each target species in a mixed catch, thus removing the unreasonable burden of making such a difficult assessment.

¹¹ Having compulsory brail capacity sizes that are regularly checked for compliance would greatly improve confidence in assessing catch

INFORMATION ON CATCH FOR EACH SET				
Species code	BET/YFT identification by observers critical	FAO 3-letter ASFIS code	Langley and Hampton (2007)	
Length measurement code	conversion to common lengths across data sets	2-letter code ¹²		
Length	size frequency data for stock assessment and other; biological studies for stock assessment and ecosystem research; population dynamics studies	truncated (rounded down) to whole cm.		

¹² See [codes](#) at end of document

Table 5. Troll or other fishing information and data

VESSEL ATTRIBUTES				
Data item	Justification	Units	References	Suggested units
<i>To be determined</i>				
GEAR ATTRIBUTES				
<i>To be determined</i>				
INFORMATION ON DAILY ACTIVITIES				
<i>To be determined</i>				
INFORMATION ON CATCH FOR EACH OPERATION				
<i>To be determined</i>				

Table 6. Species of special interest

GENERAL INFORMATION				
Data item	Justification	Units	References	Suggested units
Type of interaction	biological and population studies			
Date and time of interaction	biological and population studies	ddmmyy hhmm		
Latitude and longitude of interaction	biological and population studies			
Species code of marine reptile, marine mammal or seabird	biological and population studies			
LANDED ON DECK				
Length	biological and population studies	truncated to whole cm.		
Length measurement code	biological and population studies			
Gender	biological and population studies			
Condition when landed on deck	biological and population studies			
Condition when released	biological and population studies			
Tag recovery information	biological and population studies			
Tag release information	biological and population studies			

INTERACTION WITH VESSEL OR GEAR ONLY				
Data item	Justification	Units	References	Suggested units
Vessel's activity during interaction				
Condition observed at start of interaction				
Condition observed at end of interaction				
Description of interaction				
Number of animals sighted				

Supporting comments

“Even when there is agreement among scientists on the choice of a particular estimator, fishing methods and gears change over time, so the time series of catch and effort must be adjusted before proceeding with the analysis.”

“In longline fisheries, Olsen and Laevastu (1983) identified 32 factors that can affect CPUE.”

(Labelle, M. (2000) - More Data Required to Assess Bigeye Tuna Population - Pelagic Fisheries Research Program newsletter Volume 5, Number 1)

Notes

1. Some thought should be given to separating minimum electronics data requirements into different vessel (gear) type requirements – e.g. highly unlikely to find a bathythermograph being used on a purse seiner (??), or a GPS beacon on a longliner.
2. WCPFC needs to agree on a definition for a fishing trip so that data collection tool developers are able to design effective data standards and sampling protocols to cater for issues involving the unit of “trip”.
3. It is important to understand the direction of haul relative to the direction of setting in sets monitored by observers to ensure the most information can be derived from the record of the hook number (location) within a basket and the records of baiting patterns, catch items and soak time relative to those hook numbers. The direction is not always the same.

Codes

1. Condition codes

<u>Code</u>	<u>Description</u>
A0	Alive (not categorized into A1, A2, or A3)
A1	Alive, healthy
A2	Alive - injured, distressed
A3	Alive, but dying
D	Dead
U	Condition unknown

2. Fate codes

<u>Code</u>	<u>Description</u>
RGG	- Retained - gilled and gutted (for sale)
RGT	- Retained - gilled gutted and tailed (for sale)
RWW	- Retained - whole
RPT	- Retained - partial (e.g. fillet, loin, trunk)
RFR	- Retained - both fins and trunk (sharks)
RHG	- Retained - headed and gutted (billfish)
RSD	- Retained - but shark damaged
RCC	- Retained - for crew consumption
RGO	- Retained - gutted only
ROR	- Retained - other reason (specify)
DFR	- Discarded trunk - fins retained (sharks)
DGD	- Discarded - gear damage (tuna only)
DSD	- Discarded - shark damage
DWD	- Discarded - whale damage
DUS	- Discarded - uneconomic species
DDL	- Discarded - too difficult to land
DSO	- Discarded - (struck off before landing)
DTS	- Discarded - too small (target species)
DPQ	- Discarded - poor quality
DPA	- Discarded – species of special interest - alive (DPA)
DPD	- Discarded – species of special interest - dead (DPD)
DPU	- Discarded – species of special interest - unknown condition (DPU)
DOR	- Discarded - other reason (specify)
ESC	- Escaped

3. Gender codes

<u>Code</u>	<u>Description</u>
M	male
F	female
I	indeterminate (inspected gonads but could not decide sex)
U	unknown (gonads were not checked)

4. Length codes

<u>Code</u>	<u>Description</u>
TL	- tip of snout to end of tail
UF	- upper jaw to fork in tail
LF	- lower jaw to fork in tail
PF	- pectoral fin to fork in tail
TW	- total width (tips of wings - rays)
CL	- carapace length (turtles)
NM	- not measured

5. Usage codes

<u>Code</u>	<u>Description</u>
ALL	- used all the time
TRA	- used only in transit
OIF	- used often but only in fishing
SIF	- used - sometimes only in fishing
RAR	- rarely used
BRO	- broken now but used normally
NOL	- no longer ever used

Appendix ?? Data items on the Data Collection Committee forms (and thus already being collected by around 200 observers in the WCPFC region) that are *not* included in Appendix III of the Report Of The Statistics Specialist Working Group to SC-3

VESSEL IDENTIFICATION				
Data item	Justification	Units	References / comments	Suggested units
Vessel owner	tracking vessel, vessel identification, in case of compliance/ enforcement issues	full name		

TRIP INFORMATION				
Data item	Justification	Units	References / comments	Suggested units
Observer trip ID number	unique number allocated to a defined observer trip and used to identify and label all materials associated with that trip		different obs. progs. use different systems but most WCPO PI Obs. Prog.s use a system that identifies the observer (with unique three letter code) year of trip (yy) and the number of trips that observer has commenced in that year (-xx).	
Fishing Permit or Licence Number(s):	to verify fishing legitimacy of vessel's presence	numbers as on permit or license	recorded for each license or permit the vessel fishes under during the observed trip	

SAFETY EQUIPMENT				
Data item	Justification	Units	References / comments	
Observer life jacket		appropriate size, availability		
Life rings		number		
EPIRBS		types, number		
Life raft		number, capacity, inspection date		

VESSEL ELECTRONICS

Data item	Justification	Units	References / comments	
usage	to help weight the true effectiveness of various technologies when considered in relation to Captain/Masters' experience	codes		
blank lines to record occurrence of new technology that impacts fishing	important for effort standardisation purposes	make, model, usage, comment		

Longline

SET AND HAUL INFORMATION				
Data item	Justification	Units	References / comments	
Set number	For ease of observer form management within the same set	in numerical order commencing at start of trip		
Page number and page total	Administrative control of data during raw data handling	page number in order and total page		
Start of set UTC Date and Time	so that observer can otherwise use ship's time for ease of operation but have a relevant marker to verify true fishing time	UTC date and time from GPS dd mm yy and hh mm		
Unusual set details	opportunity for observer to highlight abnormalities in setting procedure	description/ details		
Total weight of bait used per species per set	effort standardisation with respect to use of bait species - economics	kg per species		
hook number of bait species in each basket	characterise baiting behaviour of vessel - link species caught to bait , catch rate standardisation	Record hook number	Hoyle et al 2007	
Total number of Shark lines	effort on targeting shark	total number		
Length of shark line	gear configuration	meters		
“Yes or No” for any Event to be recorded on Gen – 3	administrative tool for linking appropriate forms and information especially at raw data phase	Y or N		
Diary page number		Page number in observer diary		
Comments		Comments		
Position at start of haul	catch rate standardisation		Hoyle et al 2007	
Position at end of haul	catch rate standardisation		Hoyle et al 2007	

INFORMATION ON CATCH FOR EACH SET				
Data item	Justification	Units	References / comments	
Page number and page total	cross checking / debriefing tool – data quality	page number in order and page total		
Ship's time when fish are landed or caught	effort - length of soak time; important link to position of catch at higher resolution than just start and end of catch – standardising CPUE with oceanographic variables	hh mm	Hoyle et al 2007	
Tally of every basket observed in each LL	working tool for observers to help compute actual observer coverage rate	a stroke per basket		
Total tally of all baskets observed in each LL – 4	observer effort, for computing observer coverage level – number of hooks observed	sum of strokes		
“Comment”, tag number and other sampling information		comment		

Pole and Line

INFORMATION ON DAILY ACTIVITIES				
Start of day UTC Date and time	so that observer can otherwise use ship's time for ease of operation but have a relevant marker to verify true fishing time	UTC date and time from GPS dd mm yy and hh mm		
Beacon/Payao number	tracking number of FAD/payaos fished on, measuring effort per payao – fish attraction time, how often a payao is being fished	record FAD or payao number		
Yes or No for any event to be recorded in Gen-3	administrative tool for linking appropriate forms and information especially at raw data phase	Y or N		
Tally of number of schools sighted per day	Indication how much life in the area	Tally for floating objects and schools sighted		

BAITING INFORMATION				

SCHOOL INFORMATION				

Purse seine information and data

VESSEL AND RELATED ATTRIBUTES				
Data item	Justification	Units	References / comments	Suggested units
GEAR ATTRIBUTES				
Data item	Justification	Units	References / comments	Suggested units
Brail capacity	fishing capacity and effort	metric tonne		
Power block make and model number	fishing capacity and effort	make and model		
Purse winch make and model	fishing capacity and effort	make and model		
Number of net strips	effort and indication of net depth			
Total possible fish storage capacity	carrying capacity – fishing power	metric tonne		
Fish Wells with Fuel		metric tonne		
Fish Wells with water				
Safety equipment				

CREW INFORMATION

Data item	Justification	Units	References / comments	Suggested units
Captain license number		License number		
Navigator		Full Name		
Mate		Full Name		
Chief engineer		Full Name		
Assistant engineer		Full Name		
Deck Boss		Full Name		
Cook		Full Name		
Helicopter pilot		Full Name		
Helicopter mechanic		Full Name		
Skiff man		Full Name		
Winch man		Full Name		
Years of experience		Number of Years		
nationality		nationality		

INFORMATION ON DAILY ACTIVITIES				
Data item	Justification	Units	References / comments	
Start of day UTC Date and time	Cross check with ship's time. Verify fishing area and position	date (dd mm) and time, hh mm		
Exclusive Economic Zone (EEZ)		country code		
Wind strength (speed) and direction		knots and in degrees		
Sea conditions		C, S, R, V	(condensed beaufort scale)	
Beacon/Payao number	tracking number of FAD/payaos fished on, measuring effort per payao – fish attraction time, how often a payao is being fished	record FAD or payao number		
Set number (1, 2, 3)	administrative tool for tracking raw data	number in order		
Floating objects and school sightings tally	indicators of productivity in the area being fished	tally and total for each floating object and school		
“Yes or No” for any Event to be recorded on Gen – 3	administrative tool for linking appropriate forms and information especially at raw data phase	Y or N		
Diary page number		page number in observer diary		
SCHOOL INFORMATION				

SET INFORMATION

Data item	Justification	Units	References / comments	
Time begin pursing	efficiency, effort, fishing capacity	hh mm		
Time end pursing	efficiency, effort, fishing capacity	hh mm		
Time begin brailing	efficiency, effort, fishing capacity	hh mm		
Time end of brailing	efficiency, effort, fishing capacity	hh mm		
Cumulative landings	tool to assist observer awareness and in debriefing data-quality control monitoring	tonnes		

INFORMATION ON CATCH FOR EACH SET				
sampling type	indication of species being sampled and sampling protocols used	nominate appropriate option		
Which brail size used during brailing	important for observer catch (quantity) monitoring	tick previously coded brail size		
Measuring instrument	data quality confirmation, possible calibration issues, accuracy	brief description of instrument		
Comment on sampling protocol	verifying the correct protocol	describe sampling protocol		
Brail tallies and brail fullness	catch assessment tool for observers, efficiency	table to tally and calculate catch		
Total brails brought onboard				
Sum of all brails				
Number sampled SKJ, YFT and BET	data handling quality assurance tool	number of each species		
Sum of lengths SKJ, YFT and BET		sum of length for each species		
Average length SKJ, YFT and BET	had a role in manual species composition calculation but no longer thought necessary of useful as this task better left to computers	record in centimetres		
Cross check question on discards of SKJ, YFT and BET	constant observer reminder of importance of monitoring target species discards	Y or N		
Cross check question on bycatch species	constant observer reminder of importance of monitoring bycatch – debriefer’s aid	Y or N		
Species information		fate code		

Species of special interest

INTERACTION WITH VESSEL OR GEAR ONLY				
Data item	Justification	Units	References	Suggested units
Description of interaction	SSI mitigation	detailed description of what was happening during the interaction		

SPECIES SIGHTED				
Data item	Justification	Units	References	Suggested units
Vessel's activity when sighted	SSI mitigation	Record one - setting, hauling, transiting other		
Number of species sighted (adult and juvenile)	SSI mitigation and identification	number		
Distance of SSI from vessel	SSI mitigation	number		
Species behaviour	SSI mitigation			
Lists of SSI and FAO species code	SSI mitigation			

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