

APPENDIX 9

Examples of methods for estimation of catch composition

1. THE EYEBALL METHOD FOR NET CATCHES

The first method is the 'eyeball' method; this only uses visual estimates rather than any measurements and is a quick way to obtain a rough estimate of catch composition. With practice observers can become fairly accurate with this method. It is always worthwhile to use it to gain experience.

- 1) Estimate the catch size at the first chance you get to see the catch (when the net arrives on the deck).
- 2) Then if the fish are emptied onto the deck estimate the total weight again; compare this to the earlier estimate.
- 3) Note down all the species and an estimate of the percentage of the catch that these make up.
- 4) Calculate the weight for each species as follows:

total catch weight in kg's	= C
species %	= S
species weight in kg's	= W

 $C/100 \times S = W$
- 5) If the calculation is correct when all the species weights are added up they will be equal to the total catch weight.

Some useful tips:

- Although small fish (especially bright coloured fish) may appear to be all over the trawl, in total they will probably add up to weigh less than expected.
- Obscure colour species like squids often look less than they really are.

2. THE DECK METHOD FOR USE WHEN FISH ARE EMPTIED ON TO THE DECK

- 1) Estimate the catch size at the first chance you get to see the catch (when the net arrives on the deck).
- 2) Then if the fish are emptied onto the deck estimate the total weight again; compare this to the earlier estimate. Also check against the fishing masters' figures and estimates after processing.
- 3) Take random samples from the catch of 3 to 4 baskets. Take each basket from a different place in the pile. If the fish are over 1 tonne wait until the crew start to process the fish before taking the second, third and fourth baskets.
- 4) Sort the fish by species type and then estimate the percentages of each.
- 5) Calculate the weight for each species in the total catch by using either the estimated percentages or the calculated ones:

total catch weight in kg's	= C
species %	= S
species weight in kg's	= W

 $C/100 \times S = W$
- 6) If the calculation is correct when all the species weights are added up they will be equal to the total catch weight.

3. THE CONVEYOR BELT METHOD

These notes explain a method useful for vessels with a conveyor belt when it is not possible either to sample the whole catch or easily to weigh samples. It is based on the same concept as the deck system except that baskets of fish are taken at different times in the processing.

- 1) Estimate the catch size at the first chance you get to see the catch (when the net arrives on the deck).
- 2) Then if the fish are emptied onto the deck estimate the total weight again; compare this to the earlier estimate. Also check against the fishing masters' figures and estimates after processing.
- 3) Now decide how often to take a basket of fish to be sure to have a random sample. Normally 3 -5 samples would be taken or once every 2 hours if the catch takes over 10 hours to process. This will also depend on the number of by-catch species, if there are only a few then less samples can be taken but of course if there are lots of different species more samples are needed.
- 4) Take the first basket of fish and, divide the fish into piles by species type.
- 5) Take a second basket and continue like this while the trawl is processed.
- 6) Once all the fish from the different samples are together sort and estimate the percentages of each.
- 7) Calculate the weight for each species by using either the estimated percentages or the calculated ones:

$$\begin{array}{ll} \text{total catch weight in kg's} & = C \\ \text{species \%} & = S \\ \text{species weight in kg's} & = W \end{array}$$

$$C/100 \times S = W$$

- 8) If the calculation is correct when all the species weights are added up they will be equal to the total catch weight.

4. AN EXAMPLE OF THE CATCH COMPOSITION CALCULATION

Estimate total catch = 2400kgs = C

Species	Estimated % (S)	Calculation to Weight	Weight in KGs
HKC	40%	$2400/100 \times 40$	960
HKO	10%	$2400/100 \times 10$	240
MVO	10%	$2400/100 \times 10$	240
BRF	5%	$2400/100 \times 5$	120
JOD	5%	$2400/100 \times 5$	120
HMX	12%	$2400/100 \times 12$	288
KCP	4%	$2400/100 \times 4$	96
Mix	14%	$2400/100 \times 14$	336
Total	100%		2400 KGs

APPENDIX 10

Examples of useful forms for logistical management

1. REQUEST FOR FISHERY OBSERVER

This form is useful if the fishery requires vessels to take an observer or to report to the fishery observer programme before they leave for a fishing trip. The company or vessel can complete the form and fax it or give to the observer programme (**BOX 1**). Once the observer programme receives the form **BOX 2** is completed with the name, date and time of receiving the form. The data can then be punched into a database or recorded in a register and the associated trip record code allocated along with the names of the observer(s) allocated to the trip. If no electronic version is maintained then the form can be filed in several ways such as under the vessel or company name.

National Fishery Observer Programme	
REQUEST FOR FISHERY OBSERVER	
Fax Number:	<i>Insert Observer Programme Fax Number</i>
Telephone Number:	<i>Insert Observer Programme Telephone Number</i>
Note: <i>this request must reach the Observer Programme not more than 48 hours and at least 24 hours before the expected time of departure.</i>	
To be completed by the Company: 1	
Company Name:	_____
Contact Person:	_____
Fax:	_____
Telephone:	_____
Vessel Name:	_____
Vessel Type:	_____
Callsign:	_____
Expected Departure Date:	_____
Expected Departure Time:	_____
Name of Jetty of Harbour:	_____
Expected Length of Trip:	_____ Days
Signature:	_____
Date of Request:	_____
To be completed by National Fishery Observer Programme: 2	
Received By:	_____
Date:	_____
Time:	_____
Punched:	<input type="checkbox"/> Yes
Trip Record Code:	_____
Observers allocated:	<input type="checkbox"/> Yes <input type="checkbox"/> No

2. CANCELLATION OR DELAY IN REQUEST FOR FISHERY OBSERVER

This form is useful if the 'request for fishery observer' form is used as it ensures that track is kept of any delays or cancellations. The vessel or company completes it and faxes or gives it to the observer programme to inform them of a cancellation or delay in a previous request (**BOX 1**). Once the observer programme receives the form **BOX 2** is completed with the name, date and time of receiving the form and the action taken. If no database exists then change the word database for records. If no electronic version is maintained then the form can be filed with the request form.

National Fishery Observer Programme CANCELLATION OR DELAY IN REQUEST FOR FISHERY OBSERVER	
Fax Number:	<i>Insert Observer Programme Fax Number</i>
Telephone Number:	<i>Insert Observer Programme Telephone Number</i>
<div style="text-align: right; font-weight: bold;">1</div> <p style="text-align: center;"><i>To be completed by the Company:</i></p> <p style="text-align: center;"><i>This is to inform the National Observer Programme that the request for an observer with the following details must be:</i></p> <p>CANCELLED: <input type="checkbox"/> or DELAYED: <input type="checkbox"/></p> <p>Date of Original Request: _____</p> <p>Company Name: _____</p> <p>Fax: _____</p> <p>Vessel Name: _____</p> <p><i>If delayed:</i></p> <p>New Expected Departure Date: _____</p> <p>New Expected Departure Time: _____</p> <p>Name of Jetty of Harbour: _____</p> <p>Expected Length of Trip: _____ Days</p> <p>Signature: _____</p> <p>Date of Cancellation or Delay: _____</p>	
<div style="text-align: right; font-weight: bold;">2</div> <p style="text-align: center;"><i>To be completed by National Fishery Observer Programme:</i></p> <p>Received By: _____</p> <p>Date: _____ Time: _____</p> <p>Trip cancelled in database: <input type="checkbox"/> Yes</p> <p>Trip details updated in database: <input type="checkbox"/> Yes</p> <p>Observers allocated: <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	

3. OBSERVER DEPLOYMENT DETAILS

This is a useful form to advise the vessel or company that an observer will be joining their vessel. It can be used independently of the 'request for a fishery observer' form and is useful even if the observers carry it themselves onto a vessel. However, if possible send it to the vessel or company in advance of them sailing so that plans can be made to accommodate the observer. The observer programme completes **BOX 1** and **BOX 2** by hand or as part of a printout from a database if the 'request for fishery observer' form is entered into the database. **BOX 3** will be fixed and contain pertinent information for the captain, an example is given in the sample form. **BOX 4** will be optional for the issuing person to add comments. If no electronic version is maintained then a copy of the form can be filed either under the observer name or vessel/company name.

National Fishery Observer Programme		1
OBSERVER DEPLOYMENT DETAILS		
Company Name:	<input type="text"/>	
Contact Person:	<input type="text"/>	
Fax:	<input type="text"/>	
Date:	<input type="text"/>	

2	
<i>The National Fishery Observer Programme will deploy Fishery</i>	
Observer <input type="text"/>	Rank <input type="text"/>
and <input type="text"/> Rank <input type="text"/> to join	
vessel <input type="text"/>	with callsign <input type="text"/>
to sail from <input type="text"/> on <input type="text"/> at <input type="text"/> hours	
Authorized by <input type="text"/>	
Signature: <input type="text"/>	
Date: <input type="text"/>	

Information to Captain:		3
The following extract is taken from the terms and conditions of your fishing licence:		
<i>"You may be called upon to carry a designated Fishery Observer who will be with you in order to collect scientific, management and/or* compliance information. During the period of stay of the Fishery Observer you will be required to allow the Fishery Observer access to all parts of the vessel as well as to any records, documents and marine biological resources found there, to provide reasonable accommodation for the fishery observer, and to allow the use of all equipment necessary for the performance of his or her duties" (adapt as necessary)</i>		

Special Duties of the Observer:		4
<i>Here add any special duties - such as special sample collection or any project being undertaken by the observer on this trip</i>		

4. FISHERY OBSERVER TRIP REPORT

This form is very useful as it gives the vessel the opportunity to register agreement that the report of activities of the observers have occurred. This can be useful for payments that are related to sea time. One possibility is for this form to be part of an observer record book (see Appendix 4). The form is completed by hand and signed first by the captain at sea and then the observer programme supervisor (when the observer returns to shore to be debriefed). If this form is not included in a record book it should be filed with the observer programme under the observer name as a verification of his or her work.

National Fishery Observer Programme	
FISHERY OBSERVER TRIP REPORT	
Vessel Details:	1
Vessel Name: _____ Call Sign: _____ Licence Number: _____	
Nationality: _____ GRT: _____	
Captain's Name: _____ Company Name: _____	
Trip Details:	2
Trip number: _____ No days at sea: _____	
Date Embarked: _____ Time Embarked: _____	
Date Disembarked: _____ Time Disembarked: _____	
Embarkation Port: _____ Disembarkation Port: _____	
Sampling Details:	3
Observer Grade or Rank: _____ Number stations sampled: _____	
Species sampled: _____	
Additional Comments:	
Signature of Captain:	5
Stamp of Vessel:	
Date:	
Signature of National Fishery Observer Programme Supervisor:	6
National Fishery Observer Programme Stamp:	
Date:	

5. FISHERY OBSERVER DAILY REPORT

This is a report completed by each observer while at sea. One form covers 10 days but the period can be changed to suit the average length of trips in a fishery. **BOX 1** can be completed by hand or automatically printed by a database when the Observer Deployment Details are printed. The observer completes **BOX 2** while at sea. The observer programme supervisor checks the form and signs it adding any comments. If no electronic version is maintained then this form can be filed either under the observer name or vessel/company name. Information on this form will be used in compiling the outputs of the observer programme.

National Fishery Observer Programme - FISHERY OBSERVER DAILY REPORT									
Observer Name: _____		Number: _____		Rank: _____		Vessel Type: _____		Code: _____	
Vessel Name: _____		Call Sign: _____		Licence Number: _____		Nationality: _____			

Daily Checklist: Check the following points daily. Add any other comments in the box or on the back.

A Did you check logbook was completed correctly? **B** Did you observe any violations and complete the compliance assessment form?
C Did you undertake any commercial sampling? **D** If yes, which species were sampled?
E Vessel activity: fishing, steaming, broken down or in port

Day	Date	A		B		C		D			E			Comments
		Yes	No	Yes	No	Yes	No	fish.	steam.	broken	port			
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														

Signed: _____

Checked by Supervisor: _____

Date: _____

Daily Report Sheet No. for this trip: _____

Comments from Supervisor: _____

6. FISHERY OBSERVER COMPLIANCE ASSESSMENT

This form is useful to standardise the way in which observers collect information in support of a compliance violation. It should be adjusted to the situation in the fishery that observers are monitoring for compliance. Only one violation is completed per form and only one form is completed for each violation – i.e. if there are 2 observers both complete the same form. Every violation is entered into either a database or a violation register with additional comments from the supervisor and the action taken. If no electronic version is maintained then this form can be filed under the vessel/company name. Information on this form will be used in compiling the outputs of the observer programme.

BOX 1 is completed by the observer or as a printout, **BOX 2** is completed when a violation occurs and the observer programme supervisor completes **BOX 3**.

National Fishery Observer Programme							1
FISHERY OBSERVER COMPLIANCE ASSESSMENT							
Observer Name:		Number:		Rank:			
Observer Name:		Number:		Rank:			
Vessel Name:		Call Sign:		Licence No:			
Nationality:		Vessel type:		Trip Number:			

Apparent violations						2
Date	Time	Position		Violation	Contrary to control measures (no)	Captain Informed Y/N
		Lat	Long			Y <input type="checkbox"/> N <input type="checkbox"/>
Explain the details of the violation. If you informed the captain what was the result ? <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>						
Do you have any evidence or suspicion that the vessels logbook or radio reports are not true records of the vessel's fishing activity and catch? If so provide details below. <div style="text-align: right;">Y <input type="checkbox"/> N <input type="checkbox"/></div> <hr/> <hr/> <hr/> <hr/>						
Signed: _____				Date: _____		

Office Use:	3
Comments from Supervisor: _____ _____ _____	
Punched into register: <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Violation no. issued: _____	
Action taken: nothing <input type="checkbox"/> written warning: <input type="checkbox"/> fine: <input type="checkbox"/> court case: <input type="checkbox"/>	

7. SUMMARY SAMPLING SHEET

This form is useful to assist in managing the data sheets that the observer brings ashore. It is useful in both a manual and electronic system as it keeps a record in hardcopy of the checking and processing of the data. The observer programme supervisor completes **BOXES 1 to 5** during the debriefing of the observer. Examples of manual checks are given in Chapter 5 of the main text. **BOX 4** should be adjusted to fit the type of names of sampling forms that your programme uses. **BOX 6 and 7** are only required if you have a database for entering the scientific data generated by the programme. **BOX 8** is the record of when the data was passed to the fisheries management authority. A copy of this form should be made and one kept in the observer programme and one with the hard copies of raw data.

National Fishery Observer Programme	
SUMMARY SAMPLING SHEET	
<i>Fishery Observer Details:</i>	1
Observer Name: _____ Number: _____ Rank: _____	
Observer Name: _____ Number: _____ Rank: _____	
<i>Vessel Details:</i>	2
Vessel Name: _____ Call Sign: _____ Licence Number: _____	
<i>Trip Details:</i>	3
Trip number: _____ No days at sea: _____	
Date Embarked: _____ Date Disembarked: _____	
Embarkation Port: _____ Disembarkation Port: _____	
<i>Sampling Details:</i>	4
Number stations sampled: _____ Target Species: _____	
Number of forms completed:	
<div style="display: flex; justify-content: space-between;"> <div>1A <input type="text"/></div> <div>2A <input type="text"/></div> <div>2B <input type="text"/></div> </div>	
<div style="display: flex; justify-content: space-between;"> <div>2C <input type="text"/></div> <div>2D <input type="text"/></div> <div>3A <input type="text"/></div> </div>	
<i>Manual Data Checks:</i>	5
Checked by: _____ Date: _____	
Comments: _____	

<i>Data Processing:</i>	6
Data punched into database: <input type="checkbox"/> yes Date: _____	
Data Puncher: _____	
<i>Electronic Data Checks:</i>	7
Checked by: _____ Date: _____	
Comments: _____	

<i>Data passed to Fishery Management Authority:</i>	8
Date: _____ Received by: _____	