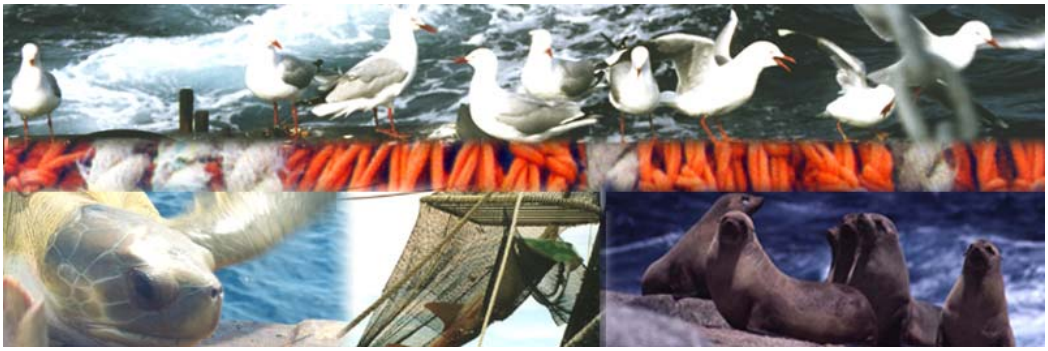
Australian Government
Australian Fisheries Management Authority

SMALL PELAGIC FISHERY

Purse Seine Scientific Observer Manual



Lachlan Kranz

AFMA Observer Program

Table I. Change control for document – only major revisions are shown in this table

Revision	Date	Changed by	Reason
0.1	27/02/2007	Lachlan Kranz	Draft

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Last Updated: 27 February 2007 Last Printed:

Table II. Distribution List

Revision	Date of Issue	Distributed by	Recipients

The distribution list is correct as of the time of printing. Refer to AFMA Observer Program for the current distribution.

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AFMA E -mail (24hours, emergency) monitoring@afma.gov.au

Coastwatch

Reporting number (free call via Inmarsat or radphone)	1800 06 1800
Fax	02 62756275

Sea Safety

Ausrep	02 6230 6880
Search & Rescue	02 6247 5244

1 THE OBSERVERS ROLE

The observer's role is to collect independent, accurate and reliable data on Commonwealth fishing operations, catches and interactions with the environment by the vessel and its fishing gear.

This is achieved through:

a) **Collection of vessel activity and catch data**, which are not obtainable through official logbooks.

This information is used by AFMA and other agencies to provide more specific and detailed information to aid in assessing the actual state of the fishery and environment. Biological sampling is done to assist scientists and managers with stock assessments and improve the understanding of impacts of fishing operations on the marine environment. Observers should also monitor the master's use of the logbook relative to observer records and help ensure the specified details are entered in an accurate and timely manner.

b) **Collection of data for research programs,** supporting marine management and other issues relevant to environmental awareness and management.

Observers provide data and information of interest to AFMA and other related agencies, such as environmental issues, bycatch, safety incidents, gear and fleet interactions and marine mammal sightings.

c) **Monitoring compliance** of the vessel with its fishing agreements.

Observers are required to note the day to day activities of the vessel, having regard to the permit conditions. Observers assist the vessel master and crew in seeking advice in the event of misunderstandings and in improving the level of compliance of various conditions. This helps to ensure that fisheries managers are obtaining reliable logbook information to assist with stock assessments and that industry are complying with their permit conditions. Observers should familiarise themselves with the permit conditions for the relevant fishery/project in which they are involved.

NB: Observers have NO AUTHORITY to direct fishing operations of the vessel or give operational advice or act in an enforcement role.

The role of the observer is not one of a fisheries officer. The observer has none of the powers of a fisheries officer and will act in accordance with AFMA's data confidentiality arrangements. Observers must report incidents which may contravene permit conditions in their observer reports. These reports may be used as evidence for action by the AFMA Compliance Section. Accordingly, in the event of witnessing an incident, observers should follow the guidelines for documentation of incidents in the Observer Operations Manual.

2 DATA COLLECTION PROTOCOLS FOR THE SMALL PELAGIC FISHERY

2.1 Data collection priorities and sampling strategy

Observer data collection priorities in the SPF are to assess the potential for and actual interactions between fishing vessels and marine wildlife and to quantify levels of bycatch by species. As a secondary priority observers will also record length frequency information from target species. To successfully achieve their objectives the observer will require the full cooperation of the vessel's crew and have access to all areas on board necessary for the performance of their duties. The observer's data collection objectives will not interfere with the commercial operations of the vessel nor reduce the value of the catch. The observer will fully brief the master and relevant officers concerning their requirements and objectives for the voyage.

2.1.1 Scientific Data Collection Priorities

1. Document fishing vessel, gear and crew details.
2. Record vessel activity by date, time and position of fishing events.
3. Monitor 100% of hauls for catch composition, recording total catch by weight of all retained species.
4. Take a random, unsorted subsample of the catch and record the sample weight, species composition and length frequency data from this subsample.
5. Record wildlife abundance and any interactions observed during fishing operations.

2.1.2 Observers Post Boarding Duties

Once the observer has boarded the vessel their first tasks to prepare for observer work are:

1. Brief the skipper and mate on the observer project.
2. Complete Vessel Safety Induction Checklist with skipper/mate.
3. Complete Vessel Voyage Summary, Vessel and Crew Details Form and the Purse Seine Gear Details Form (see appendix 2, 3, 4, 5).
4. Identify work and accommodation areas with skipper/mate.

3 Data Collection Methodology

3.1 Data recorded for all fishing operations

'Vessel Activity Form' (appendix 6)

- Date/Time/Position of each fishing activity.
- Activity code for the particular fishing activity.
- Start of set (record when the headline leaves the purse seine vessel)
- End of set (record when the headline is returned to the purse seine vessel.
- Start of haul (record when the power block begins rotating)
- End of haul (record when the entire net is back onboard)
- Shot number for all set, haul and transfer activities.
- Sea surface temperature, weather and wind speed/direction for each recorded fishing activity.
- For all SPF schools detected record the estimated school size (tons), how it was detected (e.g. plane or vessel) and any associations observed (e.g. FAD or debris) in the comments section.

3.2 Data Recorded For Every Shot

'Purse Seine Shot Details Form' (see appendix 7)

- Record all data fields for the shot as per the 'Purse Seine Shot Details Form'.

'Biological Data Form' (see appendix 8)

Collect a random, unsorted subsample of the catch as it is being pumped or scooped aboard. Each subsample should be a full fish bin and the observer should request crew members help accessing the catch. Two to three sub samples should be taken throughout the duration of the pumping or scooping operation. The following points are the biological measures to be recorded.

- Species name and FAO code
- Length (Length to caudal fork)
- Life status
- Sex (where possible)
- Whole weight of the entire fish bin sample (kg)

'Catch Composition Form' (see appendix 9)

Record an estimated catch composition for the shot in the 'Catch Composition Form'. This

should detail each species caught by estimated weight, number and fate (retained or discarded).

'Wildlife Abundance Form' (see appendix 10)

Conduct a wildlife abundance count within a 300m circumference around the purse seine vessel for 5 minutes when the headline is sent out and again when the net is completely back onboard. Wildlife abundance counts should document each observed species by number, sex (where possible) and behaviour.

'Wildlife Interaction Form' (see appendix 11)

Record all observed interactions between wildlife and the fishing vessel / gear during observer operations as per the 'Wildlife Interaction Form'.

3.3 Secondary Observer Duties

Observers are expected to note and report on activity other than that directly related to the operational features of the vessel they are working on.

Areas they should be aware of and include in their report are:

- unidentified or suspicious vessel activity in the area
- incidental sightings and observations concerning the marine environment,
- hospitality, assistance and cooperation of the master and crew of the fishing vessel boarded.

Observers should be mindful that all data collected during the voyage is of a commercially sensitive nature and any information or material collected from the vessel is treated by AFMA as "*Commercial in Confidence*". The data collected to meet AFMA's requirements will be returned to AFMA for compilation, entered onto a database and archived care of the AFMA Observer Program. Reports will be sent to stakeholders after quality control checking. Access to observer data is restricted. Researchers seeking access must sign and abide by AFMA's deed of confidentiality agreement.

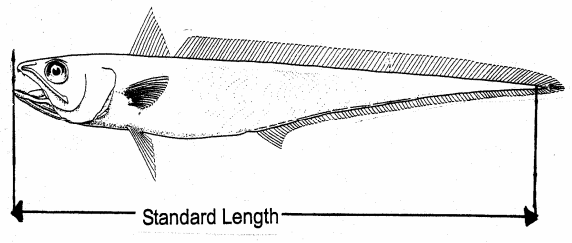
4 Biological Sample Collection Techniques

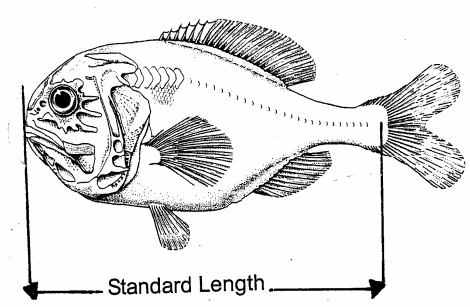
4.1.1 Length Measurement Codes and Descriptions

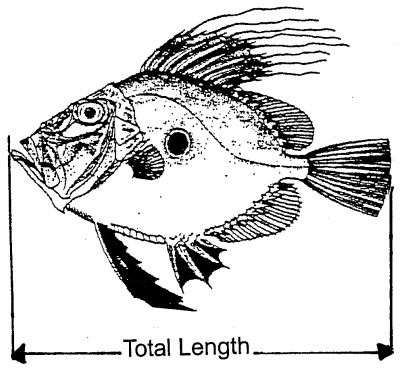
MEASUREMENT	CODE	DESCRIPTION
Length to caudal fork	**LCF**	Snout tip to fork in caudal fin.
Total length	**TOT**	Snout tip to furthest tip of tail. (Tail should be streamlined ie not compressed to spread to its extreme when measured).
Standard length	**STL**	Snout tip to last caudal vertebrae. (Last caudal vertebrae is usually marked by a shallow vertical groove near the extremity of the fleshy part of the tail).
Disc width (Skates and Rays only)	**WSP**	Distance between the furthest opposite points of the wings.
Post Orbital Carapace Length (Prawns and Lobsters)	**POC**	Distance along the dorsal surface of the carapace from the rear margin of the eye to the back edge of the carapace.
Mantle length (Squid)	**MTL**	Mantle length (see diagram)

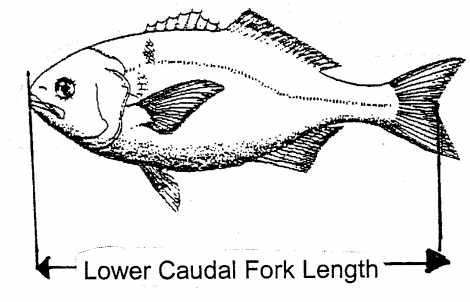
Remember to place the fish on the measuring tape, not the tape on the fish.

FINFISH



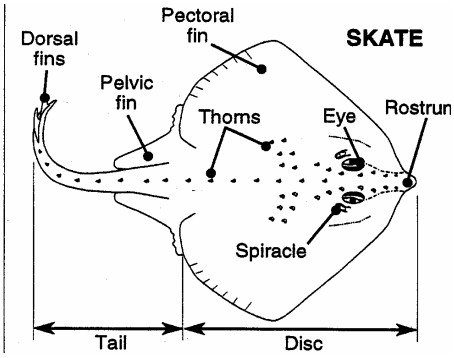






SKATES and RAYS

Skates and rays should measured for total length (**TOT**) (tip of snout to tip of tail) and wingspan (**WSP**) (across the disc).



4.1.2 Sexing Fish

Most bony fish lack obvious sex differentiation features and must therefore be sexed via internal anatomy examination. This can be achieved by cutting open the fish, locating and distinguishing male and female gonads. Gonads are typically located in the posterior-dorsal portion of the gut cavity near the backbone.

Male gonads are characterised by:

- White or grey colouration
- Elongated, stringy and irregular shape

Female gonads are characterised by:

- Orange or pink colouration
- Fat, round shape
- If in advanced state, presence of small circles within gonads

4.1.3 Random Sampling

To random sample, is to take a small portion of a whole without using conscious choice so as to ensure that the individuals contained in the sample are representative of the population that they are taken from.

- Obtain access to the catch before any sorting occurs. Access after sorting has occurred in which some individuals are removed, is not representative of the catch; and
- Hand picking of samples should be avoided. There exists a subconscious tendency to select large or otherwise obvious individuals.

4.1.4 Specimen Photography

Always photograph the left side of a fish specimen unless the left side is in poor condition relative to the right. The best position to photograph invertebrates varies from group to group: prawns on the left side, crabs, lobsters and squid on their dorsal surface.

Try to photograph on a plain (light coloured) background. Ensure that there is a ruler or similar in the frame so we can get an accurate determination of the specimen's size. With fish, if possible, try to spread its fins. This not only shows the positioning of the fins on the fish but may also reveal important information about the fin colour and species I.D. A label with the shot number should also be included in the frame to assist with matching the specimen to the catch composition records and specimens retained. Once photographed, write on the label and catch composition data form that the specimen has been photographed.

5 Scientific Observer Wildlife Observation Protocols

5.1 Seabirds, Seals and Cetaceans

The wildlife observation components of the Observer Program for the fishery have been designed to identify threats to wildlife from fishing operations and determine long term trends in the attractiveness of the fishery to wildlife. The Wildlife Abundance and Wildlife Interaction forms have been designed to allow you to collect data that will enable the following questions to be answered about the fishery:

1. **What is the nature and extent of physical contact between the fishing vessel and its fishing gear to seabirds, marine mammals and cetaceans; and**

2. **How does the attractiveness of the fishing operation to seabirds, marine mammals and cetaceans vary in time?**

All wildlife observations should, weather permitting, be made from the stern gantry or some other vantage point that gives a clear unrestricted view of the vessel's hauling and setting procedures. To answer the questions above you are asked to **observe from the gantry a minimum of 60% of the daylight shots for the entire fishing voyage (weather permitting)** and, in addition to these observations, to observe (and report on) activities of an incidental nature that you feel may pose a threat to birds and seals.

Where a shot has been observed and no "contacts" were witnessed the observer should record "NO CONTACTS OBSERVED" along with the shot number and monitored times on the "Wildlife Interaction' form.

5.2 Procedures to follow when a marine mammal or cetacean is caught

- Is the animal dead? If the animal is not moving firstly touch the animal on the neck with a pole. If there is no response, check respiratory rate and pupil dilation. If the animal is not breathing and pupils are dilated and do not respond to a finger touch then the animal is probably dead. Be aware though that stressed seals may go into "dive response" and show no sign of life.

- External examination of the animal. Check for the following: any external injuries, any identifying marks of tags or brands, any evidence of tearing in the flippers that might indicate tag loss, any sign of decay on any parts of the body, any sign of long line hooks. Take photos of any visible marks on the animal. If tags are present note the number and colour of the tags. Examine fur seals for electronic tags.

- Identify the species and sex. Refer to Appendix 17 for sex determination.

- Measure the animal. Refer to Appendix 17 for standard measurements.

- Photographs must be taken of seals and cetaceans caught in nets, both dead and alive. Photograph the animal from several angles.

5.3 Manipulation of live seals on fishing vessels

When confronted with live seals on the deck of fishing vessels, please use extreme care when herding the animals back into the sea.

Where possible, allow the vessel's experienced deckhands to undertake the task and you monitor the herding from a safe distance. **At all times take every precaution for your safety first**, before trying to herd live animals back into the sea.

5.4 Observer protocols for the capture of a seabird

This protocol provides advice on assessing the life or injury status of seabirds landed during a fishing operation and the collection and storage of any specimens taken.

If you are unsure if a landed bird is dead or alive, lay it on its side and gently touch an eye several times with your finger (un-gloved). If the bird is alive it may exhibit an eye reflex when touched. You may also shine a light into the eye and check for a reaction (closing down) by the pupil. Visually assess the bird for the cause of death (i.e., if it is wet and bedraggled it has probably been pulled under and drowned) to confirm your assessment of its life status. You may also feel its body beneath the feathers to determine if it has chilled noticeably. If there is no eye response and the bird shows signs of injury/drowning then it is probably dead. If there is an eye response or if there is no eye response but you feel the bird may only be stunned (from a collision) then assume that it may not be dead and may recover. In the latter case check the bird for signs of physical injury, particularly to the wings, legs and head.
Place it in a protected area of the vessel and allow an appropriate time for it to recover.

If the bird recovers and appears normal drop it over the side of the vessel in a manner that avoids contact with the fishing gear. Photographs showing the bird in context to demonstrate what happened, and photographs of the bird's head, bill, underwing shape and pattern, and tail shape help to identify released birds. If the bird has an injury you will have to use common sense to determine if it can be saved; this may require discussion with other people on the vessel to gain alternative assessments. If the injured bird is very rare and there is uncertainty about its rehabilitation, then seek advice from the AFMA Observer Program. A broken neck or broken wing would be terminal injuries for seabirds, which rely on powered or gliding flight for mobility. However, a broken foot or broken leg may be conditions from which the bird can recover, depending on the severity of the injury. It is difficult to advise on the extent of an injury that a seabird can cope with; assessment is largely a matter of common sense, bearing in mind that flying seabirds can often live and behave fairly normally with foot and leg injuries, except ones involving clean breaks of long bones.

5.5 Seabirds retrieved from the deck

The following guidelines are to be adopted following the retrieval of a seabird from the vessel's deck.

- ID the bird as accurately as possible;
- Take photographs of distinguishing features. Head, wing and tail pattern;
- Check for any obvious injuries or oil fouling;
- A bird with vomit on its feathers will need to be cleaned;
- Check for any colour markings (head, foreneck, chest, wings);
- If colour marked on the chest the bird will almost certainly be banded;
- Check for and record the details of any stainless steel bands;
- If coloured bands note the colour sequence;
- Do not remove any bands from a live bird just note the details;
- If banded, record the location of your vessel when the bird alights (Latitude / Longitude,);
- If banded, record the time and date when the bird alights, and when the bird is released, note condition of the bird at time of release;
- If the bird is dead, retain bird whole, do not remove bands;
- If still dark, possibly wait until day light before releasing.

Any information from banded birds will add to the knowledge we have of the species.

For further information, mention band details in weekly report.

5.6 Collection and storage of specimens

Place each dead bird in separate plastic or polypropylene bags, place a label on water proof paper inside the bag (preferably in the birds mouth) and include the date and time of capture, location of capture (Lat. and Long.), vessel name, name of capturer, cause of death and any other particulars you feel may be important (such as ship activities you feel may have led to any accident with birds or what part of the gear the bird was caught on).

Once bagged and labelled, birds should be frozen (ask the masters permission before placing the bird in any freezer) in readiness for return to CSIRO. The observer should notify a senior observer at the first convenient time in order for sample transport arrangements to be made.

appendix

APPENDIX 1: AFMA OBSERVER CODE OF CONDUCT

AFMA OBSERVER CODE OF CONDUCT

(At-Sea Supplement to the AFMA Enterprise Bargaining Agreement Code of Conduct)

1. Observer conduct must be professional and above reproach at all times.
2. Observers will respect the various customs and cultures of the vessels and crew they are involved with.
3. Observers will at all times maintain high levels of personal hygiene and dress standards appropriate for the conditions.
4. Observers have no authority to apprehend or direct any fishing vessel. They have no authority to direct fishing operations of the vessel or give operational advice to the vessel other than to assist in clarifying conditions of licence/permit and the relevant regulations applying to the vessels activities.
5. Observers will not convey information of a commercial or sensitive nature beyond that required for the task.
6. Observers have no right to collect or seek any material or information from vessels unless authorised to by AFMA and consistent with that stipulated in the vessels' fishing agreement.
7. Observer requirements should be met in away that minimises adverse effects on the quality of product retained by a vessel and observers will ensure that any disruption to a vessel's operations caused through carrying out observer duties is minimised.
8. Observers must comply with any other regulations in force such as customs and immigration restrictions and provision of quarantine and customs declarations where appropriate.
9. Observers will conduct themselves in a courteous and cooperative manner but will not be required to compromise the project in terms of health and safety, data quality or other relevant and important elements of the observer program.
10. Observers will maintain a healthy and safe work routine. Whilst ensuring that they complete the task at hand, they will exercise appropriate caution and safe practices in relation to their own behaviour and their impact on members o the crew.

APPENDIX 2: VESSEL SAFETY INDUCTION CHECKLIST

Australian Government

Australian Fisheries Management Authority

Australian Fishing Zone
Observer Programme

Observer Safety Induction Checklist

This checklist is designed to aid in familiarising Observers with safety organisation procedures on board fishing vessels on which they may be required to serve. The induction is to be conducted by either the Skipper or Mate of the vessel, and the completed form will form part of the cruise records.

1. [ ] Emergency Alarms
2. [ ] Muster Area Location
3. [ ] Emergency Evacuation Procedures
4. [ ] Brief Outline of Emergency Drills Including Fire, Man Overboard, Casualty, Damage Control
5. [ ] Lifejacket Locations and Donning Demonstration
6. [ ] Liferaft Locations and Launching Instructions
7. [ ] Lifebuoy Locations
8. [ ] Push Button Fire Alarm Locations
9. [ ] Escape Routes
10. [ ] Portable Fire Extinguishers Location and Operation
11. [ ] Fire Hose and Hydrant Locations and Operation
12. [ ] Location of First Aid Kits
13. [ ] Lifeboat / Rescue Boat (if fitted) Overview, Including Launching Procedures
14. [ ] Location of Trawl Deck Shelter Areas and Evacuation Routes
15. [ ] Skipper to Outline High Risk Areas to Avoid and Location of Proposed Observer Position on Deck and Other Areas, and Measures to Ensure Observer Safety eg. Safety Harness, Lifelines and Guardrails

Observers Name	

Observer Signature	Skipper / Mate Signature	Date

APPENDIX 3: VESSEL VOYAGE SUMMARY

AFMA Australian Fisheries Management Authority

VESSEL VOYAGE SUMMARY

OBSERVER DETAILS

OBSERVER LAST NAME	
OBSERVER FIRST NAME	
OBSERVER PROJECT	
OBSERVER TRIP ID No	
EMPLOYING ORGANISATION	

TIME ZONE
Record in this field the time zone that you have used when recording data on this voyage. You should use ship's time, which may not be local time. Use only one time zone per voyage. UTC +

VOYAGE DETAILS

DEPARTURE (SHIP DATE AND TIME)				
DD	MM	YY	hh	mm

DEPARTURE TYPE (circle)	PORT OR VESSEL NAME
PORT	
TRANSFER	

RETURN (SHIP DATE AND TIME)				
DD	MM	YY		mm

RETURN TYPE (circle)	PORT OR VESSEL NAME
PORT	
TRANSFER	

ACTIVITY SUMMARY

TOTAL No OF HOOKS, TRAPS OR NETS SET		TOTAL No OF BIRD BANDS COLLECTED	
TOTAL No OF HOOKS, TRAPS OR NETS OBSERVED		TOTAL No OF FISH TAGS COLLECTED	
TOTAL No OF SETS (HOOK FISHERY ONLY)		TOTAL No OF DAYS ABOARD	
TOTAL No OF SETS OBSERVED (HOOK FISHERY ONLY)		TOTAL No OF FISHING DAYS	
TOTAL No OF HAULS OBSERVED		TOTAL No OF STEAMING DAYS	
TOTAL No OF BIOLOGICAL DATA SHEETS		TOTAL No OF SEARCHING DAYS	
TOTAL No OF WILDLIFE ABUNDANCE DATA SHEETS		TOTAL No OF DAYS LOST TO BREAKDOWN	
TOTAL No OF WILDLIFE INTERACTION DATA SHEETS		TOTAL No OF DAYS LOST TO WEATHER	
TOTAL No OF SAMPLES RETAINED		TOTAL No OF FISH, BIRDS OR SEALS TAGGED	
TOTAL No OF SEABIRDS CAUGHT		TOTAL No OF SEALS CAUGHT	
		TOTAL No OF CETACEANS CAUGHT	

WILDLIFE MITIGATION MEASURES

WERE WILDLIFE MITIGATION MEASURES DEPLOYED DURING THE CRUISE (Y / N)	
TYPE OF WILDLIFE MITIGATION MEASURES DEPLOYED	
TOTAL No OF HOOKS, TRAPS OR NETS SET WITH WILDLIFE MITIGATION MEASURES DEPLOYED	
TOTAL No OF HOOKS, TRAPS OR NETS SET WITHOUT WILDLIFE MITIGATION MEASURES DEPLOYED	

TAG & BAND DETAILS

TAG or BAND NUMBER					
TAG ACTION (CAPTURED or RE - RELEASED)					
OBSERVER ONBOARD @ TIME OF CAPTURE (Y/N)					
TAG / BAND AGENCY					
TAG / BAND TYPE					
TAG / BAND COLOUR					
SPECIES CODE					
DATE OF CAPTURE (DD/MM/YY)					
LATITUDE					
LONGITUDE					
LENGTH LCF (cm)					
WHOLE WEIGHT (kgs)					
SST (^{0}C)					
MARKING COLOUR					
MARKING POSITION.					
OBSERVED AGAIN (Y/N)					
COMMENTS					

COMMENTS

Revised AFMA FEBRUARY 2003

APPENDIX 4: VESSEL AND CREW DETAILS FORM

Australian Government
Australian Fisheries Management Authority

OBSERVER PROGRAM

VESSEL AND CREW DETAILS

OBSERVER NAME		VESSEL NAME		OBSERVER TRIP ID	
LOGBOOK SERIAL NO.		LOGBOOK TYPE		OBSERVER PROJECT ID.	
		FISHERY			

VESSEL DETAILS

VESSEL OWNER	
NATIONALITY	
HOME PORT	
DISTINGUISHING SYMBOL	
INTERNATIONAL CALL SIGN	
GROSS TONNAGE (GRT)	
LENGTH OVERALL (LOA) metres	
YEAR OF MANUFACTURE	
MAIN ENGINE BRAKE POWER (kw)	
NUMBER OF MAIN ENGINES	
FUEL CAPACITY (tonnes)	
FUEL CONSUMPTION (tonnes /day while fishing)	
TOTAL FREEZER CAPACITY (VOLUME) cm^3	
TOTAL RSW CAPACITY (VOLUME) m^3	
BLAST FREEZER CAPACITY (tonnes / day)	
COLD STORAGE CAPACITY (VOLUME) m^3	
KORT NOZZLE (circle)	Y N

ELECTRONIC FISHING EQUIPMENT

ELECTRONIC EQUIPMENT	CIRCLE
GPS 1	Y N
RADIO DIRECTION FINDER 1	Y N
RADAR 1	Y N
WEATHER FACSIMILE	Y N
TRACK PLOTTER	Y N
SOUNDER 1	Y N
SONAR	Y N
NOAA RECEIVER	Y N
NET SONDE	Y N
INMARSAT SERVICE	Y N
VMS	Y N

CREW DETAILS

CAPTAIN'S LAST NAME	
CAPTAIN'S FIRST NAME	
YEAR'S EXPERIENCE AS A CAPTAIN	
YEARS EXPERIENCE IN THE FISHERY	
TOTAL NUMBER OF CREW	
OTHER	

COMMENTS

Revised AFMA November 2006

APPENDIX 5: PURSE SEINE GEAR DETAILS

AFMA Australian Fisheries Management Authority

OBSERVER PROGRAM

PURSE SEINE GEAR DETAILS

OBSERVER NAME		VESSEL NAME		OBSERVER TRIP ID	
OBSERVER PROJECT		LOGBOOK TYPE		LOGBOOK SERIAL NO.	

TRANSIT DETAILS

PERMIT OR LICENCE NUMBER	
FARM TRANSIT LOG NUMBER	
# OF SMALL DINGIES	
# OF LIGHT DINGIES	
# OF NET SKIFFS	
NET SKIFF MAKE / POWER (kW)	
SPOTTER CRAFT MAKE & MODEL	
AIRCRAFT REG #	
AIRCRAFT RANGE	
AIRCRAFT DURATION (hrs)	

FISHING GEAR DETAILS

POWER BLOCK MAKE & MODEL		
PURSE WINCH MAKE & MODEL		
CHUMMING BOAT PRESENT	Y	N
CHUM STATUS	ALIVE	DEAD
MAX NET DEPTH (m)		
MAX NET LENGTH (m)		
NET MESH SIZE (mm)		
NET MESH ORIENTATION		
GATE FITTED	Y	N

MARINE EQUIPMENT DETAILS

DOPPLER LOG PRESENT	Y	N
PLOTTER PRESENT	Y	N
BIRD RADAR PRESENT	Y	N
FAD PRESENT	Y	N

COMMENTS

Revised AFMA December 2006

APPENDIX 6: VESSEL ACTIVITY LOG

AFMA Australian Fisheries Management Authority

OBSERVER PROGRAMME

OBSERVER NAME | VESSEL NAME | OBSERVER PROJECT | OBSERVER TRIP ID

TIME ZONE UTC +

VESSEL ACTIVITY LOG

Date DD/MM/YY	Time (hh:mm)	Vessel Activity Code	Shot Number	Latitude mm.m')	(dd°	N S	Longitude mm.m')	(ddd°	E W	Start End Bec #	SST °C	Net Sonde °C	Wind speed (kts)	Wind direction (d °t)	Swell height (m)	Swell direction (d °t)	Sea height (m)	Sea direction (d °t)	Cloud / 8	Beaufort (1-12)	Vessel Course (d °t)	Vessel Speed (kts)	Offal Discharge (Y/N)	Offal Discharge Level

Comments

Vessel Activity Codes: DO - dodging, DR - drifting, SE -setting, HA - hauling, ST- steaming, SR- searching, AN-anchor, GT-cagetowing, OT-other, PR-processing, JI-Jigging, TL-trolling, PL-polling, IP-in port, BW-bad weather, BD-broken down

Offal Discharge Level: H - high, M - medium, L -low, N - negligible

Revised AFMA February 2003

Page of

APPENDIX 7: SPF PURSE SEINE SHOT DETAILS

Australian Government
Australian Fisheries Management Authority

OBSERVER PROGRAM

SPF PURSE SEINE SHOT DETAILS

OBSERVER NAME		OBSERVER TRIP ID.	
VESSEL NAME		OBSERVER PROJECT ID.	
DATE		SHOT NUMBER	

SHOT DETAILS

TOTAL # OF DIVERS	
MAX NET DEPTH (m)	
MIN NET DEPTH (m)	
PRIMARY TARGET SPECIES	
SECONDARY TARGET SPECIES	
TDR DEPLOYED	Y N
VESSEL SETTING SPEED (kts)	
BAROMETER (mb)	
BAROMETER TREND (CIRCLE ONE ONLY)	RISE STEADY FALL

VALID SHOT (CIRCLE ONE 'Y' ONLY)

NORMAL SHOT	Y
INTERACTED WITH OTHER VESSEL	Y
TIDE EFFECTED	Y
UNFAVOURABLE SST	Y
BREAKDOWN	Y
TANGLE	Y
MISSED MARK	Y
OTHER (SPECIFY)	

FEATURES OF SHOT (CIRCLE ONE 'Y' ONLY)

ON OR BETWEEN CONTINENTAL SHELF	Y
OVER SEAMOUNTS / CANYONS	Y
ACROSS TEMPERATURE FRONT	Y
OBVIOUS BAITFISH ACTIVITY IN AREA	Y
SST IN TARGET SPECIES RANGE	Y
ALONG / THROUGH TIDE LINE	Y
OTHER (SPECIFY)	

SCHOOL DETAILS

SCHOOL DETECTED FROM	
SCHOOL ASSOCIATION	

REASONS FOR SHOT (CIRCLE ONE 'Y' ONLY)

OBVIOUS TARGET MARKS	Y
KNOWN AREA	Y
PREVIOUS SHOT	Y
PREVIOUS TRIP	Y
OTHER VESSELS	Y
SPOTTER AIRCRAFT	Y
OTHER (SPECIFY)	

DATA SOURCE (CIRCLE ONE 'Y' ONLY)

OBSERVER PERSONALLY COLLECTED DATA	Y
CAPTAIN ENTERED DATA	Y
DATA EXTRACTED FROM LOGBOOK	Y

CATCH

RETAINED CATCH (kgs)	A	
DISCARDED CATCH (kgs)	B	
BENTHOS (kgs)	C	
TOTAL CATCH (kgs)	(A+B+C)	

CATCH ESTIMATION METHOD (CIRCLE ONE 'Y' ONLY)

EYEBALL ESTIMATE BY OBSERVER	Y
CALCULATED BY MEASURING CODEND	Y
CALCULATED FROM BIN VOLUMES	Y
EXTRACTED FROM VESSELS LOGBOOKS	Y
OTHER (SPECIFY)	

OBSERVER ACTIVITY

% OF OBSERVER COVERAGE	

COMMENTS

Revised AFMA November 2006

APPENDIX 8: BIOLOGICAL DATA FORM

AFMA
Australian Fisheries Management Authority

OBSERVER PROGRAMME

OBSERVER NAME | VESSEL NAME | OBSERVER PROJECT | OBSERVER TRIP ID

SHOT No | SHOT DATE | START SHOT TIME

BIOLOGICAL DATA

Time (dd/mh/mm)	Species Code	Catch Loon	Tag / Band or Scar	Life Status	Fate	Length (cm)	Length Code	Weight Whole (kgs)	Weight Dressed (kgs)	Process Code	Sex M-F-I-U	Gonad Stage	Sample (dd:nn)	Sample Code	Comments (Gut contents, tag #)

Life Status: 0 - dead and damaged
1 - dead, in rigour
2 - dead and flexible
3 - alive , just
4 - alive sluggish
5 - alive and vigorous

Fate: R - retained, kept for commercial or crew consumption
D - discarded, landed and not retained
J - jerked free - crew jerked free, cut free without landing
E - escaped - bitten off
U - unknown - did not observe
T - tagged fish and returned to sea alive
C-cut free - cut free without landing

Length Codes: LCF - length to caudal fork
TOT - total length
STL - standard length
BFL - bill to caudal fork length (billfish)
LFL - lower jaw to caudal fork length (billfish)
OFL - orbit to caudal fork length (billfish)

Tag Band Scar: T - Tag Present
S - Scar from tag evident, no tag present
N - no tag or scar
U - unknown

Sex: M - Male
F - Female
I - indeterminate
U - unknown

Page of

Revised AFMA February 2003

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APPENDIX 9: CATCH COMPOSITION DATA FORM

AFMA Australian Fisheries Management Authority

OBSERVER PROGRAMME

OBSERVER NAME		VESSEL NAME		OBSERVER PROJECT		OBSERVER TRIP ID	
SHOT No		SHOT DATE		START SHOT TIME			

CATCH COMPOSITION DATA

Species	Species Code	Fate	Count	Count Method	Total Weight (kgs)	Weighing Method	Weight Type	Process Code	No Samples Collected	Sample Code	Comments (Gut contents, tag #)

Count Method: AC - Accurate Count
EC -Estimated Count
XC - Extrapolated Count
LN - Extracted from logbook observer not present
LP -Extracted from logbook observer present
OC -Other Method

Weighing Method: EW - estimated by eyeball
TW - tare weight (weighed by observer
FW - calculated from factory records
XW - extrapolated weight, calculated from weighing sub sample
VW - extrapolated weight, calculated from volumetrics of fish
OW - other method (explain in comments)

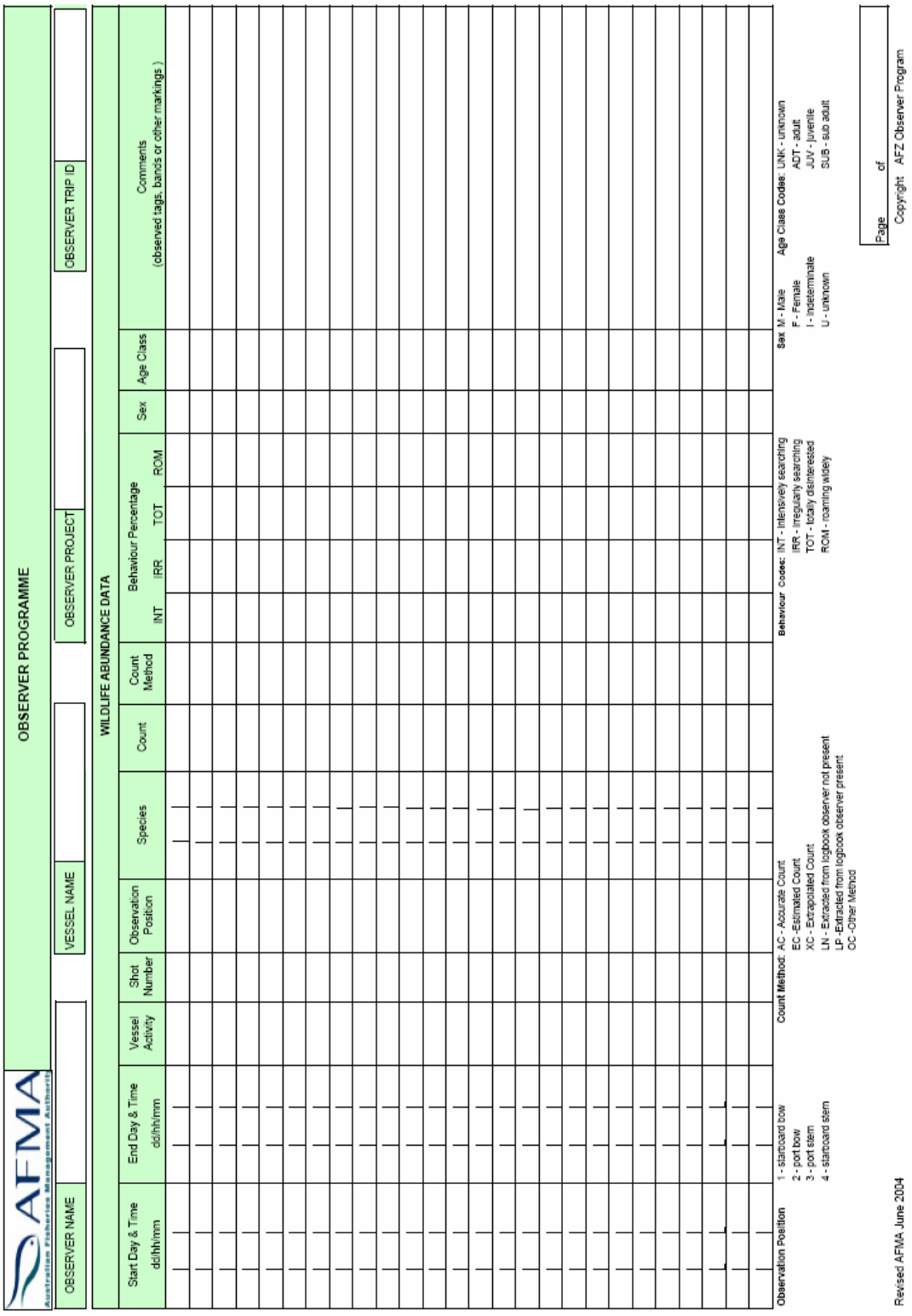
Weight Type: WHO - whole
COM - composite
PRS - Processed

Fate: R - retained, kept for commercial or crew consumption
D - discarded, landed and not retained
J - jerked free - crew jerked free, cut free without landing
E - escaped - bitten off
U - unknown - did not observe
T - tagged fish and returned to sea alive

Page of

Revised AFMA February 2003

APPENDIX 10: WILDLIFE ABUNDANCE DATA FORM



AFMA
Australian Fisheries Management Authority

OBSERVER PROGRAMME

OBSERVER NAME | VESSEL NAME | OBSERVER PROJECT | OBSERVER TRIP ID

WILDLIFE ABUNDANCE DATA

Start Day & Time dd/hh/mm	End Day & Time dd/hh/mm	Vessel Activity	Shot Number	Observation Position	Species	Count	Count Method	Behaviour Percentage INT	IRR	TOT	ROM	Sex	Age Class	Comments (observed tags, bands or other markings)

Observation Position
1 - starboard bow
2 - port bow
3 - port stern
4 - starboard stern

Count Method:
AC - Accurate Count
EC -Estimated Count
XC - Extrapolated Count
LN - Extracted from logbook observer not present
LP -Extracted from logbook observer present
OC -Other Method

Behaviour codes:
INT - Intensively searching
IRR - Irregularly searching
TOT - totally disinterested
ROM - roaming widely

Sex M - Male
F - Female
I - indeterminate
U - unknown

Age Class Codes: UNK - unknown
ADT - adult
JUV - juvenile
SUB - sub adult

Page of

Revised AFMA June 2004

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APPENDIX 11: WILDLIFE INTERACTION DATA FORM

AFMA Australian Fisheries Management Authority

OBSERVER PROGRAMME

OBSERVER NAME		VESSEL NAME		OBSERVER PROJECT		OBSERVER TRIP ID	

WILDLIFE INTERACTION DATA

Date DD/MM/YY	Time hh/mm	Vessel Activity	Shot Number	Observation Sector	Species	Sex M - F - I - U	Age Class	Distance (metres)	Count	Count Method	Contact Code	Contact Count	Contact Point	Interaction Successful (circle)	Fate	Comments
				/4										Y N		
				/4										Y N		
				/4										Y N		
				/4										Y N		
				/4										Y N		
				/4										Y N		
				/4										Y N		
				/4										Y N		
				/4										Y N		
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				/4										Y N		
				/4										Y N		
				/4										Y N		
				/4										Y N		
				/4										Y N		

Observation Sector

1 - starboard bow
2 - port bow
3 - port stern
4 - starboard stern

Age Class Codes:

UNK - unknown
ADT - adult
JUV - juvenile
SUB - sub adult

Count Method:

AC - Accurate Count
EC -Estimated Count
XC - Extrapolated Count
LN - Extracted from logbook observer not present
LP -Extracted from logbook observer present
OC -Other Method

Contact Codes:

OWL - wildlife on / in water very light contact with vessel or gear
OWH - wildlife on / in water , heavy contact with vessel or gear , wildlife may be dragged under
BFC - bird flying,light contact with vessel or gear
BFH - bird flying,heavy contact with vessel or gear
WSN - wildlife snagged or entangled in lines, not hooked .
WCF - wildlife hooked or caught / entangled in net
WCT - Wildlife chasing / diving for baits or target species
WCN - wildlife chasing / diving for non target species

Contact Points:

1 - warp wire
2 - trawl doors
3 - vessel
4 - net
5 - backstrop, bridles, sweep
6 - paravanes
7 - branchlines
8 - mainline / rope
9 - buoys / beacons
10 - jigs
11 - trap

Page of

Revised AFMA February 2003

APPENDIX 12: WHALE SIGHTING FORM

WHALE SIGHTING FORM

VESSEL NAME		JNT CALL SIGN		DATE	

POSITION

LATITUDE	
LONGITUDE	
BEHAVIOUR*	
SWIMMING DIRECTION	

TIME AND WEATHER

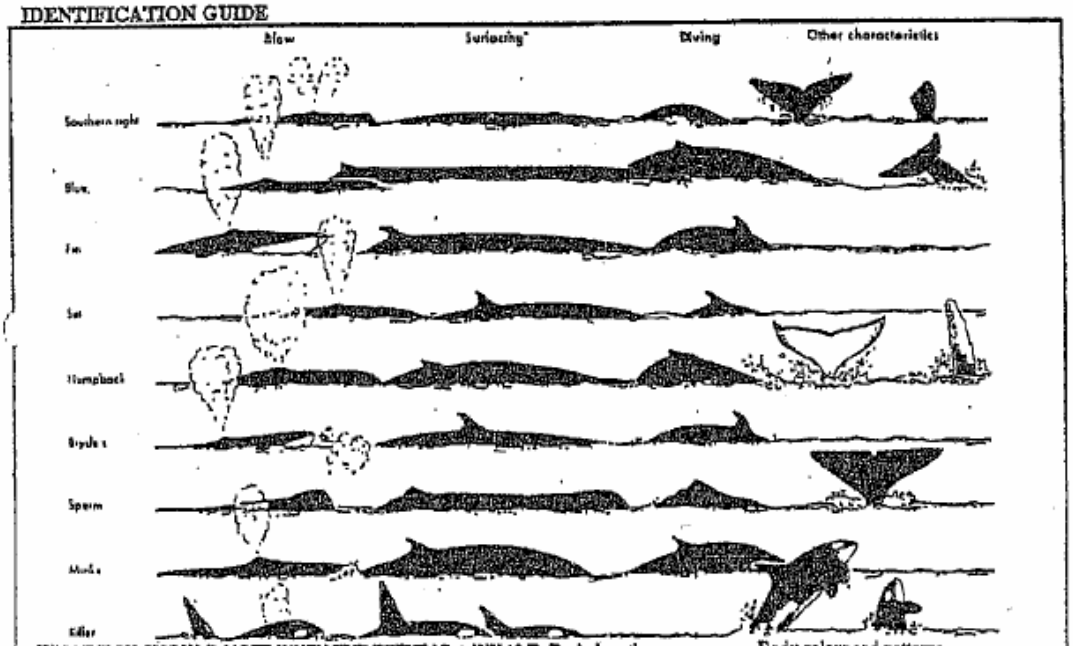
Wind dir (deg)		Sea dir (deg)		Swell dir (deg)	
Wind speed (Bf)		Sea height (m)		Swell height (m)	
Bar (mB)		Air temp (C)		Cloud cover	/8
Barometer: falling		SST (C)		Rec time	

* Swimming steadily, Stationary, Breaching, Feeding, Splashing water with tail or flippers.

WHALE DETAILS

SPECIES		TOTAL NUMBER	
ESTIMATED LENGTHS		NUMBER OF CALVES	
COLOUR, PATTERNS AND MARKINGS			
LARGE WHITE HUMPS PRESENT ON HEAD?			
LONG WHITE FLIPPERS PRESENT?			
MAMMALS, SHARKS, SEABIRDS PRESENT?		PHOTO TAKEN?	
COMMENTS			

IDENTIFICATION GUIDE



WHAT YOU SHOULD NOTE WHEN IDENTIFYING A WHALE:

- Body length
- Presence of a dorsal fin
- Shape and size of flippers
- Presence of beak
- Swimming characteristics
- Body colour and patterns
- Size and position of dorsal fin
- Shape of head and general body shape
- Shape of blow
- Sea conditions

OBSERVER	DATE

Tuna Longline AFZ Observer Cruise Diary Apr 1994

APPENDIX 13: MARPOL COMPLIANCE ASSESSMENT

MARPOL COMPLIANCE ASSESSMENT

VESSEL NAME		INT CALL SIGN		DATE	

List any MARPOL breaches you witnessed. Indicate whether you discussed any breaches with the fishing Master

			F/M
Did the Vessel comply with MARPOL regulations?	Y	N	
Did the vessel appear to fully understand MARPOL regulations when you first boarded?	Y	N	
Did the vessel appear to understand MARPOL regulations at the time of disembarkation?	Y	N	

Was the vessel equiped with an incinerator? If equiped, describe in comments.	Y	N
Did the vessel comply with MARPOL regulations in regards to disposal of any rubish at sea? Describe in comments.	Y	N

Were facilities adequate for the disposal of rubbish at the last port?

Masters Opinion	Y	N
Your Opinion	Y	N

What was the last port of call? _____

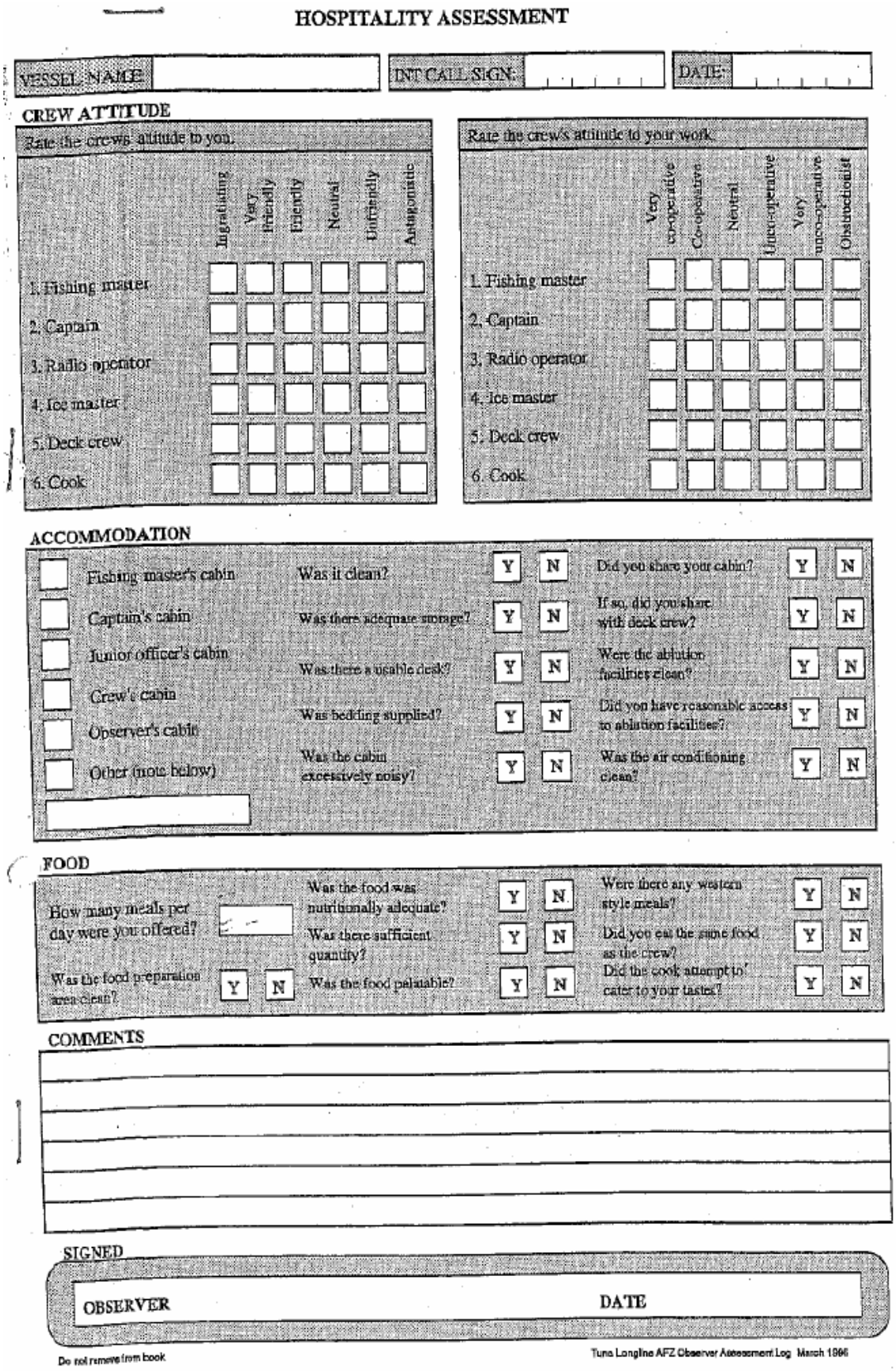
If rubbish was disposed of at sea, estimate the quantity and type (ie cans, paper, food scraps, bottles etc) and describe routine.

Describe the bait packaging materials used by the vessel on their bait boxes, particularly the straps, number and constructio

COMMENTS

OBSERVER	DATE

APPENDIX 14: HOSPITALITY ASSESSMENT FORM



HOSPITALITY ASSESSMENT

VESSEL NAME | INT CALL SIGN | DATE

CREW ATTITUDE

Rate the crews attitude to you.

	Ingratiating	Very friendly	Friendly	Neutral	Unfriendly	Antagonistic
1. Fishing master						
2. Captain						
3. Radio operator						
4. Ice master						
5. Deck crew						
6. Cook						

Rate the crew's attitude to your work.

	Very co-operative	Co-operative	Neutral	Uncooperative	Very uncooperative	Obstructionist
1. Fishing master						
2. Captain						
3. Radio operator						
4. Ice master						
5. Deck crew						
6. Cook						

ACCOMMODATION

- ☐ Fishing master's cabin
- ☐ Captain's cabin
- ☐ Junior officer's cabin
- ☐ Crew's cabin
- ☐ Observer's cabin
- ☐ Other (note below)

Was it clean?	Y	N	Did you share your cabin?	Y N
Was there adequate storage?	Y	N	If so, did you share with deck crew?	Y N
Was there a usable desk?	Y	N	Were the ablution facilities clean?	Y N
Was bedding supplied?	Y	N	Did you have reasonable access to ablution facilities?	Y N
Was the cabin excessively noisy?	Y	N	Was the air conditioning clean?	Y N

FOOD

How many meals per day were you offered? ____

Was the food preparation area clean? Y N

Was the food was nutritionally adequate?	Y	N	Were there any western style meals?	Y N
Was there sufficient quantity?	Y	N	Did you eat the same food as the crew?	Y N
Was the food palatable?	Y	N	Did the cook attempt to cater to your tastes?	Y N

COMMENTS

SIGNED

OBSERVER DATE

Do not remove from book

Tuna Longline AFZ Observer Assessment Log March 1996

APPENDIX 15: LIST OF VALID CODES

Beaufort Scale

Beaufort scale number	Descriptive term	Units in knots	Description at Sea
0	Calm	0	Sea like a mirror.
1-3	Light winds	10 knots or less	Small wavelets, ripples formed but do not break: A glassy appearance maintained.
4	Moderate winds	11-16 knots	Small waves - becoming longer; fairly frequent white horses.
5	Fresh winds	17-21 knots	Moderate waves, taking a more pronounced long form; many white horses are formed - a chance of some spray
6	Strong winds	22-27 knots	Large waves begin to form; the white foam crests are more extensive with probably some spray
7	Near gale	28-33 knots	Sea heaps up and white foam from breaking waves begins to be blown in streaks along direction of wind.
8	Gale	34-40 knots	Moderately high waves of greater length; edges of crests begin to break into spindrift; foam is blown in well-marked streaks along the direction of the wind.
9	Strong gale	41-47 knots	High waves; dense streaks of foam; crests of waves begin to topple, tumble and roll over; spray may affect visibility.
10	Storm	48-55 knots	Very high waves with long overhanging crests; the resulting foam in great patches is blown in dense white streaks; the surface of the sea takes on a white appearance; the tumbling of the sea becomes heavy with visibility affected.
11	Violent storm	56-63 knots	Exceptionally high waves; small and medium sized ships occasionally lost from view behind waves; the sea is completely covered with long white patches of foam; the edges of wave crests are blown into froth.
12+	Hurricane	64 knots +	The air is filled with foam and spray. Sea completely white with driving spray; visibility very seriously affected

Catch Life Status Codes

CODE	MEANING
0	Dead and damaged
1	Dead, in rigour
2	Dead and flexible
3	Alive, just
4	Alive and sluggish
5	Alive and vigorous

Catch Fate Codes

CODE	MEANING
R	Retained – kept for commercial or crew consumption
D	Discarded – landed and not retained
J	Jerked free – crew jerked free, without landing
C	Cut Free – cut free without landing
E	Escaped – bitten off
U	Unknown – did not observe
T	Tagged fish and returned to sea alive

Biological data length codes

CODE	MEASUREMENT
LCF	Length to caudal fork
TOT	Total length
STL	Standard length
UDL	Upper jaw to 2nd dorsal fin notch length
OVL	Orbit to vent
BFL	Bill to caudal fork length (for billfish)
OFL	Orbit to caudal fork length (for billfish)
LFL	Lower jaw to caudal fork length (for billfish)
CFL	Cleithrum to caudal fork length (for broadbill)

Wildlife behaviour codes

CODE	MEANING
INT	Intensively Searching
IRR	Irregularly searching
TOT	Totally Disinterested
ROM	Roaming Widely

Wildlife age class codes

CODE	MEANING
UNK	Unknown
ADT	Adult
JUV	Juvenile
SUB	Sub Adult

Wildlife interaction codes

CODE	MEASUREMENT
OWL	Wildlife on or in the water, very light contact with vessel or gear
OWH	Wildlife on or in water, heavy contact with vessel or gear
BFC	Bird Flying, light contact with vessel or gear
BFH	Bird flying, heavy contact with vessel or gear
WSN	Wildlife snagged or entangled in lines, not hooked
WCF	Wildlife hooked or caught / entangled in net
WCT	Wildlife chasing / diving for baits or target species
WCN	Wildlife chasing / diving for non-target species.

Vessel Activity Codes

#	ACTIVITY	#	ACTIVITY
1	Set Start	12	Finish brailing
2	Set end (rings closed)	13	Fish pumping start
3	Searching	14	Fish pumping ends
4	Transit	15	Abort shot
5	Breakdown no fishing	16	Net streaming or cleaning
6	Bad weather no fishing	17	Net repair
7	In port	18	Chumming
8	Waiting for cage	A1	Aircraft leaves base
9	Start transfer to cage	A2	Aircraft begins search
10	Finish transfer to cage	A3	Aircraft leaves area
11	Start brailing	A4	Aircraft arrives base

APPENDIX 16: TABLE OF SPECIES CODES

Species Codes for Fish and Sharks

FAO code	Common name	Scientific Name	CSIRO CAAB code
ALB	Albacore	Thunnus alalunga	37441005
BLM	Black marlin	Makaira indica	37444006
SNK	Barracouta	Thyrsites atun	37439001
SWO	Broadbill swordfish	Xiphias gladius	37442001
BET	Bigeye tuna	Thunnus obesus	37441011
PBF	Pacific Bluefin tuna	Thunnus orientalis	37441026
BSH	Blue whaler shark	Prionace glauca	37018004
LEC	Black oilfish (escolar)	Lepidocybium flavobrunneum	37439008
BAU	Bonito	Sarda australis	37441020
BRA	Pomfret	Brama spp.	37342000
BRO	Bronze whaler shark	Carcharhinus brachyurus	37018001
BLZ	Blue marlin	Makaira mazara	37444003
BUK	Butterfly mackerel	Gasterochisma melampus	37441019
ISB	Cookiecutter shark	Isistius brasiliensis	37020014
PSK	Crocodile shark	Pseudocarcharius kamoharai	37009003
DOT	Dogtooth tuna	Gymnosarda unicolor	37441029
DGZ	Dog shark	Family Squalidae	37020000
DOL	Dolphinfish	Coryphaena hippurus	37338001
SSQ	Velvet dogfish	Zameus squamulosus	37020042
DUS	Dusky shark	Carcharhinus obscurus	37018003
TAS	Rough Pomfret	Taractes asper	37342008
GPF	Golden pomfret	Xenobrama microlepis	37342002
GBA	Great barracuda	Sphyraena barracuda	37382008
SPN	Hammerhead shark	Sphyrna spp.	37019000
WSH	Great white shark	Carcharodon carcharias	37010003
YTC	Yellowtail kingfish	Seriola lalandi	37337006
TAL	Long finned bream/Bigscale pomfret	Taractichthys longipinnis	37342003
LMA	Long finned Mako	Isurus paucus	37010002
ALX	Long nosed lancetfish	Alepisaurus ferox	37128001
LOT	Longtail tuna	Thunnus tonggol	37441013
SMA	Mako shark	Isurus oxyrinchus	37010001
RMB	Manta ray	Manta birostris	37041004
KAW	Mackerel tuna	Euthynnus affinis	37441010

OIL	Oilfish	Ruvettus pretiosus	37439003
LAG	Opah	Lampris guttatus	37268001
OT#	Other unidentified species landed		
OCS	Oceanic white-tipped shark	Carcharhinus longimanus	37018032
POR	Porbeagle shark	Lamna nasus	37010004
PTH	Pelagic thresher shark	Alopias pelagicus	37012003
STI	Pelagic ray	Dasyatis spp.	37035999
POA	Ray's bream	Brama brama	37342001
CEO	Rudderfish	Centrolophus niger	37445004
TRP	Dealfish	Trachipterus spp.	37271000
CCP	Sandbar shark	Carcharhinus plumbeus	37018007
SSP	Shortbill spearfish	Tetrapturus angustirostris	37444007
SBF	Southern bluefin tuna	Thunnus maccoyii	37441004
GAG	School shark	Galeorhinus galeus	37017008
SKJ	Skipjack tuna	Katsuwonus pelamis	37441003
SFA	Indo-Pacific Sailfish	Istiophorus platypterus	37444005
ALO	Shortnosed lancetfish	Alepisaurus brevirostris	37128002
BAC	Pickhandle barracuda	Sphyraena jello	37382004
GES	Snake mackerel	Gemphylus serpens	37439504
FAL	Silky shark	Carcharhinus falciformis	37018008
SLT	Slender tuna	Allothunnus fallai	37441021
BRU	Southern Ray's bream	Brama australis	37342010
MLS	Striped marlin	Tetrapturus audax	37444002
MOP	Sunfish	Mola ramsayi	37470001
UNK	Unknown		37999999
TIG	Tiger shark	Galeocerdo cuvier	37018022
BTH	Bigeye thresher shark	Alopias superciliosus	37012002
ALV	Thintail thresher shark	Alopias vulpinus	37012001
WAH	Wahoo	Acanthocybium solandri	37441024
YFT	Yellowfin tuna	Thunnus albacares	37441002

Species Codes for Seabirds

FAO code	Common name	Scientific Name	CSIRO CAAB code
ALZ	albatrosses (family code)	Diomedeidae - undifferentiated	40 040000
DIB	Buller's albatross	Thalassarche bulleri	40 040001
DCU	shy albatross	Thalassarche cauta	40 040002
DCR	yellow-nosed albatross	Thalassarche chlororhynchos	40 040003
DIC	grey-headed albatross	Thalassarche chrysostoma	40 040004
DIP	southern royal albatross	Diomedea epomophora	40 040005
DIX	wandering albatross	Diomedea exulans	40 040006
DIM	black-browed albatross	Thalassarche melanophrys	40 040007
PHU	sooty albatross	Phoebetria fusca	40 040008
PHE	light-mantled sooty albatross	Phoebetria palpebrata	40 040009
DGA	Gibson's albatross	Diomedea gibsoni	40 040010
DAA	antipodean albatross	Diomedea antipodensis	40 040011
DIQ	northern royal albatross	Diomedea sanfordi	40 040012
TQW	Campbell albatross	Thalassarche impavida	40 040013
TQH	Indian yellow-nosed albatross	Thalassarche carteri	40 040014
DMA	Pacific albatross	Thalassarche platei	40 040015
PTZ	petrels, prions and shearwaters (family code)	Procellariidae - undifferentiated	40 041000
MAI	southern giant-petrel	Macronectes giganteus	40 041007
MAH	northern giant-petrel (Hall's giant-petrel)	Macronectes halli	40 041008
PRO	white-chinned petrel	Procellaria aequinoctialis	40 041018
PCI	grey petrel	Procellaria cinerea	40 041019
PCW	westland petrel	Procellaria westlandica	40 041021
PDM	great-winged petrel	Pterodroma macroptera	40 041031
PFC	flesh-footed shearwater	Puffinus carneipes	40 041038
PFG	sooty shearwater	Puffinus griseus	40 041042
PFZ	wedge-tailed shearwater	Puffinus pacificus	40 041045
MVR	Australasian gannet	Morus serrator	40 047002
CSK	great skua	Catharacta skua	40 128005

Species Codes for Turtles

FAO Code	Common Name	Scientific Name	CISRO CAAB Code
TTX	turtles (group code)	Testudines - all families except Testudinidae	39 001001
TRA	pignose turtles (family code)	Carettochelydidae - undifferentiated	39 012000
TPN	pig-nosed turtle	Carettochelys insculpta	39 012001
TUR	sea turtles (family code)	Cheloniidae - undifferentiated	39 020000
TTL	loggerhead turtle	Caretta caretta	39 020001
TUG	green turtle	Chelonia mydas	39 020002
TTH	hawksbill turtle	Eretmochelys imbricata	39 020003
LKV	Pacific ridley turtle (Olive ridley turtle)	Lepidochelys olivacea	39 020004
FBT	flatback turtle	Natator depressus	39 020005
DUN	turtles (family code)	Dermochelyidae - undifferentiated	39 021000
DKK	leatherback turtle	Dermochelys coriacea	39 021001

Species Codes for Marine Mammals

FAO code	Common name	Scientific Name	CSIRO CAAB code
RWH	right whales (family code)	Balaenidae - undifferentiated	41 110000
EUA	southern right whale	Eubalaena australis	41 110001
CPM	pygmy right whale	Caperea marginata	41 110002
MIW	minke whale	Balaenoptera acutorostrata	41 112001
SIW	sei whale	Balaenoptera borealis	41 112002
BRW	bryde's whale	Balaenoptera edeni	41 112003
BLW	blue whale	Balaenoptera musculus	41 112004
FIW	fin whale	Balaenoptera physalus	41 112005
HUW	humpback whale	Megaptera novaeangliae	41 112006
DLP	dolphins (family code)	Delphinidae - undifferentiated	41 116000
DCO	common dolphin	Delphinus delphis	41 116001
KPW	pygmy killer whale	Feresa attenuata	41 116002
SHW	short-finned pilot whale	Globicephala macrorhynchus	41 116003
PIW	long-finned pilot whale	Globicephala melas	41 116004
FRD	Fraser's dolphin	Lagenodelphis hosei	41 116006
DDU	dusky dolphin	Lagenorhynchus obscurus	41 116008
RSW	southern right whale dolphin	Lissodelphis peronii	41 116009
KIW	killer whale	Orcinus orca	41 116011

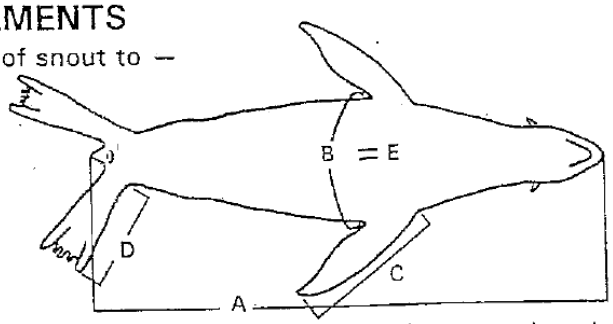
MEW	melon-headed whale	Peponocephala electra	41 116012
FAW	false killer whale	Pseudorca crassidens	41 116013
DHI	Indo-Pacific hump-backed dolphin	Sousa chinensis	41 116014
DPN	spotted dolphin	Stenella attenuata	41 116015
DST	striped dolphin	Stenella coeruleoalba	41 116016
DSI	spinner dolphin	Stenella longirostris	41 116017
RTD	rough-toothed dolphin	Steno bredanensis	41 116018
DBO	bottlenose dolphin	Tursiops truncatus	41 116019
SPM	sperm whales (family code)	Physeteridae - undifferentiated	41 119000
PYW	pygmy sperm whale	Kogia breviceps	41 119001
SPW	sperm whale	Physeter catodon	41 119003
DWW	dwarf sperm whale	Kogia simus	41 119002
BEK	beaked whales (family code)	Ziphiidae - undifferentiated	41 120000
BAW	Arnoux's beaked whale	Berardius arnuxii	41 120001
SRW	southern bottlenose whale	Hyperoodon planifrons	41 120002
BNW	Longman's beaked whale	Indopacetus pacificus	41 120003
BDW	Andrews' beaked whale	Mesoplodon bowdoini	41 120004
BBW	Blainville's beaked whale	Mesoplodon densirostris	41 120005
TGW	gingko-toothed beaked whale	Mesoplodon gingkodens	41 120006
BYW	Gray's beaked whale	Mesoplodon grayi	41 120007
BHW	Hector's beaked whale	Mesoplodon hectori	41 120008
TSW	strap-toothed beaked whale	Mesoplodon layardii	41 120009
BTW	True's beaked whale	Mesoplodon mirus	41 120010
BSW	Tasman beaked whale - in Aust. region (not on AFZ list)	Tasmacetus shepherdi	41 120011
BCW	Cuvier's beaked whale	Ziphius cavirostris	41 120012
SNZ	New Zealand fur-seal	Arctocephalus forsteri	41 131001
SEA	Antarctic fur-seal - in Antarctic/subantarctic zone (not on AFZ list)	Arctocephalus gazella	41 131002
SEK	Australian fur-seal	Arctocephalus pusillus doriferus	41 131003
SSF	subantarctic fur-seal	Arctocephalus tropicalis	41 131004
ASL	Australian sea-lion	Neophoca cinerea	41 131005
NSL	Hooker's sea-lion - in Antarctic/subantarctic zone (not on AFZ list)	Phocarctos hookeri	41 131006

APPENDIX 17: STANDARD BIOLOGICAL MEASUREMENTS OF SEALS AND CETACEANS

STANDARD MEASUREMENTS

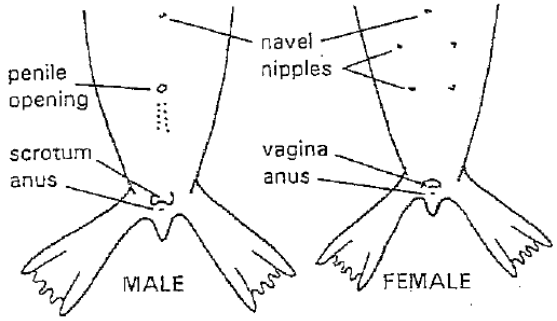
Taken in straight line from tip of snout to —

A. tip of tail
B. axillary girth
C. foreflipper length
D. hindflipper length

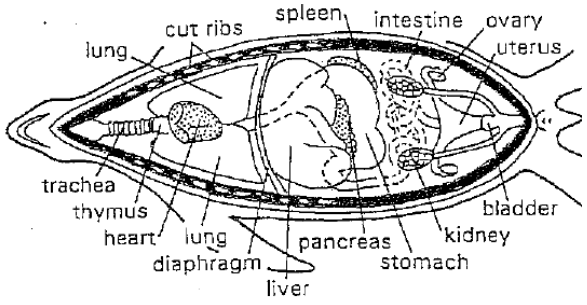


E. blubber thickness over sternum, by making two parallel cuts 2.5 cm apart through skin to sternum, then measure on inner cut from base of blubber to suface of skin

SEX DETERMINATION



ANATOMY



Measurements and Morphology of Cetaceans

Measurements

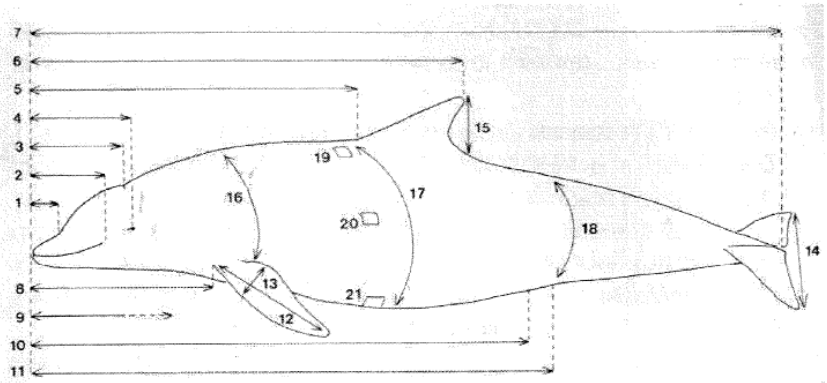


Fig. 10.7. Measuring cetaceans. **1**. Snout to melon. **2**. Snout to angle of mouth. **3**. Snout to blowhole. **4**. Snout to center of eye. **5**. Snout to anterior insertion of dorsal fin. **6**. Snout to tip of dorsal fin. **7**. Snout to fluke notch. **8.** Snout to anterior insertion of flipper. **9**. Snout to caudal end of ventral grooves (when present). **10**. Snout to center of genital aperture. **11**. Snout to center of anus. **12**. Flipper length. **13**. Flipper width (maximum). **14**. Fluke width. **15**. Dorsal fin height. **16**. Girth: axillary. **17**. Girth: maximum (specify location). **18**. Girth: at level of anus. **19**. Blubber thickness: dorsal (anterior and lateral to dorsal fin). **20**. Blubber thickness: lateral. **21**. Blubber thickness: ventral. As a minimum, measure 7, 12, 14, 17 and 21. (Modified from Norris 1961.)

Basic Morphology and Sexing