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DEVELOPMENT OF INNOVATIVE LOW COST CAGES FOR PROMOTING OPEN SEA CAGE CULTURE ALONG THE INDIAN COAST

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Introduction

The progressive decline in marine fish landing all along Indian cost poses serious question about availability of fishery resources as a source of cheap protein to the common man. It also raises serious concernes about the arising unemployment in the coastal belt of the country. Alternate technologies are the urgent need of the hour to produce more resources from the costal water and also to generate employment opportunities for the fishermen.

Open sea cage culture is one answer to address this problem partially. India has a cost line of 7517 km where open sea cage culture can be initiated at selected places where these systems will not clash with the fishing operation of the traditional and mechanized sector.

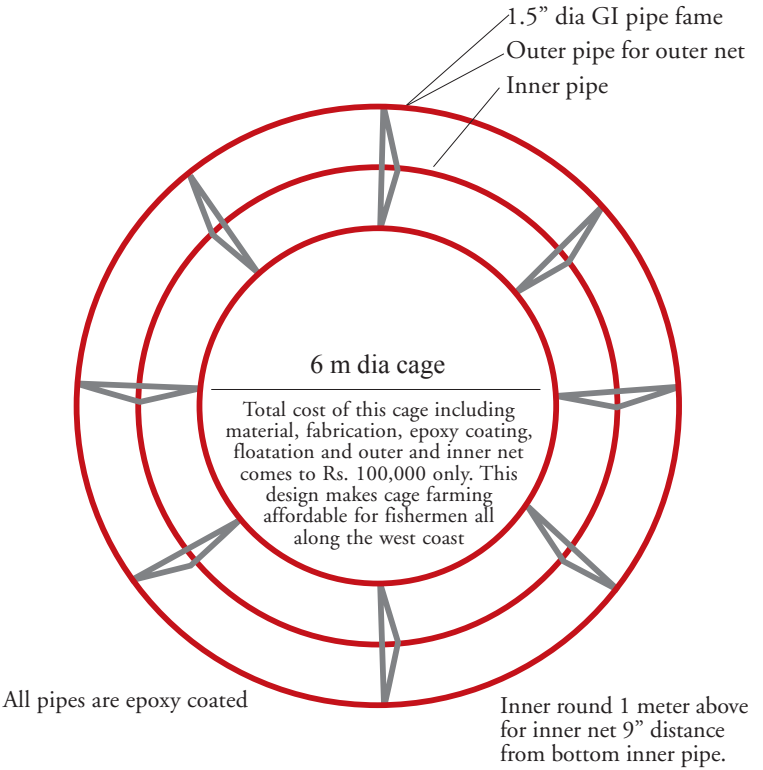

Fig.1. Design details of the low cost cage

Central Marine Fisheries Research Institute being the pioneer to initiate open sea cage culture in Indian waters has been striving hard to promote open sea cage culture at selected locations in all the maritime states with the involvement of the fisherman community. Cage design and mooring technology has been undergoing refinement through the dedicated and committed efforts of the scientist of CMFRI. Efforts were continuously made

to reduce the cost of the cage and mooring systems so as to make it affordable for the fisherman and also to help them to take it up as a lively hood alternative. The present HDPE cage costs about Rs.4,00,000/- per cage and together with the mooring systems and net, the cost increases to about Rs.5,50,000/- making it unaffordable to the fisherman. While interacting with the fisherman they expressed their desire to have cage costing less then Rs. 1,00,000/- and lasting at least 5 years to make it sustainable and economical in the long run. It was with their interest in mind the Karwar Research Centre has looked for alternatives for HDPE cages for promoting cage culture in the coastal waters and developed fifth generation cage.

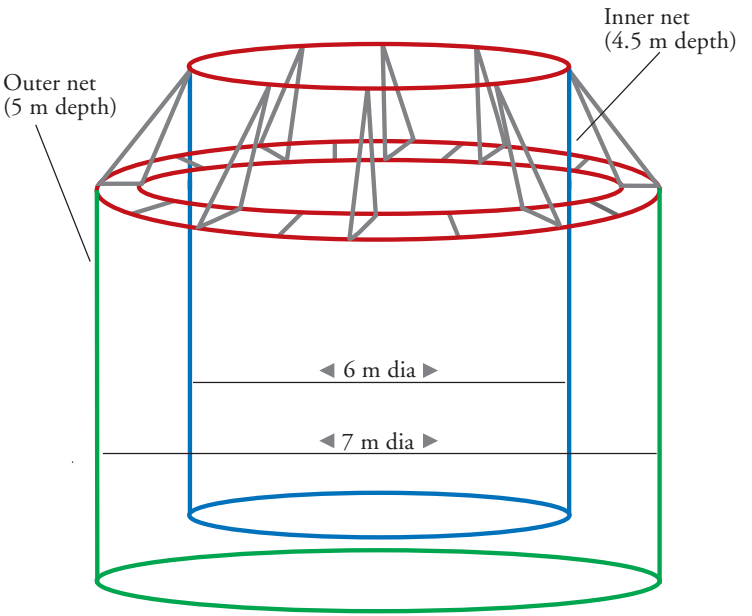

Fig.2. Technical details of the low cost cage

Design

The low cost cage developed at Karwar is made of good quality 1.5" GI pipe (B class). The design details of the cage are given in fig-(1) and Fig-(2). The diameter of the cage is 6 m and the height is 120 cm from base to the railings. Fig (3). All the joints are double welded for ensuring extra strength. After fabrication the structure was provided with single coat epoxy primer and double coat epoxy grey paint to prevent rusting. The total weight of the cage is about 700 kg.

Fig.3. Low cost cage before epoxy coating

Floatation

Puff or foam field HDPE cage is buoyant enough to float in the water. However, metal cage needs additional floatation (Fig.4). Ten fiber barrels of 200 l capacity filled with 30 lb air are used for floating the cage. The cage when floated on inflated barrels provides a stable platform around the cage where fisherman can stand and safely carry out works like net clearing, net replacement etc.

Advantage of the low cost cage

The HDPE cages floats on water surface hence the outer net is always in the water level and predatory fishes enters into the area in between outer and inner net. In the case of low cost cage the outer net is 60 cm above water level and provides no chance for predatory fishes to enter in the middle space.

HDPE cage sinks if more than three person climb on the side frame where as the low cost cage can take the weight of as

many as 20-25 persons on the platform safely. The cost of one HDPE cage including netting, mooring etc. costs around Rs. 5,50,000, whereas the low cost cage including netting, mooring all together cost only Rs. 1,00,000. The HDPE cage may take a minimum 4 to 5 crops to recover the input cost whereas low cost cage can recover the investment in a single crop. The diameter of the HDPE cage and low cost cage is 6 meters and depth of the net is 6 m. Hence, area wise both the cage give the same performance.

Disadvantages

Unlike HDPE cage wind action is more on metal cage as it is floated on barrels. Hence, it will be difficult to float in open sea condition from June to August unless heavy duty mooring is provided. Except for this the metal cage performance is far superior to HDPE cages.

Fig.4. Metal cage developed at Karwar

Open sea cage culture is promoted by the government of India in a big way to increase fish production from coastal waters and to provide livelihood option to the fishermen. In this context CMFRI's initiative to reduce the cost of the cage to make it affordable to the common fishermen, will go a long way in resource and employment generation.