

## 'BANGOS' FRY TRAWL

by

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### ABSTRACT

An appraisal of the predominant method of catching 'bangos' fry is given. The author describes the construction and operation of the gear which he personally had designed and tried. The advantages in the use of the gear are pointed out as the following: rapidity and ease of operation; increase in the rate of catch; capability of operation even in strong wind and in rough weather; easily mechanized; economical in the use of nets and man-power thus lowering the cost of the bangos fry; can be used either as a stationary or mobile gear; and can be operated in shallow as well as in deep waters.

### INTRODUCTION

To supply the giant bangos (*Chanos chanos*) fishpond industry of the Philippines, an important supporting industry for the catching of bangos fry has developed in many coastal parts of the Archipelago. This industry provides employment to a large number of fishermen, including women and children, during the summer months when the fry are in season. The average annual catch of bangos fry has been estimated by Villadolid *et al* (1943), and by commercial fry dealers at around 147,000 pots or 440,000,000 fry. The principal fishing gear that account for this catch are the 'panagap' or two-man seine, the 'saplاد' or tidal set net, and the 'sakga' or scissors net (Blanco and Villadolid, 1939). All these types of gear use 'sinamay', a kind of coarse cloth woven out of 'abaca' fibre.

The panagap is a rectangular sinamay seine about 6 metres long by 3 metres wide. It is dragged by two persons along shallow sandy shores where bangos fry are known to concentrate. After covering a sufficient distance, dragging is stopped and the fry are dipped out with a white-enamelled basin.

The saplad consists of a V-shaped barricade with the walls or wings usually made of flattened bamboos and set across the mouth of shallow rivers to catch bangos fry that come with the tide. At the end of the wings a fine sinamay cloth, rectangular in shape, is placed hammock-like where the fry are concentrated and caught. The whole contrivance is raised manually as the water rises, to keep the upper edge just above water level.

The sakag is similar to the common scissors net used in catching 'alamang' and small shrimps.

The saplad is popularly used in the Ilocos fry grounds, while the panagap is used predominantly in southern Luzon and the Central Philippines. The relative importance of these gear is shown in the following estimate of the catch each contributes to the over-all total production; panagap, 50%; saplad, 40%; sakag 10%.

### APPRAISAL OF EXISTING FRY GEAR

During a recent (1955) survey of the bangos fry grounds in Southern Luzon, the writer observed the operation of the prevailing methods of catching bangos fry to note their various short-comings. Although the panagap is the most widely used gear in southern Luzon especially in the provinces of Batangas, Quezon, Mindoro, Marinduque and Albay, it was found to have many defects. It is cumbersome and heavy to drag in the water and it can hardly be worked against a strong wind or in a heavy sea. To collect the captured fry, dragging has to be stopped and the whole gear has to be gathered to concentrate the catch. Much time is lost, thereby. Because the gear cannot be dragged fast enough, a large percentage of the catch is able to escape since the commercial bangos fry are already fast swimmers.

Sakag or scissors nets used for catching fry cannot be used in rough sea or in deep water.

The saplad is generally installed only in a shallow section of river mouths and it has to

be constantly adjusted to the rising tide. A large section of the river, especially if it is deep, is left open and its fry potential unexploited.

The advantage of panagap is that it can be used during both low and high water. On the

other hand, the saplad, once set in a favorable stream, requires little effort in proportion to volume of catch. Saplad operators, however, have to use the panagap when the mouths of the rivers are blocked by sand bars.

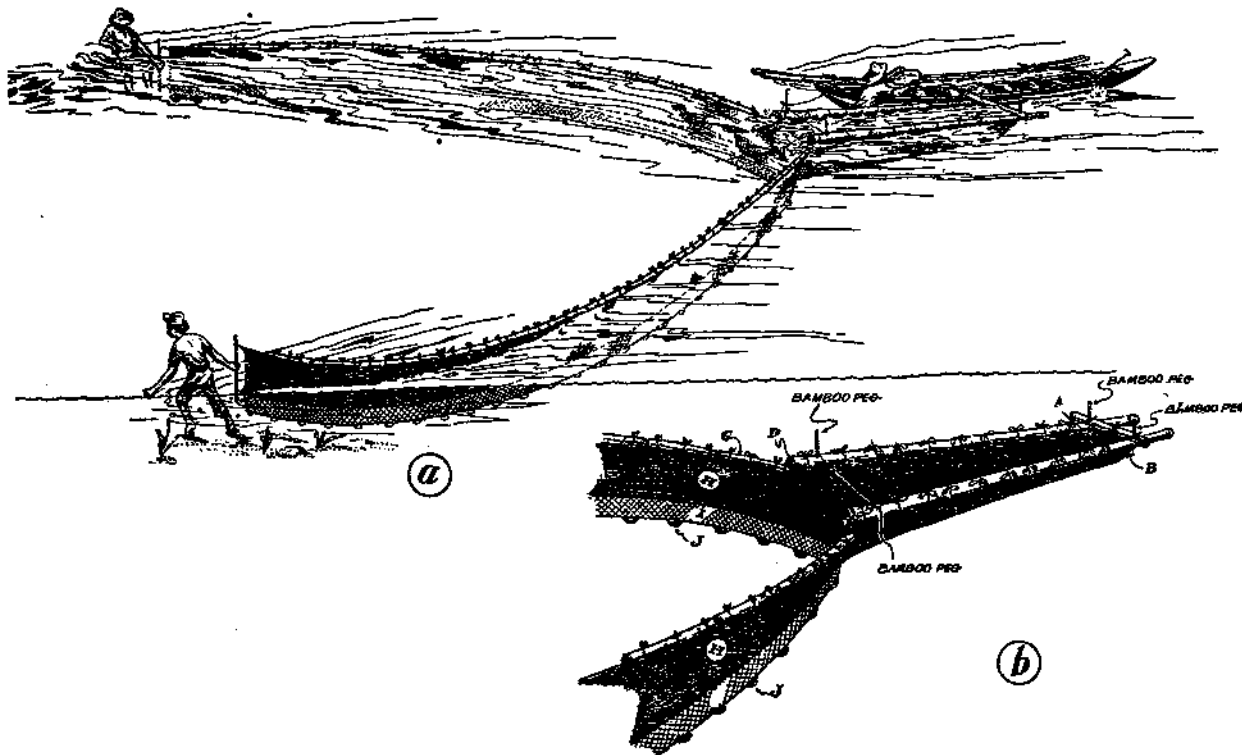


Fig. 1. Operation of the 'Bangos' fry trawl; a) Operation as a 'Panagap' (Mobile Gear). b) Operation as a 'Saplad' (Stationary Gear).

The bangos industry at present depends almost entirely on the fry caught by panagap, saplad and sakag. Any improvement, therefore, of these nets to increase their catch would redound to the ultimate benefit of the industry. With this view, the writer designed a new gear in which he sought to eliminate the defects of the traditional bangos fry gear. The result was the development of a light and highly effective contrivance which is the subject of this paper. This new gear combines the features of a panagap and a saplan (Fig. 1). In this paper it will be called bangos fry trawl. It was first tried in the fry grounds of Tiwi, Albay Province. It is being used already by bangos

fry catchers in Bulan and Gubat, Sorsogon Province, certain localities in Polillo Island and Gesan, Marinduque Province. Demonstrations have been conducted recently in the town of Salinas, Cavite Province.

#### PLAN OF THE GEAR

Figure 2 shows the plan of construction of the bangos fry trawl. The plan shows that it carries practically all the standard features of a trawl net without a top cover: a pair of wings, a small floor or belly, and a catching end. The whole trawl is made of fine-meshed sinamay reinforced on the edges with  $\frac{3}{8}$  inch abaca twine.

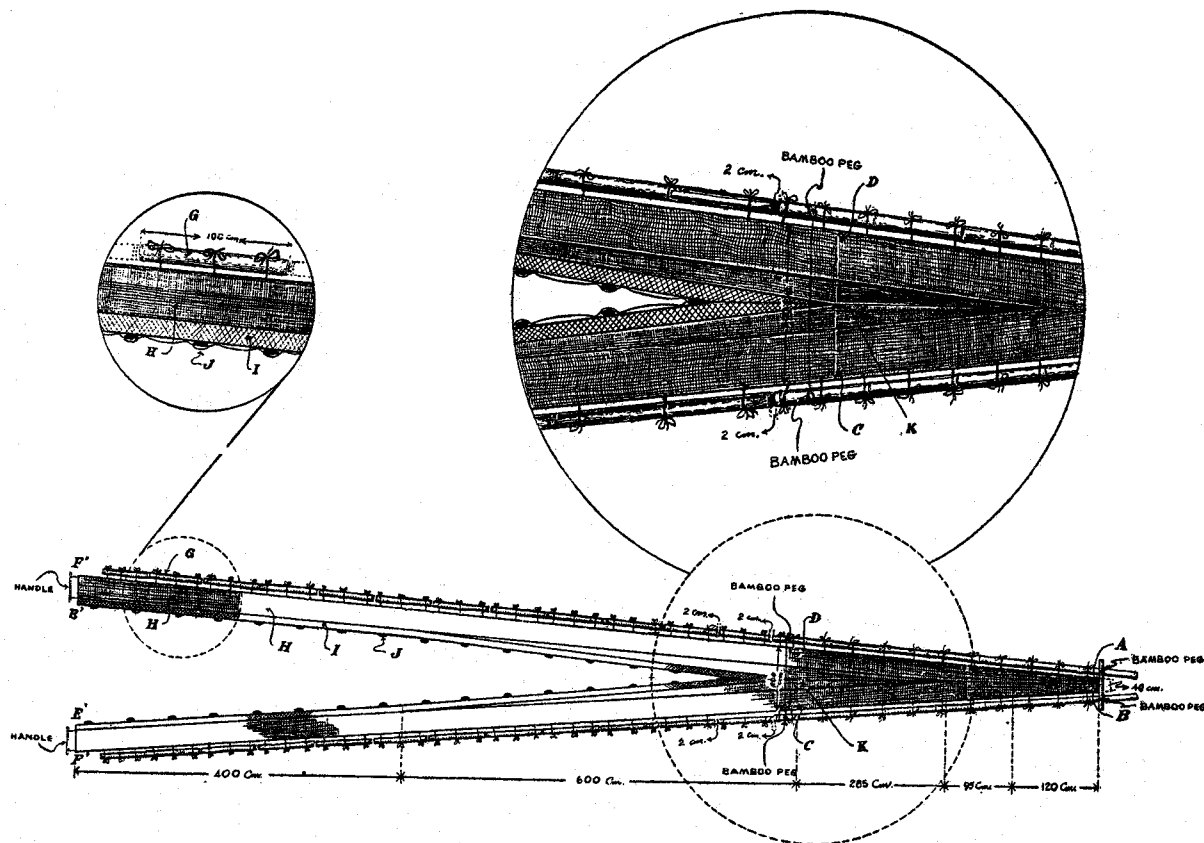


Fig. 2. Construction details of the fry trawl net.

### CONSTRUCTION OF THE GEAR

In the standard fry trawl the belly and dipping end or saplad section ABCD is a trapezoidal piede 500 cm. long, 200 cm. wide at the forward end and 40 cm. wide at the blind end. The pair of wings, DKEF and CKEF, is 10 metres long, 95 cm. wide at the junction with the belly and 50 cm. at the free end. The lower edges of the two wings are provided with a selvage (I) of abaca netting of 1 inch, 3 to 4 meshes deep. The leadline is hung from this selvage. The abaca selvage minimizes wear and tear of the fine-meshed and delicately-made sinamay and the accumulation of sand and debris in the wings and belly. Old pieces of cotton nets of 1 to 2 inches mesh may also be used.

The sinamay cloth, when joined together, is double sewn. The free edges are folded and

reinforced with abaca rope of 3/8 inch. The rope is extended beyond the corners of the wings to serve as handles for pulling the net.

### OPERATION OF THE GEAR

The bangos fry trawl, combining the features of the saplad and the panagap, can be used as either, with practically no modification.

#### The Gear as a Panagap

When used as a panagap the fry trawl is dragged by two persons, one at the end of each wing (Fig 1). A third man goes alongside the scooping end with a banca containing receptacles for bangos fry. As the trawl is dragged along, he keeps clearing this section of debris and dipping out the fry that accumulate at the cod-end.

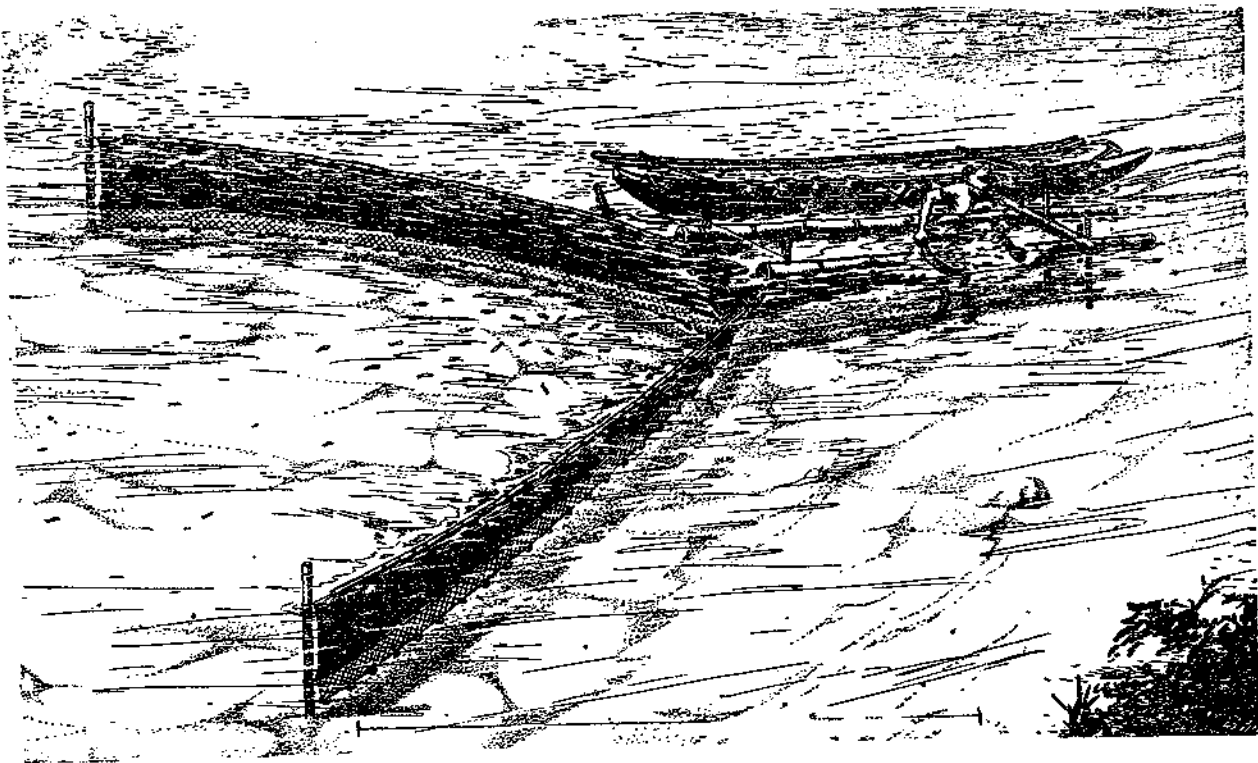


Fig. 3. Details showing the operation of the 'Bangos' fry trawl as a 'Saplاد', and 'Bangos' fry being collected from the cod-end.

The whole trawl is kept afloat by a series of bamboo tubes fastened to the floatline. The floats for the wings (G) are pieces of bamboo one metre long and tied along the floatline, end to end with a clearance of 1 or 2 cm. The floats for the saplad section are a pair of bamboos 6 metres long and about 10–12 cm. in diameter, the larger diameter being placed toward the rear. The distance of the saplad floats at forward end may be reduced from the maximum 200 centimetres by shortening the twine that joins the two ends. It is, however, fixed at 30 to 40 centimetres at the scooping end of the net by means of a cross bamboo piece pegged to the bamboo floats at A and B. Thus transfixed, the two bamboo floats are prevented from rolling and the scooping end is kept open. The bamboo floats project about 1 metre beyond the scooping end to offset the tendency of the net to sink at this point, due to the current concentrating here.

The wings are weighed by a series of clay weights (J) about 2 inches long and 1 inch in diameter. They are hung at 30 cm.

intervals on the leadline from the belly to the tip of the wings.

To prevent the escape of bangos fry in the saplad section the sinamay net is hung high on four bamboo pegs driven vertically into the bamboo floats.

#### The Gear as a Saplاد

When used as a stationary gear or saplad the fry trawl is set at the mouth of the river with the use of four stakes: one on each end of the wings and one on each corner formed by the saplad floats and the bamboo cross piece, A and B (Fig. 2 and 3). When the tide ebbs the position of the trawl is easily reversed to screen the out-flowing water. A series of trawls can be installed to cover the entire width of the river.

The advantage of the trawl when operated as a fixed gear over the standard saplad is that the trawl, with its series of bamboo floats, rises with the rising tide and *vice versa*, and thus it automatically adjusts itself to fish at the most

productive level. The trawl, therefore, catches more fry from both the incoming and outgoing tides than the rigidly installed saplad.

#### AMENABILITY TO MECHANIZATION

It is now a common observation that bangos fry are present not only along the shore but also further out in the open sea. Catching bangos fry both along the shore and in the open sea may now be commercially feasible with a mechanized trawl. The fry trawl can be operated from two boats like a floating Spanish trawl or from a single boat. In the latter case, the boat used is provided with double out-riggers and uses a pair of nets installed on each side of the boat. What is used of the original trawl is the belly, the scooping end, and, if the length of the out-riggers permit, part of wings. The pieces of bamboo floats are replaced by two long bamboo poles or wood with sufficient leverage to keep the mouth open and to adjust it to the right fishing depth.

Mechanical trawling for bangos fry would indeed be a great improvement over the panagap, the radius of operation of which is limited to wading depth. This radius is further reduced during high tides when wading becomes so difficult that fishing has to stop. The mechanized fry trawl, therefore, can fish from the shore-line to any depth where bangos fry are in commercial concentration.

#### RECAPITULATION OF ADVANTAGES OF 'BANGOS' FRY TRAWL

Based on the present application of the bangos fry trawl, the following have been noted to be its decided advantages over the present methods:

1. It is faster and easier to operate since it offers less resistance to the water.
2. The fry are automatically concentrated at the saplad end and can be dipped out without stopping the catching operation.
3. It catches more fry per unit time, the equivalent of one trawl being about three to five conventional panagap by actual observation.
4. It can be operated in strong wind and in rough sea.
5. It lends itself easily to mechanization.
6. Because of its high efficiency, less number of nets and men are needed to operate a bangos fry concession, thus lowering the ultimate cost of bangos fry.
7. It can be used either as a stationary gear (saplad) or as a mobile gear (panagap).
8. When used as a saplad it can be easily installed in shallow as well as in deep waters.

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