

SET NET FISHERY (LAMBAKLAD)

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■ DESCRIPTION

Philippines, like Japan is an archipelago endowed with numerous bays, gulfs and coves that are essential requisites for set nets. The set net is a typical “passive” gear in contrast to such an aggressive or active type of fishing gear such as trawl and boat seines.

One of the most feasible type of set net is the Lambaklad. Lambaklad is a Japanese (Otoshi-Ami) type of set net that consists of several parts, namely: the bag, the slope (outer and inner), the playground and the leader. Each of these parts has its own role in trapping the fish. The leader blocks the path of the school of migratory fish that lead them to the playground. From the playground, fish enters the outer slope by means of the pointer nettings. As the fish passes through the slope, it enters the inner slope or non-return valve dropping into the bag where they are trapped and hauled for the catch. This design effectively confines fish and enables hauling only in a small box chamber to harvest them. This is the major category of set net which is popularly used today in Japan and encounters proliferation in the Philippines. *Otoshi*, a Japanese word means trapping down and *Ami* means a net.

Lambaklad is considered as one of the most viable and durable fishing methods used for catching first class highly migratory fishes such as tuna and tuna-like species i.e. yellow fin, skipjack, marlin, Spanish mackerel, caranx sp., crevalle and other migratory fishes. Its fishing operation is very economical and not fuel-consuming. It is a passive and seasonal gear due to the effect of monsoon wind. Likewise, the net could be removed at sea during unfavorable weather condition especially during typhoon months.

This gear is set in the strategic coastal areas, which are considered migration paths of pelagic fishes. They are set in coves and in bays preferably in areas where there are moderate currents and observed as feeding ground of migrating species. It could be set from 20 to 45 meters deep. The life span of the fishing materials will last for 5 to 7 years.

The environment to support set net (Lambaklad) is unique not only in the Philippines and Japan, where it originated but must also be available all over the world. ***Hence, there is no reason that the technical transfer for Lambaklad fishery is doubtful in other countries.*** Since set net fishing mainly depends on environmental factors, the technology is applicable in waters wherever the situation is favorable to develop in many parts of coastal waters over the world.

■ ADVANTAGES OF A LAMBAKLAD

Lambaklad have some advantages compared to other types of fishing gear. The following are the advantages:

1. Passive type of gear : the gear is stationary and is anchored at the bottom. It is a “wait and see” type of fishery operated to catch only incoming fishes.

2. Good Quality of Catch : can be preserved in the net for a number of days waiting for good market price as being alive and fresh and near to the market.

3. Durable life of materials : increased life span of the gear due to the advent of synthetic materials from jute.

4. Seedlings for Aquaculture : fishes caught alive could be reared in tanks, cages and ponds e.g. yellow tail, red sea bream, etc. for marine fish cultivation.

5. Shorter Working Time : fishermen can attend to other businesses after 2-3 hours of hauling in a day and with the mechanization of the boat, the working time and labor cost is reduced.

6. Less Fuel Consumption : as compared to trawl and other types of fishing gear, fishermen do not go too far from shore to scout a school of fish.

7. Preserves the Marine Resources : being a selective and passive gear, it can only fish coming to it with much less possibility of overfishing.

AREAS OF OPERATION

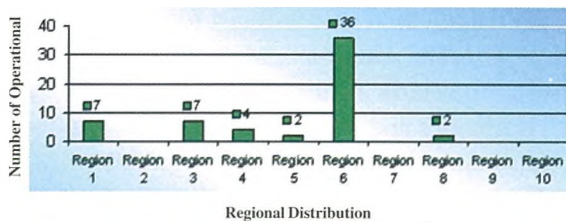


Fig. 1 Status of Operational Lambaklad Projects in the Philippines

There are fifty-four (58) lambaklad units presently operating in all regions (Figure 1) of the Philippines. It is broken down of as follows: Antique 19 units; Aklan 17 units; Camarines Province 2 units; Ilocos Province 7 units; Leyte - units; Mindoro - units and Zambales 7 units.

ON-GOING LAMBAKLAD CONSTRUCTION

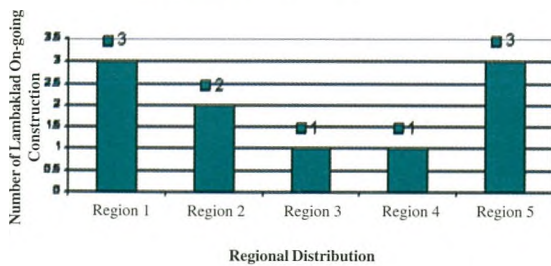


Fig. 2 Regional Distribution of Lambaklad on-going Construction

Figure 2 shows that in a total of ten that are on-going construction, three are done at Regions 1 and 6, two are at Region 5 and one each for Regions 4 and 5. It is expected that this number of Lambaklad undergoing construction will grow due to enormous requests from different Regional Offices nationwide for Lambaklad Project.

AREAS SURVEYED/PROPOSED SITES

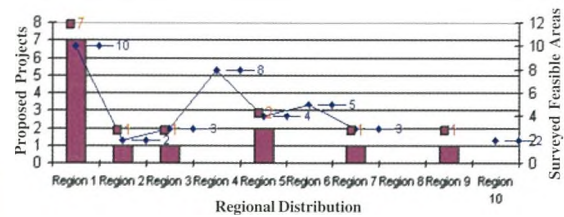


Fig. 3 Lambaklad Data on surveyed Sites and Surveyed Feasible Areas

Figure 3 shows the data on the regional distribution of Proposed Projects and the actual Surveyed Feasible Areas in the Philippine. Furthermore, it shows that among the proposed seven (7) projects at Region 1, ten (10) areas were found out to be feasible while one (1) proposed project at region 2 and 2 sites were found out to be feasible.

It is interesting to note that no project was proposed in regions IV and VI but were found out to have eight (8) and five (5) surveyed feasible areas respectively.

To date, there are eleven (11) proposed projects while 35 areas in the Philippines were found out feasible.

IMPORTANCE/BENEFITS

Economic Benefits

The implementation of the project will introduce a community-based livelihood program, the direct beneficiaries of which are the residents of the area. The lambaklad net fishing will provide regular source of extra

income and additional employment opportunities to the fisherfolks. Better quality of local fish supply will increase with lesser lives' risk considering that it is a coastal type of fishing. Increase trade with other communities and other economic activities will generate more revenue to the community and the government.

Social Benefits

Cooperative participation in the conceptualization of the project is recognized and highly encouraged. Dialogue is conducted with the representative from the cooperative with the local residents to final solution of the proposed project site. It is also through this dialogue that the fishermen encourage to a cooperative to push with the project.

Fisherfolks/Cooperative and Fishermen Association are integrated of the project. Their direct and active participation in the project is imperative to insure availability as envisioned that through direct technology transfer and management training fisherfolks cooperators, the project will be replicated in the future.

As development effect, the quality of life of the fisherfolk organization will improve. Being a community-based project, their involvement and participation in the cooperative effort will be heightened. The cooperative will thus be strengthened. Its capability will be increased and more services will be rendered for more community development endeavors.

Environment Aspect

The introduction of a new, efficient and environment-friendly fishing method shall boost production and will eventually provide an alternative measure against illegal and highly destructive fishing methods such as dynamite and cyanide poisoning. The set net (lambaklad) being stationary will serve as buffer or fence against incursion of large

commercial fishing vessels in the municipal waters. The fisherfolks cooperators will naturally act as protectors in the nearby vicinity of the project so as to ensure viability and sustainability of their livelihood. Marine resources will be protected and will be regenerated. The gear also helps in conserving fishes thus serving as sanctuary for small and juvenile species.

■ **INVESTMENT/INCOME**

Investments (Depth: 25 meters)

A. Materials and Equipments/Labor P 1,280,437.90

- one set of otoshi-ami (complete)	812,798.00
- two units of woodenhauling boat	80,000.00
- two units service boat (outriggered)	100,000.00
- two units o steel buoy (rectangular)	80,000.00
- one unit Fishermen Quarter	60,000.00

B. Labor

- Hiring of 18 skilled net menders at P 170.00/day for 30 days construction	91,000.00
- Hiring of technical supervisor in the Survey site, gear designing and Construction and installation 5%	56,639.90

C. Operating Expenses P 280,559.60

- Fuel and Lube-oil	10,000.00
- Repair and maintenance	15,000.00
- Municipal Permit	15,000.00
- Annual depreciation	226,559.60
- Fish Handling	14,000.00

D. Estimated Gross Income (8 monts) P 1,260,000.00

- Average catch/day 100 kgs. At P60.00/kg.
For 210 days (fishing operation)

E. Estimated Net Income P 979,440.40

- 65% institutional share	636,636.26
- 35% Fishermen share	342,804.14

F. Return of Investment

$$\text{R.O.I.} = \frac{\text{Net Return}}{\text{Investments}} \times 100 = \frac{636,636.26}{1,280,437.90} \times 100 = 49.72\%$$

$$\text{Payback Period} = \frac{\text{Investment}}{\text{Institutional share}} = \frac{1,280,437.90}{636,636.26} = 2 \text{ years}$$

■ EXPERIENCES FROM OTHER AREAS

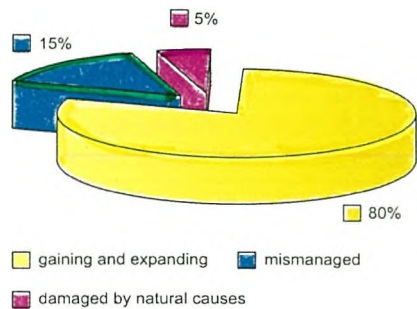


Fig 4. Over all evaluation on Lambaklad Operators in 1995

Figure 4 shows the over-all evaluation on Lambaklad Operators in 1995. It was found out that 80% of the total installed projects were gaining and expanding, 15% are mismanaged and 5% are damaged by natural calamities. As a recent development, Lambaklad units can now be installed facing an open sea such as South China Sea as experience in the Ilocos Region and Zambales Coast.

Through the monitoring of BFAR with regards to the operation and production of lambaklad projects thus having an average yield of 200 kgs. per day. In other observation, payback period takes five (5) months of operation, having a maximum production of 25 tons per day in Antique; 14 tons/day in Zambales; 13 tons/day in Aklan; 6 tons/day in Vigan. For an over-all evaluation in 1995 on Lambaklad operators.

■ RECOMMENDATIONS

1. Technology transfer on this field of Fishing Industry must be encourage and intensified.

2. Continuous dissemination of information and educate the lambaklad beneficiaries.

3. Scientific studies should be conducte in future development of the Lambaklad fishery industry.

4. The optimistic matterialization of proportainately large capital for Lambaklad

investment will stimulate new projects by investors to boost the Lambaklad fishing business. Therefore, it is strongly recommended that soft expanded loans be liberalized. Flexible loan programs should be sustained by the government to go hand in hand with technology and ecological policies.

Table 1. Criteria applied to decide dimensions of various positions of Set net.

FIG.	POSITIONS	CRITERIA TO DECIDE DIMENSIONS
A	Front entrance width	1.0 ~ 2.0 (1.5 in average) x water depth, W.
B	Back entrance width	0 ~ 100% (50 ~ 60% in average) of the front entrance width, A, or may have no back entrance.
C	Buffer stop panel	Its length is equivalent to a sum of the widths of front entrance, A and back entrance, B.
D	Entrance flap length	30 ~ 40% (1/3 in average) of breadth of net, H.
E	Entrance flap opening (width between off- shore ends of entrance flaps)	70~85 of the entrance width, A+B.
F	Playground side panel	The length is 0.8~1.8 (0.9 in average) x W.
G	End stopper panel of playground	The length is 0.6~1.3 (0.8 in average) x W.
H	Breadth of net	0.9~2.2 (1.5 in average) x W, being narrow in a deep fishing ground and broad, in shallow
I	Waist of net (intermediate breadth at the end of panel of box chamber)	0.6~1.4 (1.0 in average) x W
J	Outer slope funnel	The length is 1.2 ~ 1.9 (1.5 in average of 20 degrees)
K	Incline of outer slope funnel (angle between funnel floor and seabed)	12~25 degrees with an average of 20 degrees.
L	Hauling section (width of slope funnel at end panel of box chamber)	The width is 0.6~0.8 the waist of net, I, basically.
M	Inner slope funnel	The length is 0.8 x width between outer slope funnel ends, L, or 1/3 of the length of box trap chamber
N	Height of slope funnel floor at the waist.	0.3~0.7 (0.5 in average) x W
O	Distance between base floats and end stopper panel	0.5 x W basically or relatively constant to be 20~30 m.
P	Box Chamber	The length is 1.1~3.3 (2.0 in average) x W. It could be as long as 3.0 x W in strong current fishing ground.
Q	Bunt end	The length is the same as that of the net hauling boat.

A: Front Entrance
 B: Back Entrance
 C: Buffer Stop Panel
 D: Entrance Flap
 E: Entrance Flap Width
 F: Off-shore side Panel
 G: End Stopper Panel
 H: Breadth of Net
 I: Waist of Net
 J: Outer Slope Funnel
 K: Incline of Outer Slope Funnel
 L: Outer Slope Funnel
 M: Inner Slope Funnel

N: Height of Slope Funnel Floor at the Waist
 O: Distance between Base Floats and End Stopper Panel
 P: Box Chamber
 Q: Bunt End
 R: King Base Float
 S: Van Base Float
 W: Water Depth

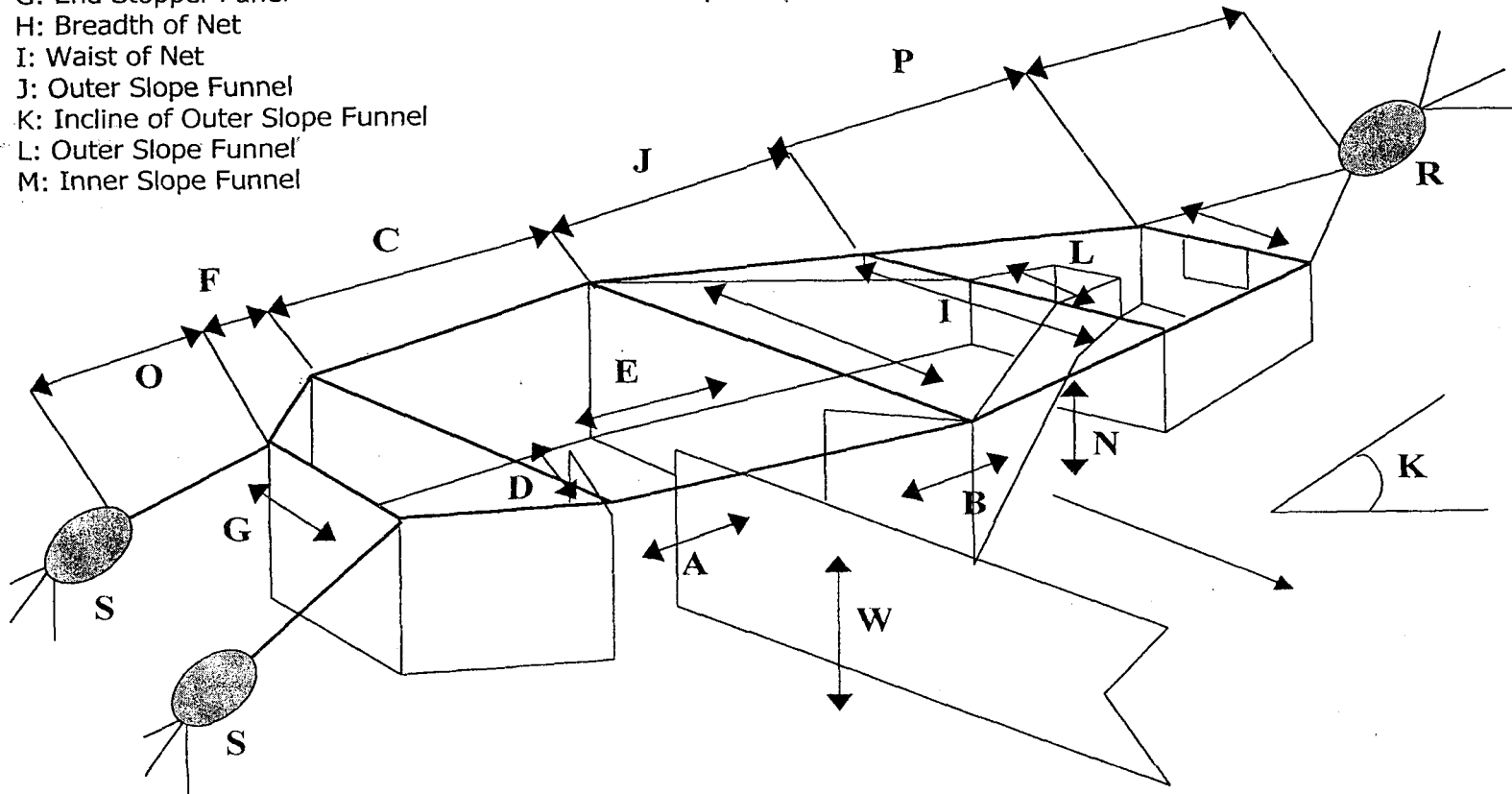


Figure 5) Names of the Parts of Set Net, *Otoshi-Ami*

ESTIMATED BILL OF MATERIALS FOR 30 METERS DEEP SET NET

1. Nettings: (200 MD x 100 m B/R PA)

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
210/ 36 X 11 K	Bale	1	30,763.20	30,763.20
210/ 36 X 7 K	Bales	6	24,629.80	147,778.80
210/ 36 X 5 K	Bales	7	29,770.00	208,390.00
210/ 36 X 4 K	Bales	5		
210/ 45 X 3 K	Bales	4	28,431.00	113,724.00
210/ 45 X 2 K	Bales	4	29,770.00	119,080.00
SUB- TOTAL				619,736.00

2. Ropes (medium Laid, PP) 220 meters

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
40 mm	rolls	2	13,260.00	26,520.00
30 mm	rolls	3	10,774.00	32,322.00
24 mm	rolls	18	5,024.00	90,432.00
18 mm	rolls	10	3,465.00	34,650.00
14 mm	rolls	12	1,787.50	21,450.00
7 mm	rolls	80	487.00	38,960.00
SUB- TOTAL				244,334.00

3. Knitting Twine (PA br)

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
210/36	spools	50	123.50	6,175.00
210/42	spools	30	123.50	3,705.00
210/45	spools	20	123.50	2,470.00
SUB- TOTAL				12,350.00

4. Floats and Sinkers

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
Y- 80	pcs.	70	117.00	8,190.00
Y- 30	pcs.	150	53.00	7,950.00
Plastic Floats 15" dia	pcs.	150	715.00	107,250.00
#8 pb (50 kgs. / box)	box	8	1,885.00	15,080.00
Stone/ Boulders	tons	80		
SUB- TOTAL				138,470.00

5. Accessories

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
Flatboat				
24' x 4' x 2'	unit	2	32,500.00	65,000.00
Main Buoy				
8' x 4' x 2'	unit	2	30,000.00	60,000.00
Pump Boat	unit	1	100,000.00	100,000.00
16 HP Engine		1	65,000.00	65,000.00
Fishermen's Quarter	unit	1	60,000.00	60,000.00
SUB- TOTAL				350,000.00

Labor Cost: 30 % of the Materials and Equipments

374253.06

Allowance for Contingencies: 10 %

124751.02

ESTIMATED BILL OF MATERIALS FOR 35 METERS DEEP SET NET

1. Nettings: (200 MD x 100 m B/R PA)

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
210/ 36 X 11 K	Bale	1	30,763.20	30,763.20
210/ 36 X 7 K	Bales	5	24,629.80	123,149.00
210/ 36 X 5 K	Bales	7	29,770.00	208,390.00
210/ 45 X 3 K	Bales	7	28,431.00	199,017.00
210/ 45 X 2 K	Bales	4	29,770.00	119,080.00
SUB- TOTAL				680,399.20

2. Ropes (medium Laid, PP) 220 meters

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
40 mm	rolls	1	13,260.00	13,260.00
36 mm	rolls	3	10,774.00	32,322.00
24 mm	rolls	16	5,024.00	80,384.00
14 mm	rolls	12	1,787.50	21,450.00
7 mm	rolls	60	487.00	29,220.00
4 mm	rolls	20	280.00	5,600.00
SUB- TOTAL				182,236.00

3. Knitting Twine (PA br)

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
210/36	spools	50	123.50	6,175.00
210/45	spools	30	123.50	3,705.00
SUB- TOTAL				9,880.00

4. Floats

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
Y- 80	pcs.	70	117.00	8,190.00
Y- 30	pcs.	130	53.00	6,890.00
Synthetic Float	pcs.	130	715.00	92,950.00
#8 pb (50 kgs. / box)	box	9	1,885.00	16,965.00
SUB- TOTAL				124,995.00

5. Accessories

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
Flatboat				
24' x 4' x 2'	unit	2	32,500.00	65,000.00
Main Buoy				
8' x 4' x 2'	unit	2	30,000.00	60,000.00
One unit Pump Boat				
16 HP Engine		1	65,000.00	65,000.00
Fishermen's Quarter	unit	1	60,000.00	60,000.00
SUB- TOTAL				250,000.00

Labor Cost: 30 % of the Materials and Equipments

374253.06

Allowance for Contingencies: 10 %

124751.02

GRAND TOTAL

1,746,514.28