



Food and Agriculture
Organization of the
United Nations



Fisheries Scientific Data Collection

Review of scientific data collection and best practices

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Scientific data collection outline

- * Scientific data objectives
- * Scientific data (quick) description
- * Scientific data collection review
- * Scientific data collection best practices

Fisheries scientific data objectives

- * Main role of scientific data in fisheries is to feed analysis on stock assessment (stock status) and provide enough detailed information to define the acceptable level of stock exploitation.
- * Scientific data are also collected for aquaculture, not in this presentation scope though.

What are scientific data?

- * Fisheries Scientific data: no official data definition exists.

It encompasses all data needed to provide scientific recommendations on fisheries management/exploitation to policy makers.

We will describe in the next presentation the minimum requirement for scientific data.

Scientific data collection?

- * We agree (see next presentation) on the following definitions:
 - * **Exploitation data:** catches, effort, landings: by the National fisheries monitoring systems: logbook/e-logbook, sample based survey, frame survey, landing survey
 - * **Biological data:** observers on board, scientific fishery campaign, scientific research on fish biology

Scientific data collection?

- * Catches, landings and effort at National level: what?
 - * **Fleet frame**: either done through national frame survey or by combining port authority vessel registrations list and fishing licenses list (<http://www.fao.org/fishery/cwp/handbook/L/en>)
- * Key to know the total fleet **capacity**

Scientific data collection?

- * Catches, landings and effort at National level: what?
 - * **Activity survey** is then required to assess total fleet **effort**
(<http://www.fao.org/fishery/cwp/handbook/N/en>)
- * Landings are monitored to assess total quantity of **Nominal Catches**

Scientific data collection?

- * Catches, landings and effort at National level: how?
 - * Logbook: Industrial / semi-industrial fisheries: provide information on vessel activities and landing (or catches): can be a simple landing form

Bahamas Log Book v1.0 book # 1 / page 1

Landing form for Bahamian large vessels

Name of vessel: _____ Port Registration #: _____ Name of captain: _____ Picture of landed catches taken? picture# _____
 Landing site (Port): _____ Date of landing and selling operations: started on the _____ / _____ / _____ Ended on the _____ / _____ / _____

Period at sea (in # of days) to produce the present landed products: _____ days
 Crew size for this period of time? _____
 How many dinghies used for this period of time? _____
 Registration n° of the dinghies used: _____

Gears and devices used (check one or more boxes):
 cast net ☐ seine net ☐ gillnet ☐ deep sea net ☐ stone crab traps ☐
 crawfish traps ☐ scalefish traps ☐ deep water traps ☐ cenderos ☐
 handling hook-line ☐ crawfish hook ☐ spear-fishing ☐
 Diving technique used: Free diving [☐], Compressor [☐]

Name of products	Weight landed (Lbs)	Selling Value (\$)
Spiny lobster (long whole)		
Spiny lobster (tail)		
Spiny lobster (head)		
Stone crab (whole)		
Stone crab (claw only)		
Spider crab		
Queen conch (whole)		
Queen conch (bodies only)		
Queen conch (shells only)		
Line snapper		
Mutton snapper		
Yellowtail snapper		
Gray snapper		
Blackfin snapper		
File snapper		
Black snapper		
Other or undefined snapper		
Nassau grouper		
Yellowfin grouper		
Blackfin grouper		
Goliath grouper		
Red grouper		
Musty grouper		
Rock hind		
Other or undefined grouper		
Groupers flat		
Undefined flat		

Name of products	Weight landed (Lbs)	Selling Value (\$)
Queen triggerfish (barrel)		
King fish		
Banana fish		
Grouper		
Panor fish		
Silver pomfrit		
Yellowtail pomfrit		
Succinea pomfrit		
Margate		
White grunt		
Slipstream grunt		
Indigo chromis		
Pomfrit		
Black margate		
Other or undefined grunts		
Yellow jack		
Blue runner		
Rainbow runner		
Barjack		
Pomfrit		
Bayview acid		
Other or undefined jacks		
Woolly scorpion		
Yellowhead scorpion		
Red scorpion		
Gray scorpion		

Scientific data collection?

- * Catches, landings and effort at National level: how?
- * Logbook: And an activity sheet: number of days at sea

Bahamas Log Book v1.0 book # 1 / page 1 Activity form for Bahamian large vessels

Name of vessel: _____ Registration n°: _____ Month/Year: ____/____/____ Picture taken [] on date: ____/____/____

Date (N° of the day)	Sailing only	Fishing	Landing and selling the fishing products	Food and fuel supply	In dock, at rest or activity of maintenance	Location (fishing ground or port)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

For each day: check relevant boxes (one or more) and fill the name of location

Date (N° of the day)	Sailing only	Fishing	Landing and selling the fishing products	Food and fuel supply	In dock, at rest or activity of maintenance	Location (fishing ground or port)
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

Scientific data collection?

- * Catches, landings and effort at National level: how?
 - * Logbook: when combining log book landing, log book activities form and initial frame, landing, catches and effort can be computed. It can be a comprehensive monitoring of fishing activities/landing, sampling methodologies can also be applied.
 - * Cost is mainly bared by state to collect and process paper forms in electronic tools to raise statistics. Fishers time investment is limited but fishers can have strong reluctance to fill out such document if no legal constraint exists
 - * More advanced forms of paper log book can exist (with monitoring of catches instead of landing declaration, with by-catch and discards. Can be accurate with observer on board)

Scientific data collection?

- * Catches, landings at National level: how?
 - * E-logbook: industrial fisheries: requires regulation defining formats/tools to implement regulations and allow fishermen to transmit information. (eRS version 3 for EC:
<http://ec.europa.eu/fisheries/cfp/control/technologies/ers/>)
 - * Cost for countries is important (need to have automatic procedure to get e-logbook data / importance of managing confidentiality of data) and cost for fishermen is even higher. But the benefit is the comprehensive coverage of all fishing activities → very precise information is obtained on stock exploitation

Scientific data collection?

- * Catches, landings at National level: how?
 - * What happened for countries with limited resources (human / funds): Sample based survey
 - * It requires a frame survey to describe the national fleet and the landing sites:
 - ➔ Give precious indications on the fleet organization (type of fishing units, number, frequency of trip at sea etc...)
 - ➔ Give precious on landing sites organization (major landing sites per species/fishing unit)

Definition of a cost efficient sampling methodology

Scientific data collection?

- * Catches, landings at National level: how?
 - * What happened for countries with limited resources (human / funds): Sample based survey
 - * Then landings monitoring is needed to raise statistics
- * **Be aware that there is still the need for a in-house statistician to review results and update design**

Scientific data collection?

- * Catches, landings at National level: how?
 - * Indirect data from other sources: from administrative records from processing plants, sale houses etc...
 - * **Be aware of double counting !**

Scientific data collection?

- * Catches, effort, landings at Regional level
 - * Data calls are made by the Regional Organization to Member Countries
 - * Ex: <https://datacollection.jrc.ec.europa.eu/>
 - * Ex: ICES: <http://www.ices.dk/marine-data/tools/Pages/Data-calls.aspx>

Scientific data collection?

- * Biological data at National level: what?
 - * On-board length distribution
 - * Length distribution collected at landing sites
 - * Ad-hoc studies: acoustic campaign, scientific fisheries campaigns, scientific studies

Scientific data collection?

- * Biological data at National level: how?
 - * On-board observers: imposed by regional regulations or national fishery act
 - * Length distribution collected by Enumerators (cf IFREMER in Martinique: <http://archimer.ifremer.fr/doc/00156/26762/>)
 - * Scientific studies conducted by research institutes (can be with external support from other national institutes like IFREMER or international organizations such as FAO)

Scientific data collection best practices

- * Catches, effort, landings: recommendations for best practices are available
 - * Logbook: <http://www.fao.org/fishery/cwp/handbook/O/en>
 - ➔ Recommended mainly for industrial fisheries (easier to impose as best practises: most of industrial vessels records their catches for their companies/their associate fishermen/landing declaration). More difficult to recommend to artisanal fisheries, seen as a burden rather than a tool to improve their business

Scientific data collection best practices

- * Catches, effort, landings: recommendations for best practices are available
- * E-logbook: format depends on usually on the country. But should try to get common format at regional level for scale cost saving to develop software for on-board e-log book and data exchange at national level. Existing format such as eRS version 3 from EU could be reused (a version 4 is about to be released)
 - * <http://ec.europa.eu/fisheries/cfp/control/technologies/ers/>

Scientific data collection best practices

- * Catches, effort, landings: recommendations for best practices are available
 - * Sample based survey: abundant literature is available .

FAO reference book is technical paper 425 by Constantine Stamatopoulos. It is recommended as best practice when implementing a SBS. The key to success is the frame survey to clearly identify the fleet and landing sites topology
 - * <http://www.fao.org/3/a-y2790e.pdf>
 - * <http://www.fao.org/3/a-i3639e.pdf> (training course)
- More on-line resources are available here.
- * <http://www.fao.org/docrep/005/x8923e/x8923e00.htm>
 - * <http://www.fao.org/3/a-x2465e.pdf>
 - * <http://www.fao.org/docrep/003/T0011E/T0011E00.HTM>

Thank You!
¡Muchas Gracias !
Merci!