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SUSTAINABLE FISHERIES MANAGEMENT PROJECT (SFMP)

Small Pelagic Fisheries Data Collection: Orientation Training Manual

May 4-5, 2015, Boyboison Hotel
Takoradi, Western Region, Ghana

THE UNIVERSITY OF RHODE ISLAND GRADUATE SCHOOL OF OCEANOGRAPHY | CRC COASTAL RESOURCES CENTER

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Photo Credit: Hen Mpoano

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SNV:	http://www.snvworld.org/en/countries/ghana
SSG Advisors:	http://ssg-advisors.com/
Spatial Solutions:	http://www.spatialsolutions.co/id1.html

ACRONYMS

CEWEFIA	Central and Western Region Fishmongers Improvement Association
CRC	Coastal Resources Center at the Graduate School of Oceanography, University of Rhode Island
DAA	Development Action Association
DAASGIFT	Daasgift Quality Foundation
FAO	Food and Agricultural Organization of the United Nations
FoN	Friends of Nation
FtF	Feed the Future
NGO	Non-Governmental Organization
SFMP	Sustainable Fisheries Management Program
SNV	Netherlands Development Organization
SS	Spatial Solutions
SSG	SSG Advisors
URI	University of Rhode Island
USAID	United States Agency for International Development

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CHAPTER 1: INTRODUCTION

1.1 Purpose and Objectives USAID/Ghana Sustainable Fisheries Management Project

The USAID Ghana Sustainable Fisheries Management Project (SFMP) is a five-year program aimed at rebuilding Ghana's marine fish stocks and catches through the adoption of responsible fishing practices.

The (SFMP) project contributes to the Government of Ghana's fisheries development objectives and USAID's Feed the Future Initiative goals of improved food security, economic growth and poverty alleviation. Working closely with the Ministry of Fisheries and Aquaculture Development and the Fisheries Commission, USAID/Ghana SFMP aims to end overfishing of key stocks important to local food security through a multi-pronged approach:

- Improved legal enabling conditions for co-management, use rights and effort-reduction strategies
- Strengthened information systems and science-informed decision-making
- Increased constituencies that provide the political and public support needed to rebuild fish stocks
- Implementation of applied management initiatives for several target fisheries ecosystems

As part of measures to guide management and policy decisions, the SFMP will develop a baseline small pelagic fisheries profile addressing ecological, socio-economic and governance dimensions. Information gathered through the profile will be used to guide various fishery management strategies, potential fisheries capacity control and reduction plans, economic development initiatives (post-harvest), infrastructure investments and community and marine fisheries spatial planning.

1.2 Objectives of the manual

This training manual is written for persons who have been selected to collect data on Ghana's small pelagic fishery. It is aimed at introducing fisheries data collectors to the basic protocols for collecting and processing fisheries data. It is intended to foster interactive and participatory learning approaches in the process of data collection. The training event was held on May 4-5, 2015, at the Boyboison Hotel, Takoradi, Western Region, Ghana.

It is assumed that users of the manual are familiar - working and living – with fishing communities and can relate their own experiences to the data collection protocol. This is reflected in the set-up of the manual. The first chapter discusses the objectives of the USAID Ghana SFMP. The second chapter focuses on gear types and technologies while the third emphasizes the why, what and how to collect fisheries data in the Ghanaian context.

CHAPTER 2: FISHING GEAR TECHNOLOGIES

2.1 Classification of Fishing Gears

Fishing gears are commonly classified in two main categories: passive and active. This classification is based on the relative behaviour of the target species and the fishing gear (Cochrane, 2002)

2.1.1 Passive Gears

Passive fishing gear is the general term used to describe stationary fishing gear in the water. They are those which are left in place for a period before retrieval. Passive gear may either attract fish using bait, or may passively wait for a fish to swim into a net or trap. Examples of passive gear are gill nets, longlines, traps and pots and seine nets.

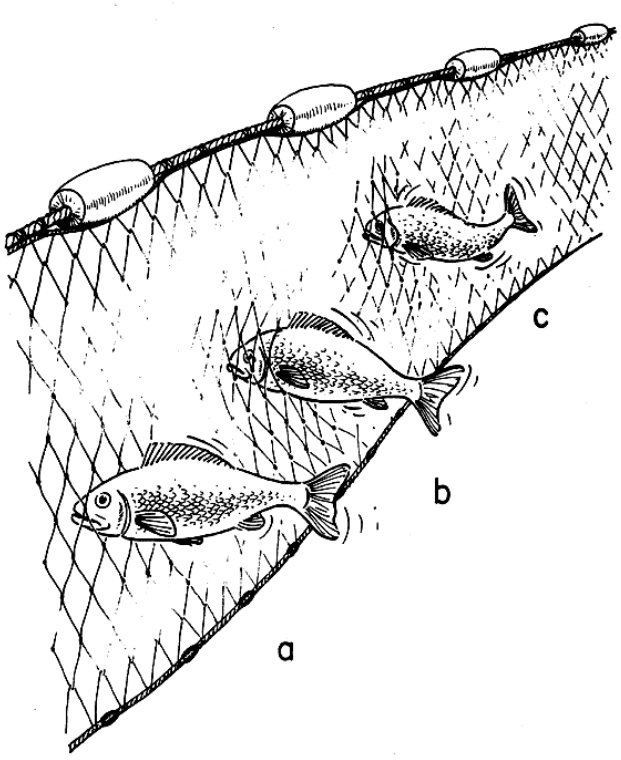


Figure 1: Gill net (dela Cruz, 1983)

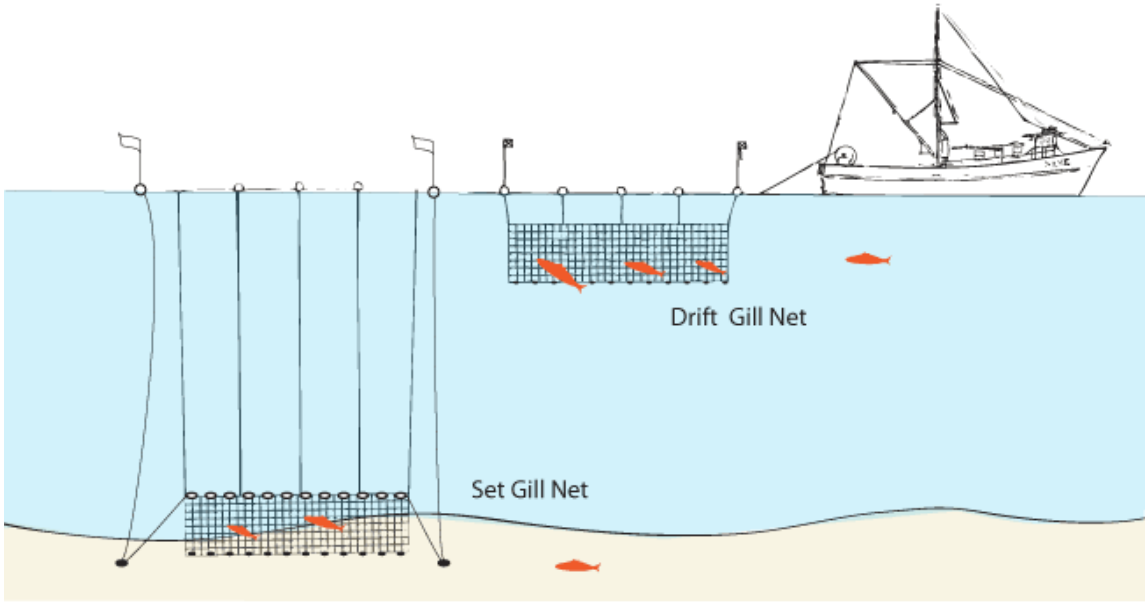


Figure 2: Types of gill net (source: http://www.montereyfish.com, 2015)

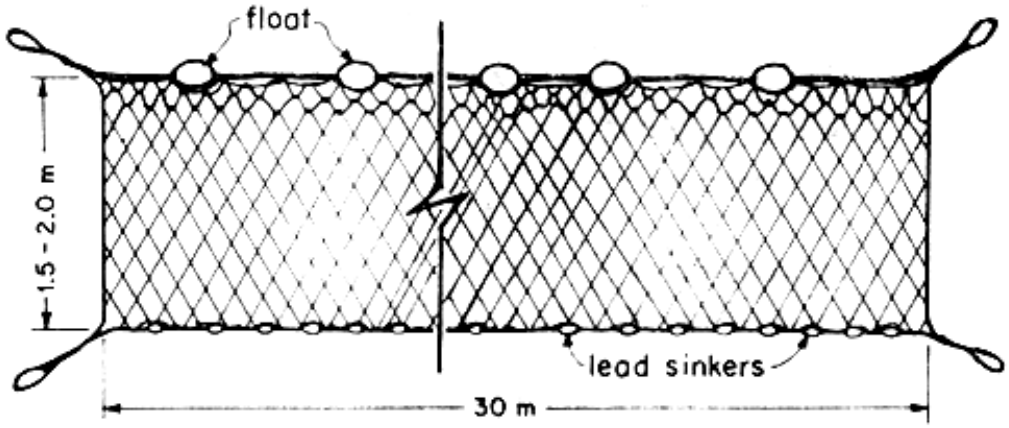


Figure 3: Gill nets showing floats and lead sinkers (dela Cruz, 1983)

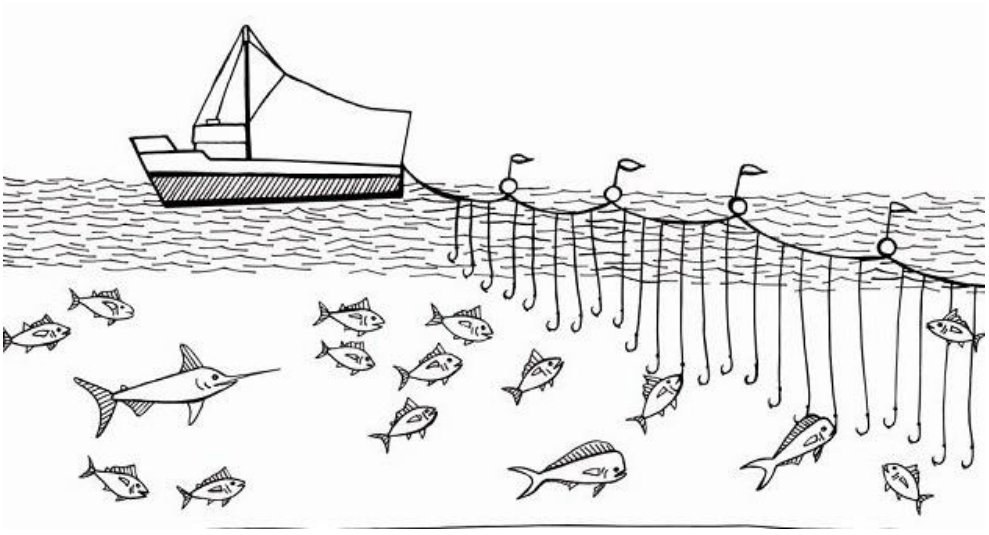


Figure 4: Longline (hook and line) (source: http://wwfsassi.co.za, 2015)

2.1.2 Active Gears

Active or mobile gears are moved in order to catch fish by trapping or encirclement. These gears can be divided into those which are towed along the seabed e.g.; beach seine and bottom trawl, and those which remain clear of the seabed e.g.; purse seines and mid-water trawl.

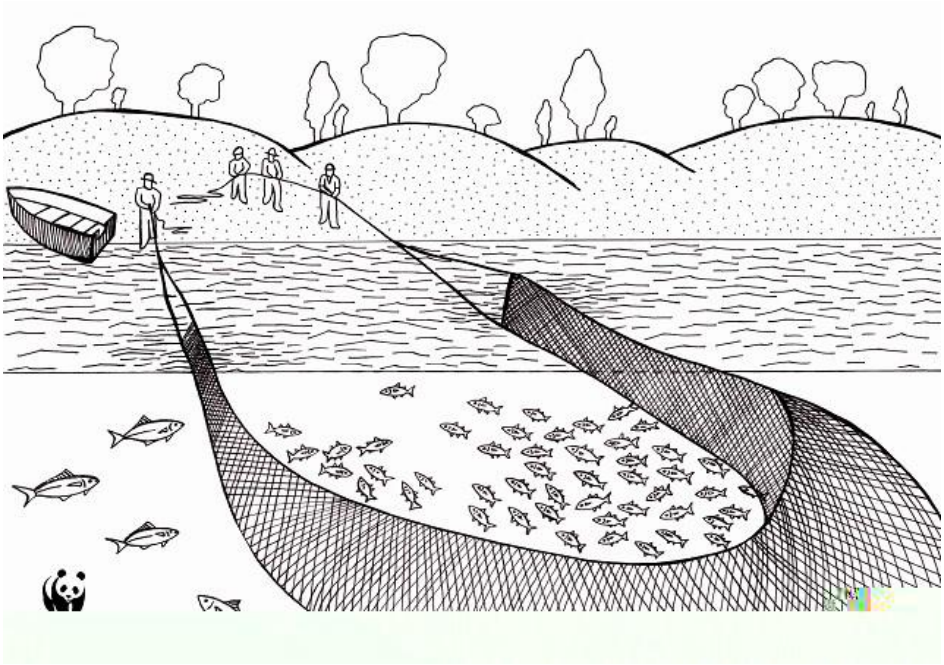


Figure 5: Beach seine (source: http://wwfsassi.co.za, 2015)

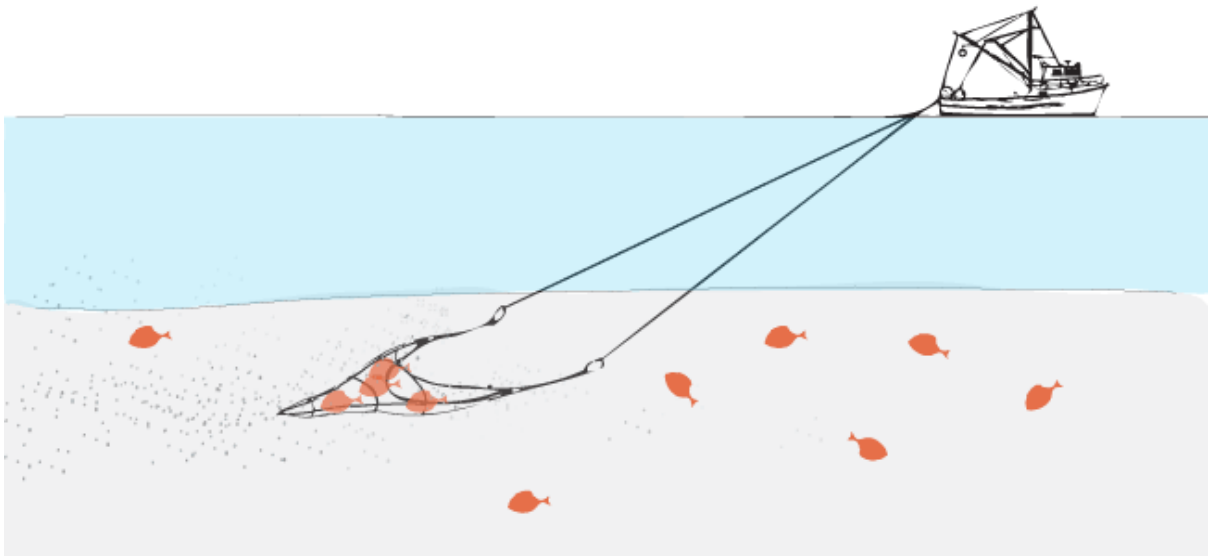


Figure 6: Bottom trawl (source: http://www.montereyfish.com, 2015)

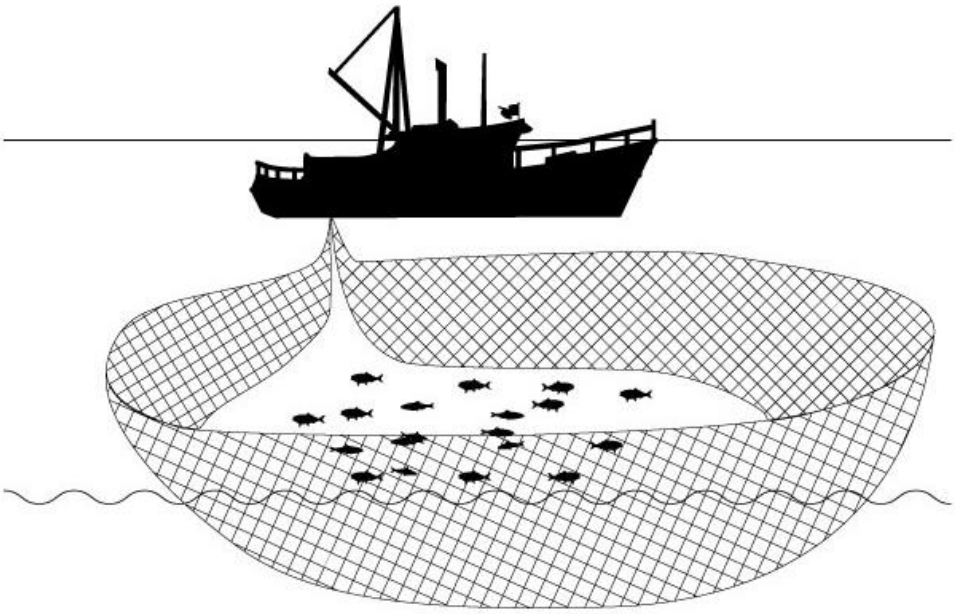


Figure 7: Purse seine (http://www.yellowbkroad.com, 2015)

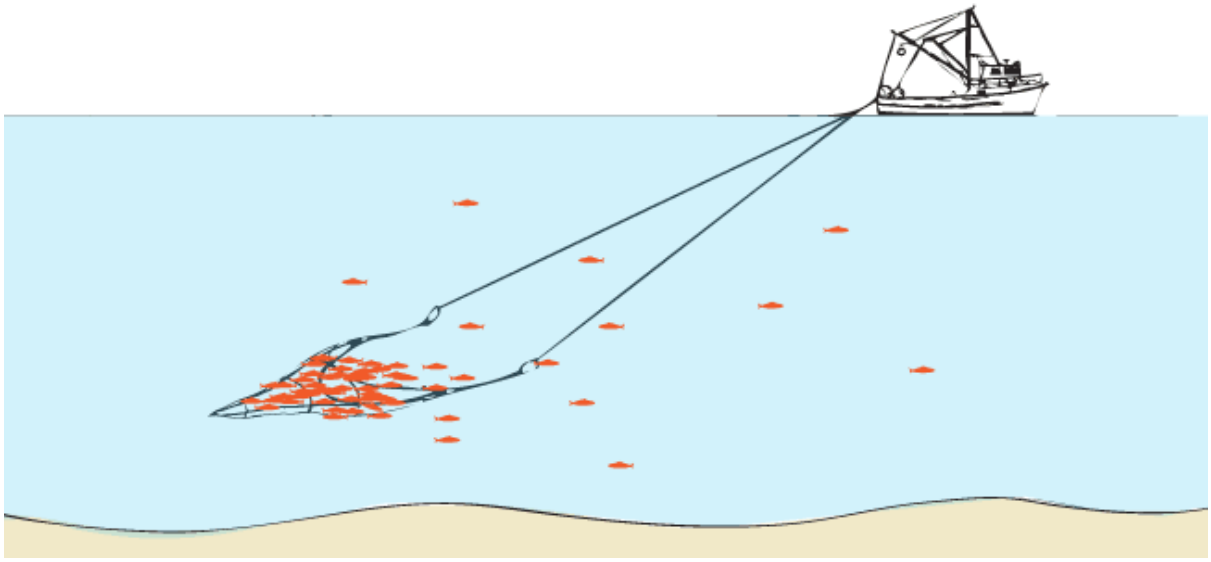


Figure 8: Mid-water trawl (source: http://www.montereyfish.com, 2015)

CHAPTER 3: DATA COLLECTION PROCESS

3.1 What is a Capture Fishery?

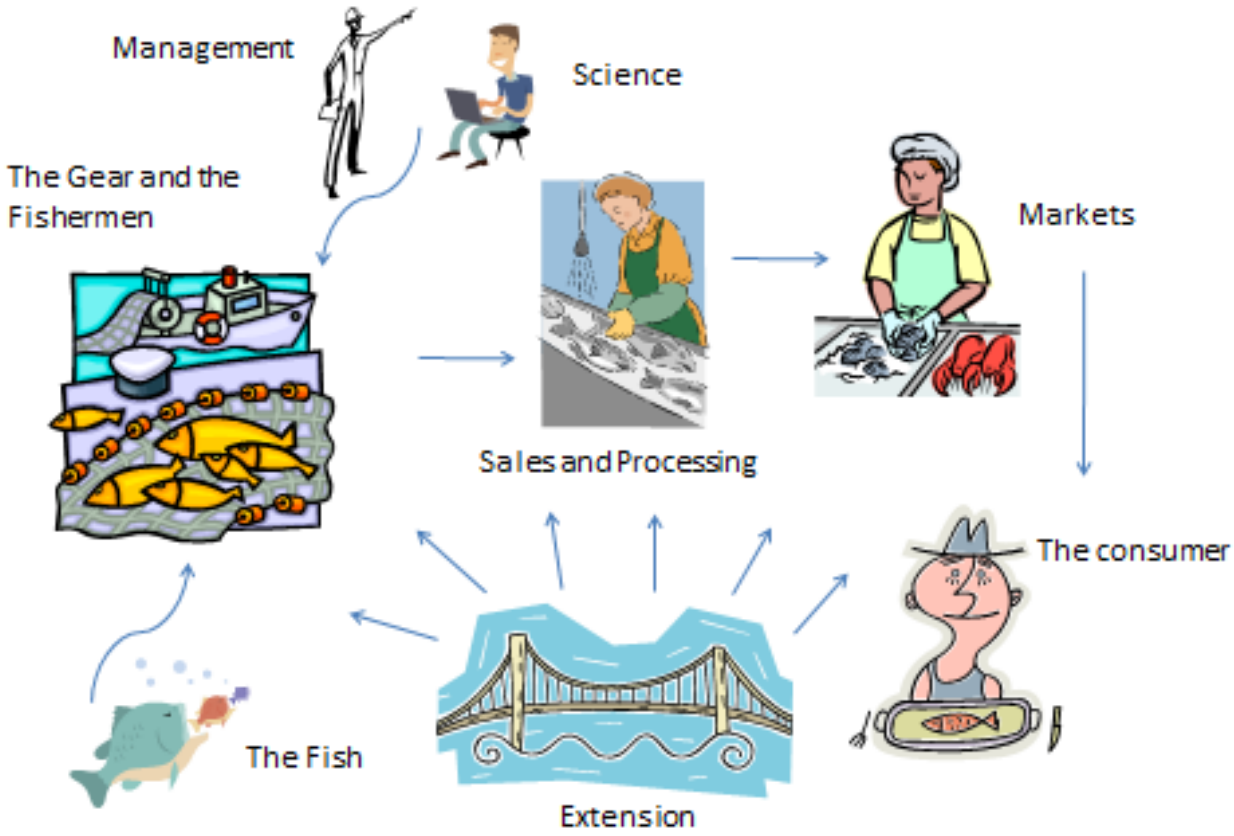
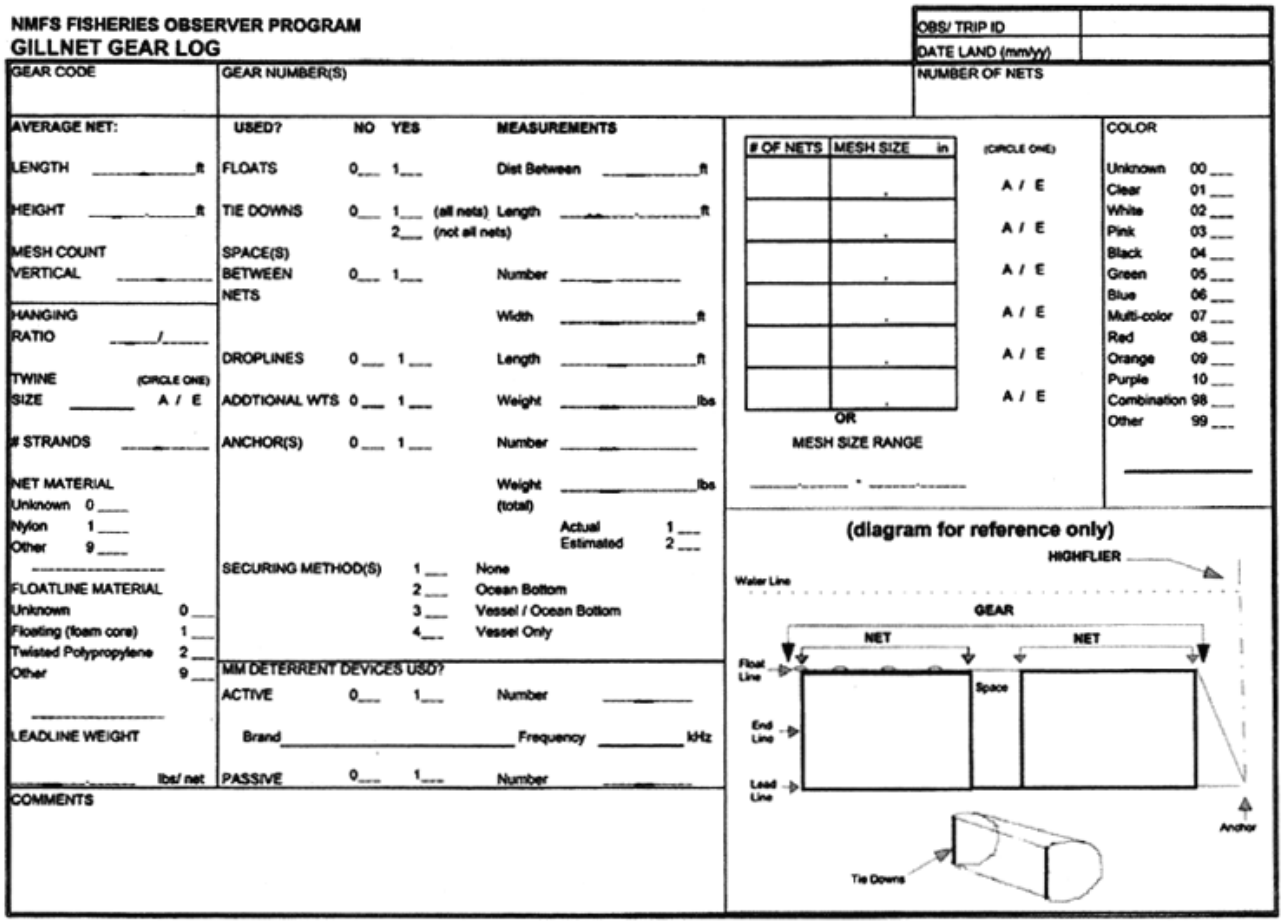


Figure 9: Components of a capture fishery

3.2 What are Fisheries Data?

The phrase "fisheries data" usually include biological information about the exploited fish and associated species, economic information about the fishermen and the markets for the catch, and information about the environmental conditions that affect the productivity of the species.


NMFS FISHERIES OBSERVER PROGRAM
GILLNET GEAR LOG

OBS/ TRIP ID
DATE LAND (mm/yy)
NUMBER OF NETS

GEAR CODE
GEAR NUMBER(S)

AVERAGE NET:
LENGTH _____ ft
HEIGHT _____ ft
MESH COUNT VERTICAL _____
HANGING RATIO _____/_____
TWINE SIZE _____ (CIRCLE ONE) A / E
STRANDS _____
NET MATERIAL
Unknown 0
Nylon 1
Other 9
FLOATLINE MATERIAL
Unknown 0
Floating (foam core) 1
Twisted Polypropylene 2
Other 9
LEADLINE WEIGHT _____ lbs/ net

USED?	NO	YES	MEASUREMENTS
FLOATS	0	1	Dist Between _____ ft
TIE DOWNS	0	1 (all nets) 2 (not all nets)	Length _____ ft
SPACE(S) BETWEEN NETS	0	1	Number _____ Width _____ ft
DROPLINES	0	1	Length _____ ft
ADDTIONAL WTS	0	1	Weight _____ lbs
ANCHOR(S)	0	1	Number _____ Weight (total) _____ lbs Actual 1 Estimated 2

SECURING METHOD(S): 1 None; 2 Ocean Bottom; 3 Vessel / Ocean Bottom; 4 Vessel Only

MM DETERRENT DEVICES USD?
ACTIVE 0 1 Number _____ Brand _____ Frequency _____ kHz
PASSIVE 0 1 Number _____

COMMENTS

# OF NETS	MESH SIZE in	(CIRCLE ONE)
		A / E
		A / E
		A / E
		A / E
		A / E
		A / E

OR
MESH SIZE RANGE _____ " _____

COLOR
Unknown 00
Clear 01
White 02
Pink 03
Black 04
Green 05
Blue 06
Multi-color 07
Red 08
Orange 09
Purple 10
Combination 98
Other 99

(diagram for reference only)

Figure 10: Example of Data sheet

3.2.1 Fisheries Dependent Data (Fisherman's data)

- Data coming from fishermen's activities through their fishing operations, landings, sales and processing.
- Measures the status of the stock via an independent measure of abundance of catch and effort

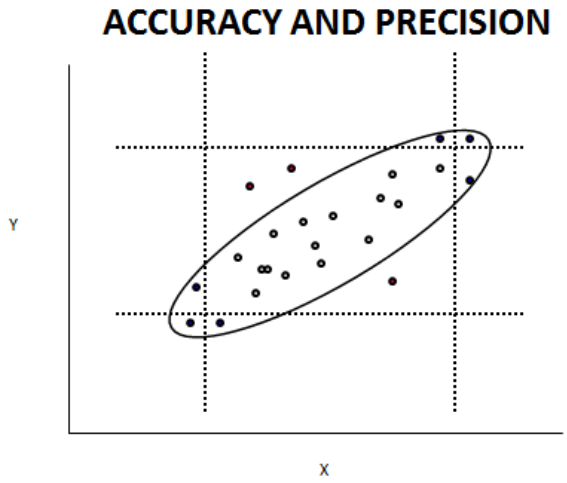
3.2.2 Fisheries Independent Data

- Measure of state of the stock via an independent means of catch and effort by fish surveys (ie. scientific surveys, satellite imagery).

3.3 Who uses Fisheries Data?

Fisheries data have many uses and many users:

- Stock assessment
- Fishery management
- Strategic planning
- Business development



3.4 Are Data Important?

- Fisheries data are vital to strategic planning activities in coastal communities that rely on fisheries.
- Fishery management authorities are responsible to use fisheries data for creating policies for sustainable development and management of fisheries.
- Civil authorities use fisheries data to develop infrastructure for the fishing industry.
- Bankers use fisheries data to plan economic development and loan packages to fishermen, fish processors, and ship suppliers.
- Fishermen themselves use fisheries data to plan future fishing activities, such as shifts to new fishing grounds, changes in fishing gear, and changes in species targeted.

3.5 Data Quality

- Quality information is critical to the integrity of science-based management on which its stewardship mission depends.
- Good data = Good decision

3.5.1 The Meaning of Data Quality

- Generally, you have a problem if the data doesn't mean what you think it does, or should.
- Belief vs what the data is telling you (Perception vs reality)
- Data quality problems are expensive

3.5.2 Conventional Definition of Data Quality

- Accuracy - precision
  - The data was recorded correctly.
- Completeness
  - All relevant data was recorded.
- Timeliness
  - The data is kept up to date.

    Special problems in federated data: time consistency.
- Consistency
  - The data agrees with itself.

3.6 How to collect data

There are four critical considerations for engaging community members in data collection

- Community consultation / permission: this involves briefing community leaders, chiefs including chief fishermen, assembly persons about the purpose of survey and obtaining permission to conduct survey in their community.
- Community sensitization: it is a process of engaging community members in research. This involves explaining the purpose of survey to potential participants before they are approached to participate in the survey. This is done by organizing sensitization meetings in which community members are invited and informed about the survey to be initiated in their community.
- Community involvement / ownership: is a process in which data collectors ensure that community members are involved in the whole conduct of the survey and are considered as partners. It is very necessary for local communities participating in survey or providing leads to scientific findings to be considered as partners. This partnership should begin before the conduct of the survey and should continue during the survey process and after the life span of the survey. This way, community members commit themselves to the activities and feel ownership of the project initiated their community.
- Community feedback / dissemination of survey results: These involve organizing dissemination meetings to feedback results to participating community members and also take their feedback.

3.6.1 Types of data

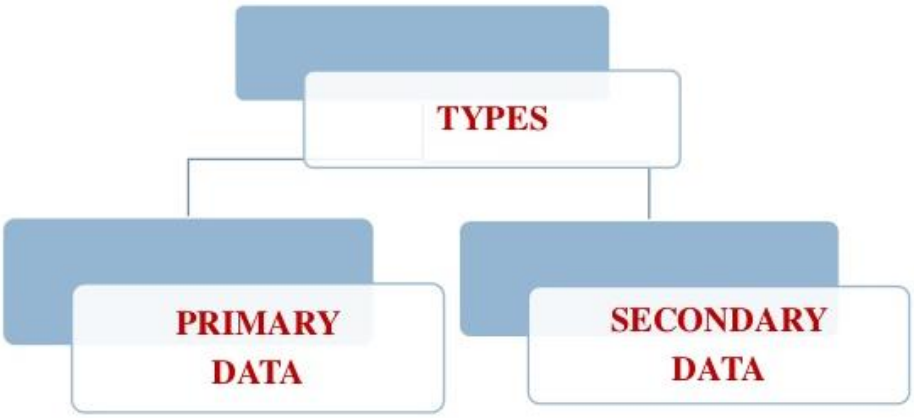


Figure 11: Types of data

Commonly used techniques for primary data collection are;

- **Surveys**: a method in which a sample of individuals is selected from a target population to respond to a structured set of questions. Questions are usually short answer or closed-ended (*i.e.*, provide a limited set of responses that a respondent can select from). Surveys may be conducted in person (an interviewer sits down with a respondent), over the telephone, or self-administered (the respondent completes the survey alone).
- **Focus groups:** a method of collecting qualitative data involving a carefully planned small group discussion of specific questions or topics led by an experienced moderator.
- **Key person or key informant interviews:** a qualitative method involving in-depth interviews with a small number of individuals carefully selected because of their personal experiences and/or knowledge related to the topic of interest. A discussion guide is used to ensure that major topics and issues are addressed.
- **Mapping:** this method is used to indicate or locate points which could be used for particular purpose - in fact, unless very good and up-to-date maps or plans already existed, it would be almost essential to carry out one or other of these techniques for any selected site. The preparation of these maps serve several purposes:
    - to provide a physical focus for discussions, giving something concrete for people to refer to when talking about local conditions, changes in conditions or particular issues.
    - to allow local people to illustrate their view of their environment and what is important in it for them
    - to get a better understanding of key local features - the distribution of settlements and population, local landmarks, different resource zones etc.

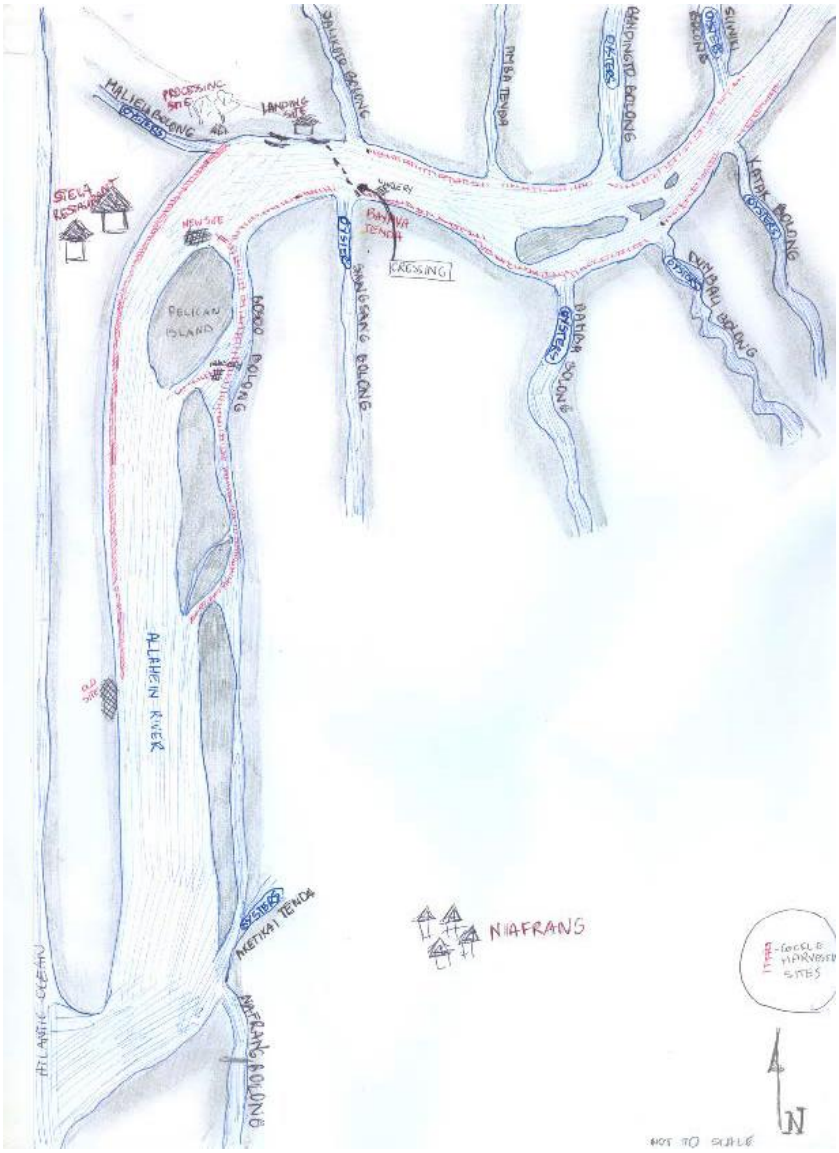


Figure 12: Example of community map (source: WWF-WAMPO, 2012)

- Understanding sampling strategies
  - Opportunity
  - Random
  - Stratified
  - Combination

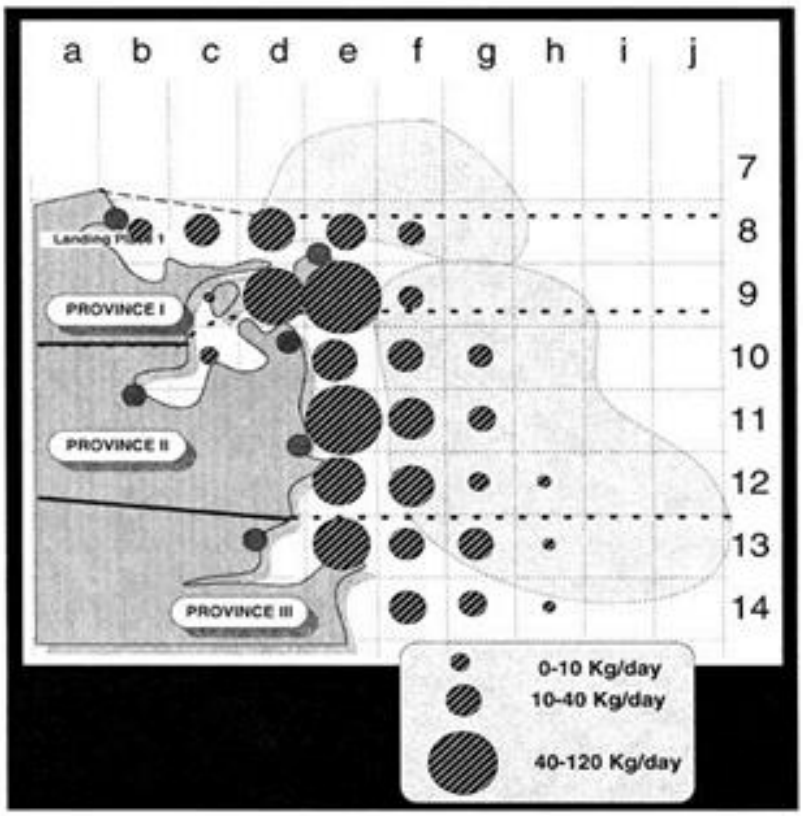


Figure 13:Geo-Spatial Sampling

BIBLIOGRAPHY

Cochrane, K.L. (ed.) (2002) .A fishery managerís guidebook. Management measures and their application. FAO Fisheries Technical Paper. No. 424. Rome, FAO. 231 pp.

De la Cruz, C.R., 1983. Fishpond engineering: A Technical Manual for small and medium scale coastal fish farms in Southeast Asia. SCS manual No. 5. 180 pp.

Herring Harvest: Purse Seining http://www.gma.org/herring/harvest_and_processing/seining

Monterey Fish Market: Open Ocean Gillnetting. http://www.montereyfish.com/pages/methods/oo_gillnett.html

WWF Sassi Tools for Consumers: http://wwfsassi.co.za

WWF-WAMPO, 2012.Participatory Rural Appraisal (PRA) Report: Cockle Harvesting Activity, Kartong, The Gambia. Gambia-Senegal Sustainable Fisheries Project (USAID/Ba Nafaa)

Yellow Brick Road: How We Catch Them. http://www.yellowbkroad.com/catch.html

ANNEXES

Annex I: Enumeration Sheet for Canoe Fleet

CANOE FISHERIES STATISTICS

REGION ---------- **DATE** ----------
DISTRICT ----------
FISHING VILLAGE ---------- **ENUMERATIOR** ----------
LANDING BEACH ----------

	CANOE						AVERAGE NO OF FISHERMEN		
GEAR	NUMBER	MOTORS	RESIDENTS	MIGRANTS	ACTIVE	NOT ACTIVE	AVERAGE NUMBER OF CREW PER CANOE	FULLTIME	TOTAL
ALI									
POLI									
WATSA									
BEACH SEINE									
S/N LOBSTER									
LINE									
DGN/NIFA-NIFA									
ONE MAN CANOE									
TOTAL									

COMMENTS:

Annex II: Enumeration Sheet for Semi-industrial Fleet

SEMI-INDUSTRIAL FISHERIES STATISTICS

REGION ---------- **DATE** ----------
DISTRICT ----------
FISHING VILLAGE ---------- **ENUMERATOR** ----------
LANDING BEACH ----------

GEAR	VESSEL					AVERAGE NO OF FISHERMEN		
	NUMBER	WINCH	MARINE MOTOR	ACTIVE	NON ACTIVE	AVERAGE NUMBER OF CREW PER VESSEL	FULLTIME	TOTAL
PURSE SEINE								
TRAWLER								
OTHERS								
TOTAL								

COMMENTS:

Annex III: Small Pelagic Fisheries Profile

DATA COLLECTION PROTOCOL

INTRODUCING THE PROJECT

The Sustainable Fisheries Management Project (*USAID/SFMP*) is a five-year initiative (October 1, 2014 – September 30, 2019) supported by the U.S. Agency for International Development (USAID-Ghana). It is implemented through a cooperative agreement with the University of Rhode Island (URI).

Implementing partners include Hen Mpoano, FON, SSG, CEWEFIA, DAA, DASGIFT and other key government, private sector and Non-Governmental Organizations (NGO) stakeholders along the coast and in the fisheries sector.

The main goal of the *USAID/SFMP* Project is to support the Government of Ghana's efforts to achieve reform of its fisheries sector by strengthening many of the enabling conditions necessary to end overfishing and rebuild small pelagic fisheries and to improve post-harvest processing conditions through effective tools and approaches in a participatory fisheries management process.

The annual sardinella catch from the canoe fishery has plummeted from just over 17,000 metric tons in 2012 from a high of 120,000 metric tons just a dozen years earlier.

Overfishing due to an increasing number of boats and fishers in an open access fishery and weak governance all contribute to the crisis. At risk are not only the livelihoods of more than 25,000 Ghanaians engaged in the fishery sector but also the food security of the nation and region.

Immediate action is needed to reverse this decline. The menu of potential management measures that can reverse this decline and rebuild the fishery are known and have proven effective elsewhere in the world. Needed are the applications of some combination of several of the following options:

- Freeze on new canoes and licenses
- Closed seasons
- Closed areas
- Reduction on number of industrial vessels
- Promote best fishing practices
- Promote new processing techniques
- Involve fishermen in direct management

These actions will only work if all the stakeholders including fishermen (canoe, semi-industrial and trawlers) fishmongers, processors and government agree to work together to ensure everyone follows the rules agreed to and are applied.

The SFMP strategy is to engage with you (stakeholders) to identify the problem, study it together, and then search for solutions together so as to reverse the trends of the collapse!

This questionnaire is designed to seek information on Small pelagic fisheries to improve management and inform policy decisions on the resource. Any information given will be used solely for such purposes. Your cooperation in answering these questions below shall be very much appreciated. You are assured that answers will be handled with strict confidentiality.

Please tick [√] or fill in the blank spaces where appropriate and provide additional information or comment where necessary

TAXONOMY

What fish species do you harvest? *Provide local names:*

a. Pelagic fish species

Scientific names	**Local names**
Round Sardine (*Sardinella aurita*)	
Flat Sardine (*Sardinella maderensis*)	
Anchovy (*Engraulis encrasicolus*)	
Chub Mackerel (*Scomber japonicas*)	
Ribbon Fish (*Trachurus sp*)	

b. Demersal fish species

Scientific names	**Local names**

Canoe Fishermen Survey

1. Name: …….Cell No…….
2. Community: ……
3. Age: ……
4. Level of education
   □ never been to school □ primary school □ JHS □ SHS □ Tertiary □ others
5. Are you married? □Yes □No If yes how many wives? :……..
6. How many children do you have? :……..
7. How many years have you been a fisherman? :…….
8. What is your principal fishery? □ Pelagic □ Demersal
9. Which type of gear(s) do you use?
   □ APW □ Beach seine □ Set net □ Drift Gill Net (DGN □Hook & line
10. What other type of fishing are you engaged in? (Target species): ……
11. Do you own a canoe? □Yes □No
12. If yes, fill the table below:

Which year was the canoe built?	
What is the size of the canoe?	
What is the horse power of the motor?	
Construction material of the canoe	

13. Do you own other canoes? □Yes □No If yes how many? :……
14. How many crewmen work on the canoe(s)?
    :……..
15. How do you describe your fish catch from 2000-present? □Decreased □ Increased
16. How many days is your fishing trip?
    :……..
17. How do you finance your fishing trip? □ Banks □ Self □ Fish mammies□ Family □ other (Please specify): ……..
18. What percentage of your personal/household income is derived from fishing income?
    :…
19. Where is your primary landing site?
    :……
20. Do you migrate to fish? □Yes □No
    a. If yes, where? :……
    b. Which month of the year? :……
21. Do you belong to any type of fishermen's organization? □Yes □No
22. If yes, name the organization(s):
    ……
23. Is your canoe registered? □Yes □No
24. Do you have health insurance? □Yes □No
25. Do you have insurance for the canoe? □Yes □No
26. Any other comment/questions?
    :……..

Historical perspective

	1960-1980	1980-2000	2000-PRESENT
How many **CANOES** where fishing in your community?			
How many **FISHERMEN** were involved in fishing in your community?			
What type of **FISHING GEAR** existed in your community?			
How long was your fishing **TRIP**?			
What was the average daily **CATCH** in kgs or boxes?			
What was the **PRICE** per Kgs or box?			
What was the average **SIZE of CANOE** in your community?			
What was the average size of the **PURSE SEINE** used in your community?			
What was the **MESH ZISE** of the **PURSE SEINE** used in your community?			
What was the average **SIZE** of the **PURSE SEINE** used in your community?			
What was the **MESH SIZE** of the **BEACH SEINE** used in your community?			
What was the size of **CREW MEMBERS** per one canoe?			
What was the **SIZE of CREW** hauling **BEACH SEINE**?			
What was the average **HORSE POWER** of the engine used for Canoe?			
How far did you **TRAVEL** (distance in nautical miles) to catch fish?			

Semi-Industrial Fishermen Survey

1. Name: .....Cell No…….
2. Community: ……
3. Age: ……..
4. Level of education:
   □ never been to school □ primary school □ JHS □ SHS □ Tertiary
5. Are you married? □Yes □No If yes how many wives? :……..
6. How many children do you have? :…….
7. How many years have you been a commercial fisherman?
   :……..
8. What is your principal fishery? □ Pelagic □ Demersal
9. Which type of gear(s) do you use?
   □ APW □ Set net □ Drift Gill Net (DGN) □ Hook & line
10. What other type of fishery are you engaged in? (Target species): …….
11. Do you own a vessel? □Yes □No
12. If yes, fill the table below:

Which year was the vessel built?	
What is the size of the vessel?	
What engine does the vessel use?	
Construction material of the vessel	

13. How many crewmen work on the vessel?
    :……
14. How do you describe your fish catch from 2000-present? □ Decreased □ Increased
15. How many days is your fishing trip?
    :……
16. Which technology do you deploy in your fishing? □ GPS □ Fish Finders □ Eco-sounder □ others (Please specify):
    ……...
17. How do you finance your fishing trip? □ Banks □ Self □ Fish mammies □ Family □ other (Please specify): ……..
18. What percentage of your personal/household income is derived from fishing income?
    :…
19. Where is your primary landing site?
    :……
20. Do you migrate to fish? □Yes □No
    a. If yes, where? :……
    b. Which month of the year? :……
21. Do you belong to any type of fishermen's organization? □Yes □No
22. If yes, name the organization(s):
    ……
23. Is your vessel registered? □Yes □No
24. Do you have health insurance? □Yes □No
25. Do you have insurance for the vessel? □Yes □No
26. Any other comment/questions?
    :……..

Fish Processors Survey

1. Name: …….. Cell No……
2. Community: …….
3. Age: ……
4. Marital status: □ Single □ Married □ Separated □ Divorced
5. How many children do you have? :.....
6. Level of education
   □ never been to school □ primary school □ JHS □ SHS □ Tertiary
7. Do you come from this community?
   □Yes □No (Migrant)
8. How many years have you been processing fish? :.....
9. How do you process your fish? □ Smoking □ Frying □ Sun-Drying □ Salting □ Others-Please specify: …….

	Peak season	Lean season
10. How many days in a week do you engage in fish processing?		
11. How many hours per day did you process fish		
12. How many pans/crate of fish (quantity) do you process per day		
13. How many pans/crate of fish are kept on average per day for household consumption?		

14. Which fish species do you process? Please explain
    □ Pelagic: ……
    □ Demersal: ……
    □ Both: ……
15. Where do you get fish to process? □ Local fishermen □ Cold stores □ others (Please specify): …….

		1960-1980	1980-2000	2000-PRESENT
18	What is the average price (GH¢) per pan/crate of fish processed			
19	Operating Costs (GH¢) for Processed fish			
	a. Wood			
	b. Labour			
	c. Fish purchased			
	d. Paper for packaging			
	e. Others (Please specify): ……			

20. Where do you market processed fish?
    □ Community
    □ Within Ghana (specify)……
    □ Outside Ghana (specify)……
21. Number of dependents in households engaged in fish processing: …….
22. Number of processing and storage facilities owned
    □ Oven……

□ Stove……
□ Freezer…….
□ Others (Please specify)…….

23. Are you a vessel/canoe owner? □Yes □No
24. If yes, how many vessel/canoe do you own? .....
26. Do you finance fishing expeditions? □Yes □No
26. If yes, how frequent do you finance expeditions? : .....
27. Are you ever asked for special favors (eg.sex for fish) to buy fish from a fishermen? □Yes □No
28. Any other comment/questions?
:…….....

Annex IV: Fish Identification

Small Pelagics

Wahoo

(Ewe: Torgbor dzadu, Ga: Nweisaflo, Fante: Posor Saful)

Anchovy

(Ewe: Abobi, Ga: Amoni, Fante: Sasakwesi, Nzema: Ablobi)

Bumper

(Ewe: Dzodzoe, Ga: Antele, Fante: Tantemire, Nzema: Awomakpoke)

Bigeye scad

(Ewe: Tsiyi, Ga: Atumui, Fante: Ebrum, Nzema: Ebrum)

Chub mackerel

(Ewe: Ablotsikpokpokuvi, Ga: Saman, Fante: Awukongula, Nzema: Ankomla)

Cunene horse mackerel

(Ewe: Tsiyivi, Ga: Dzaase, Fante: Tumbiewu Nzema: Kotolo)

False scad

(Ewe: Tsiyi, Ga: Emule, Fante: Ebrum, Nzema: Ebrum)

Flat sardinella

(Ewe: Adruku, Ga: Antebo, Fante: Eban, Nzema: Antele)

Frigate tuna

(Ewe: Kpokponku, Ga: Opoku, Fante: Apoku, Nzema: Kpokukpoku)

King fish

(Ewe: Dadzu, Ga: Saflo, Fante: Safor, Nzema: Esafol)

Ladyfish

(Ewe: Aminoe, Ga: Kpole, Fante: Ahenemba ndzi, Nzema: Ebor)

Long-finned herring

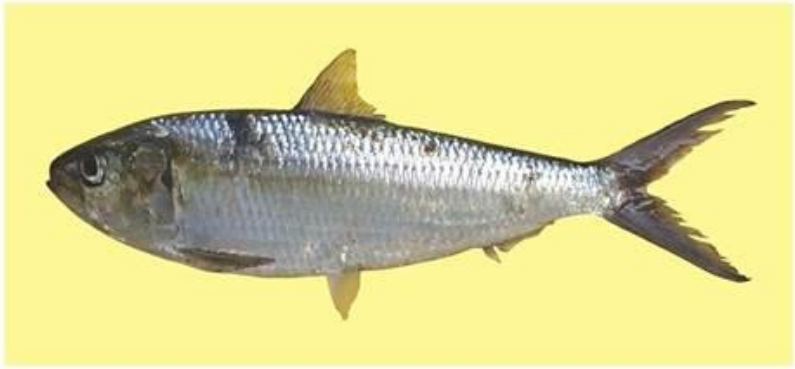
(Ewe: Kafla, Ga: Kanfla, Fante: Kanfena, Nzema: Nkranfil

Ribbonfish

(Ewe: Anipaye, Ga: Wawadzan, Fante: Nwonwoyan, Nzema: Wawanyan)

Round sardinella

(Ewe: Vetsimu, Ga: Kankama, Fante: Eban, Nzema: Kankama)



Round scad

(Ewe: Tsiyivi, Ga: Pamplobaa, Fante: Ebrum, Nzema: Ebrum)

Shad

(Ewe: Eflo, Ga: Kokole, Fante: Kokore, Nzema: Ngokolo)

Wahoo

(Ewe: Torgbor dzadu, Ga: Nweisaflo, Fante: Posor Saful, Nzema: Esafol)

Large Pelagics

Blue marlin

(Ewe: Hatali Kofi, Ga: Onyankle, Fante: Ekyinekyin)

Bigeye tuna

(Ewe: Geku, Ga: Odaa, Fante: Edaa, Nzema: Ela)

Blue runner

(Ewe: Kpetome tsiyi, Ga: Odzeonye, Fante: Anoeku, Nzema: Akole)

Pampano

(Ewe: Fofoe, Ga: Anteyaa, Fante: Antseyaa, Nzema: Andeya)

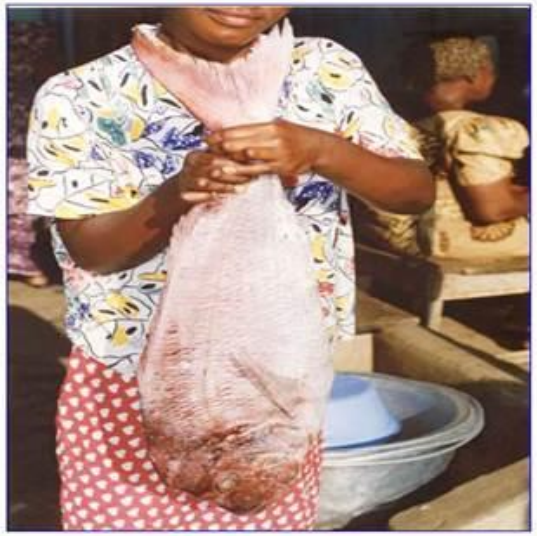
Yellowfin tuna

(Ewe: Geku, Ga: Odaa, Fante: Edae, Nzema: Ela)

Demersal species

Seabream

Ga: Anotia, Ewe: Sikasika, Fante: Sikasika

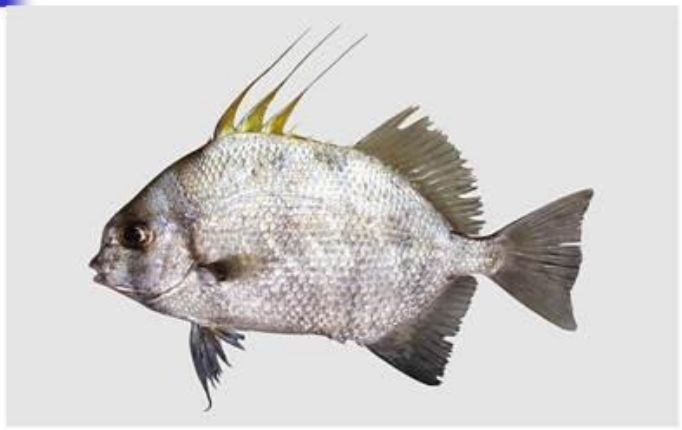


Atlantic Bigeye

(Ewe: Za Kofi, Ga: Frangaashishi, Fante: Anihonton, Nzema: Kyekyewire)

Black spadefish

(Ewe: Gbagbadza, Ga: Adibi, Fante: Pompatowa, Nzema: Elende)



Barracuda

(Ewe: Lidzi, Ga: Odoe, Fante: Edoe, Nzema: Eloe)

Blue-spotted sea bream

(Ewe: Sikasika, Ga: Shikashika, Fante: Sikasika, Nzema: Sikasika)

Boe drum

(Ewe: Kpetami, Ga: Guan mue, Fante: Boe, Nzema: Abonye Akua)

Burrito

(Ewe: Hawui, Ga: Boeboe, Fante: Eboe, Nzema: Ano kpetei)

Butterfish

(Ewe: Zowle, Ga: Kokole asor, Fante: Mamaniwa, Nzema: Ahorlorlor)

Canary drum

(Ewe: Kpetome notsa, Ga: Nkanbli, Fante: Ekanobir, Nzema; Ekanmin)

Cassava fish

(Ewe: Notsa, Ga: Nkan, Fante: Ekan, Nzema: Ekanye)

Congo dentex

(Ewe: Sikasika, Ga: Yeke, Fante: Wiriwiriwa, Nzema: Wiriwiri)

Fork-tail snapper

(Ewe: Egbo, Ga: Molike otoe, Fante: Afiti boe, Nzema: Afiti boe)

Grey snapper

(Ewe: Shikple, Ga: Ashikple, Fante: Efua Edube, Nzema: Epiabo)

Grouper

(Ewe: Fieyu, Ga: Shoi, Fante: Buadzi, Nzema: Buadze)

Moonfish

(Ewe: Ngogba lolotor, Ga: Antele-wawaa, Fante: Epo edwire, Nzema: Ndademire)

Pink dentex

(Ewe: Shile, Ga: Tsile, Fante: Tsile, Nzema: Sile)

Red pandora

(Ewe: Sikasikavi, Ga: Yiyiwa, Fante: Wiriwiriwa, Nzema: Wiriwiri)

Red snapper

(Ewe: Tomeha dzea, Ga: Tan, Fante: Esoe, Nzema: Esoe)

Roncador

(Ewe: Kaatui, Ga: Sope, Fante: Sofe, Nzema: Nzerma)

Red Mullet

(Ewe: Gekoe, Ga: Blofo tsukwei, Fante: kokodudu, Nzema: Paol)

Spadefish

(Ewe: Gbagbadza, Ga: Okposansa, Fante: Eposansa, Nzema: Elende)

Globefish

(Ewe: Agede, Ga: Awulen, Fante: Ewure srikyi, Nzema: Awule)

Surgeon fish

(Ewe: Ehee, Ga: Fante adzesa, Fante: Alata mfantsi, Nzema: Adesa mpekyiwa)

Flying gurnard

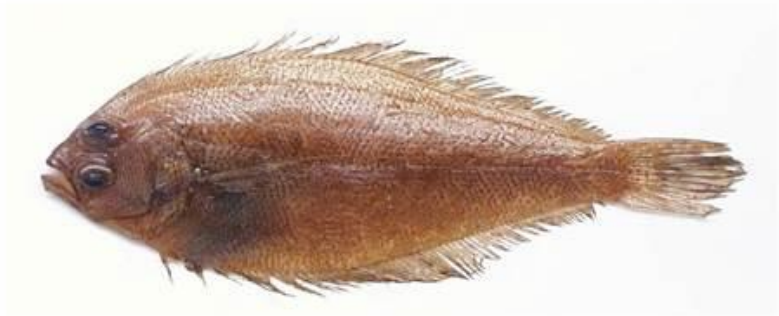
(Ewe: Adoglo, Ga: Flikilo, Fante: Pampsire, Nzema: Keklebetile)

Black sole

(Ewe: Adze menyi, Ga: Didee baa nimse, Fante: Anose, Nzema: Nimse)

Rock sole

(Ewe: Asifome, Ga: Spaa, Fante: Futufutu, Nzema: Mfutumfutu)



Tongue sole

(Ewe: Afofome, Ga: Didaebaa, Fante: Aberewa nhon, Nzema: Kpangbaku)

Cuttlefish

(Ewe: Adzitoa, Ga: Kakadiamaa, Fante: Posra, Nzema: Posra)

Shell Fishes

Caramote prawn

(Ewe: Bolu, Ga: Son, Fante: Sesew, Nzema: Senzeke maale)

Pink shrimp

(Ewe: Bolu, Ga: Son, Fante: Sesew, Nzema: Senzeke maale)