

STATUS OF TRAWLING DATA IN THE PHILIPPINES

by

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ABSTRACT

Describes the present status of trawling data in the Philippines and the methods used in data analysis. Commercial trawl data are generally unreliable so that studies on the commercial otter trawl fishery were conducted under the UN-assisted Marine Fisheries Biology Research Project.

Trawl fishing in the Philippines was started by the Japanese way back in 1900 when they operated the beam trawls called the "Utase" which were then sail driven (Umali, 1932). In the 1920's the boats were equipped with power, and nets were made larger. Up to 1946 the beam trawl was in used. Then in 1947 one operator rigged his boat with otter trawl and was successful. From 1948 to 1957 the otter trawler of single engine was used. In 1958 the twin engine with greater horse power was introduced with the aim of increasing the speed to enable them to catch more pelagic species. To the present our trawlers still use twin engine. The mesh size of the cod nets ranges from 1 to 1 $\frac{1}{2}$ inches with nets themselves measuring from 50 to 65 feet on the head rope.

There are around 500 trawlers operating in the whole country at present. These are only the licensed commercial trawlers, all above 3 tons gross. Almost all are otter trawlers and data on their type, fuel used, gross tonnage, horse power and fishing methods are available based on their licenses which are annually renewed. There are no data on the small commercial fishing vessels which are less than three tons.

The operators of commercial trawlers are required by law to submit Daily Fish Caught Reports on a monthly basis. These reports include the (1) method of fishing, (2) the fishing ground, (3) the number of fishing hours, (4) the daily catch by fish species and (5) wholesale value of the catch.

However, because of the so-called fish caught fee of two pesos for every ton of catch imposed on the operator basing on the quantity of catch reported, no operator ever reports his accurate catch. As a result, the recorded catch is four to five times lower than the actual catch.

In this connection, an analysis made by the Fisheries Commission for commercial fishing vessels licensed in the Manila region in 1964 gave the following results:

- a. Number of vessels licensed - 1,007 (this includes all kinds of gear - bagnet, otter trawl, purse seine, and round haul seine).
- b. Number of vessels with no report submitted - 155.
- c. Number of vessels with report but never on fish caught (Reports no operation, vessel still at sea, no catch, dry dock, etc.) - 72.
- d. Number of vessels with reports on fish caught - 780. A closer analysis of the 780 reports available on fish caught showed that only a few operators submitted their report regularly. Only 21 vessels reported 12 months when fish were caught. 174 vessels reported only 1 month when they caught fish. And all the other vessels ranged from 2 months to 11 months in their reports.

Furthermore, nearly half of the report did not disclose catch broken down by species and wholesale value. A few species would be mentioned and the rest would be lumped down as miscellaneous.

Data reported by fishing boat operators were, therefore, found to be very unreliable due to the following reasons: (1) there is a tendency to underestimate landings since vessel operators pay sales taxes based on the value of their catch. (2) Many landings are made at ports where there are no fishery officers, hence are unreported. (3) Many standards of measure are used, varying from a shallow tray in Manila to baskets, gasoline cans, and other containers in the provinces, thus rendering the estimation of weight not only difficult but unreliable.

In 1956, the Fisheries Commission started the UN-assisted Marine Fisheries Biology Research Project and one of its studies was concerned with the commercial otter trawl fishery. Since the data reported by fishing boat operators were found to be unreliable, two fishery technicians were sent aboard the commercial trawlers to join the fishing trips that last from 3 to 5 days. Investigations were made on: (1) the size and power of fishing vessels, (2) the catch composition, (3) total catch landed, (4) recent improvements on the otter trawl, and (5) the catching ability of different sizes of trawling vessels. Surface and bottom water samples are taken for salinity and phosphate studies, and data on temperature are recorded during the hauling of nets.

On these trips observations on the following were made:

1. Name of Fishing Boat
2. Operation No.
3. Date
4. Latitude (from _____ to _____)
5. Longitude (from _____ to _____)
6. Nature of bottoms
7. Shoreline distance
8. Tide
9. Depth
10. Haul No.
11. Time set
12. Time hauled
13. Length of fishing time
14. Direction of operation
15. Air temperature _____ °C
16. Wind direction _____
17. Surface temperature _____ °C (T) _____ °C
18. Water bottle sample no. _____
19. Wind velocity (beaufort) _____
20. Bottom temperature (t) _____ °C (T) _____ °C
21. Water bottle sample no. _____
22. Weather remarks

The catch composition data consist of the following:

1. Species caught
2. Number of trays
3. Kilos
4. Remarks - type of boat, tonnage, name of engine, horse power, type of net, size of mesh (bag, body, and wings), size of net, name of operator and his address

Forms used for gathering these data are attached as Annexure A.

The data gathered from these trips are analyzed for (1) the average landings of otter trawl with catch rate per hour, average monthly landings and average annual landings; (2) the average number of boats operating monthly and the number of boat-months per year, and (3) computed monthly trawl landings as averaged from the five-year data. These include the average number of boats operating per month, the monthly average catch per boat in kilograms and the computed average monthly landings of all trawlers.

The method of data analysis used in these studies are given below.

AVERAGE MONTHLY LANDINGS = Total catch/month/boat X average no. of boats/mo.

TOTAL CATCH/MONTH/BOAT = Average rate of catch/hour/boat X No. of hours/month

AVERAGE ANNUAL LANDINGS = Average monthly landing X no. of months in year

CATCH/UNIT OF EFFORT = $\frac{\text{total catch}}{\text{total effort expended (hrs.)}}$

MONTHLY CATCH/BOAT = $\frac{\text{monthly catch/unit effort X hours/month}}{\text{total catch/boat/month/year}}$

MONTHLY AVE. CATCH/BOAT = $\frac{\text{summation of total catches/boat/mo./yr. for all years}}{\text{no. of years}}$

TOTAL CATCH OF ALL BOATS OPERATING PER MONTH/YEAR = total catch/boat/month/year X av. no. of boats/mo.

AVERAGE MONTHLY LANDINGS OF ALL TRAWLERS = $\frac{\text{summation of total catches of all boats/month for all years}}{\text{no. of years}}$

Species and Mean lengths

1961

1st class Hoya

(1) croakers - 15.92 \bar{x} = 15.92

2nd class

(1) *Anadontostoma chacunda*

14.92
12.35
15.04 \bar{x} = 13.70
12.50

3rd class

Pentaphrion - 9.51
Gerres filamentosus - 10.14
Trichiurus sp. - 33.86
Apogon sp. - 7.60 \bar{x} = 15.27
61.11

Shrimp

Metapenaeus - 14.39
Penaeus monodon - 16.51
Penaeus monoceros - 12.50
43.40 \bar{x} = 14.46

1962

<u>1st class</u>		<u>Shrimp</u>
<i>Rastrelliger</i>	- 12.58	
<i>Pseudosciaena</i>	- 14.85 $\bar{x} = 13.08$	- $\frac{109.76}{9}$ $\bar{x} = 12.20$
<i>Caranx</i>	- <u>11.81</u>	
	39.24	
<u>2nd class</u>		<u>Squids</u>
<i>Nemipterus</i>	- 12.14	<i>Loligo sp.</i> - 8.44
<i>Anadontostoma</i>	$\bar{x} = 12.79$	- 9.53
<i>chaerunda</i>	- <u>13.45</u>	<u>17.97</u> $\bar{x} = 8.98$
	25.59	
<u>3rd class</u>		
	- 37.65	
<i>Trichiurus</i>		
<i>haumela</i>	- <u>39.63</u> $\bar{x} = 38.64$	
	77.29	
<i>Saurida</i>		
<i>tumbil</i>	- 18.98 $\bar{x} = 18.98$	

In addition to the commercial otter trawl, the dug-out trawl fishery, more commonly known as the baby trawl, developed in Manila Bay sometime in 1950. The fishery consists essentially of a small otter trawl net rigged to a motorized dug-out and operated on shallow smooth littoral areas to catch shrimps, crabs, slip-mouths, soles, whittings. The development of this gear came about after the complete cessation of the operation of another mechanized dug-out, which was outlawed by the government because of its use of explosives as an accessory in the catching of pelagic species. Another contributing factor to the development of mechanized dug-out crafts in Manila Bay is the decline in the catches of subsistence fishermen using the age-old scissors nets, operated on wading depths of less than a fathom. The large scissors nets formerly used in the pandilis fishery was first modified into a flat-type otter trawl net and dragged with a single towline over the stern of the same dug-out craft. Later, regular otter trawl nets were constructed to suit the size and power of the dugout craft being used.

A study on experimental fishing with the baby trawl was started in April 1957 as a result of complaints from sustenance fishermen that the trawls are responsible for depleting the fishery.

Fishing stations were established in the Bay, ranging from 2 fathoms to 8 fathoms in depth. And the 25 H.P. baby trawl boat made fishing trips to these stations from 8 to 12 times a month. Various sizes of mesh were used. These ranged from $1\frac{1}{4}$ " , $3/4$ " , 2" , $2\frac{1}{4}$ " and $2\frac{3}{4}$ ". From each station water sample for salinity was collected and temperature was recorded as well. The catch composition was analyzed in a manner similar to the analysis of commercial otter trawl catches.

A comparison of the different types of baby trawlers was made. The Table below gives the horse power of engine in relation to size of craft, otter door, and length of headrope and footrope.

H.P.	Length of headrope, meter	Length of footrope, meter	Length of dug out, meter	Otter doors	
				Size, in.	Weight Kg.
2½	2 - 3	2 - 3	5 - 7	18 x 12	5 - 8
6	5 - 7	5 - 7	5 - 12	27 x 16	8 - 10
9	7 - 9	7 - 9	7 - 12	48 x 28	10 - 12
Jeep engine (4 cylinder)	9 - 12	9 - 12	12 - 15	52 x 28	15 - 20

REFERENCES

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- Warfel, H.E. and P.R. Manacop (1950). Otter trawl exploration in Philippine waters. Research Report 25, Fish and Wildlife Service, U.S. Dept. of Interior, pp. 1-49.
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COMMERCIAL TRAWL

Name of Fishing Boat

Area _____ Operation No. _____ Date _____

Latitude (from) _____ (to) _____

Longitude (from) _____ (to) _____

Nature of bottom _____ Shoreline distance _____

Tide _____ Depth _____ Haul No. _____

Time Set _____ Time Hauled _____ Air temperature _____ °C

Wind direction _____ Surface Temp.(t) _____ °C (T) _____ °C
H₂O bottle sample No. _____

Wind velocity (Beaufort) _____ Bottom temp.(t) _____ °C (T) _____ °C

Weather Remarks: _____

Species caught	No. of trays	Kilos	Species caught	No. of trays	Kilos

Remarks: _____

Mention the following: Type of boat; Tonnage; Name of engine; Horse Power; also type of net; size of mesh (bag, body and wings); size of the net; Name of operator and his/her corresponding address.

COMMERCIAL OTTER TRAWL
(Hydrographic Data)

Operation No.					Name of Fishing Boat					Date						
Haul No.	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Latitude	From	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	To	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Longitude	From	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	To	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Depth (fathom)	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Shoreline distance	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Nature of bottom	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Direction of operation	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Wind Direction	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Wind Velocity (beaufort)	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Tide	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Time Set	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Time Hauled	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Fishing Time	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Air Temperature °C	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Water Temp. °C	(1-2m)	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	(20 m)	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Salinity	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Observer

