BOBP/MAG/12

# How to Build a Timber Outrigger Canoe

BOBP For Fisheries Development
BAY OF BENGAL PROGRAMME

# 8.6m OUTRIGGER CANOE INS-5

# BUILDING INSTRUCTIONS

by

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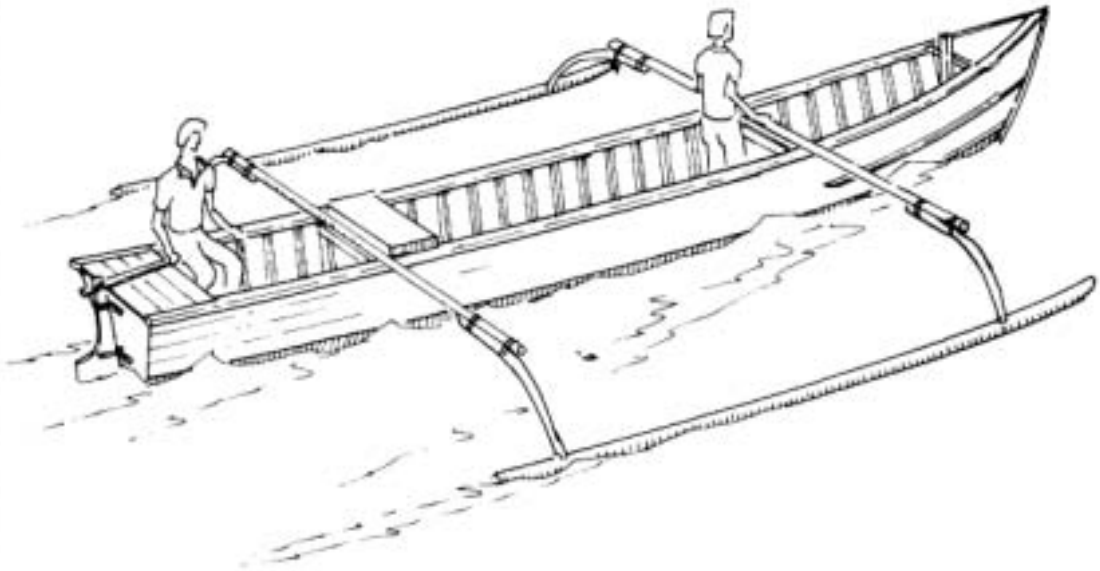

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# INTRODUCTION

Dug-out outrigger canoes, traditional fishing craft found from Madagascar in the west to Indonesia and the Pacific Islands in the east, are made from tree trunks of adequate diameter. But logs for construction of large canoes are becoming difficult to find and construction is consequently becoming more and more expensive. Dug-out construction also wastes a lot of timber. For each dug-out canoe, two or three planked canoes can be built. The Bay of Bengal Programme (BOBP) undertook a project in Nias Island, Sumatera, Indonesia, and Shri Lanka to design and construct planked outrigger canoes that would provide an answer to the problems now being laced in building the traditional outrigger canoes.

The outrigger canoe, INS-5, developed by BOBP in Nias Island was fully tested and demonstrated for hook-and-line fishing, using an insulated ice box to preserve the catch, and was found acceptable by fisherfolk in several fishing villages of Nias Island and the west coast of the Province of North Sumatera. This manual, describing the design and construction of this BOBP-designed canoe, is presented in a simple 'how-to-do' format that can be easily used by any boat-builder or carpenter with a little experience. The manual also describes the construction of a canoe with diagonal planking of its sides, as done in Shri Lanka, where it is difficult and expensive to obtain planks of 4-5 m length.

The project for the development of the outrigger canoe and this manual have been sponsored by the Bay of Bengal Programme's "Small-Scale Fisherfolk Communities in the Bay of Bengal" (GCP!RAS/118/MUL). The project was executed by the Provincial Fisheries Service of North Sumatera, An Indonesian edition of the manual has been published in cooperation with the Semarang Fishing Technology Development Centre, Ministry of Agriculture, Directorate General of Fisheries, Indonesia.

The manual shows, step by step, how to build the main hull of the 8.6 m-long INS-5 canoe using sawn planks. The same methods of construction may be used for canoes from 7.5 m to 10.8 m length. Sawn planks are available either cut locally or bought from a timber shop. The different dimensions of timber used have been kept to a minimum and these dimensions correspond to common commercial sizes. The planks alone need to be planed to the correct thickness with an electric planer.

The shape of the canoe is given by the main frames spaced apart. These frames can easily be drawn in full size from the measurements given in the manual.

The bottom of the canoe is crossplanked with two layers of planking to ensure good watertightness even after the craft has been left sitting on the beach for several days. The sides can be planked longitudinally in the conventional way, or diagonally. The diagonal planking is preferred if it is difficult to obtain planks of 4-5 m length.

A wooden boat is only as strong as its fastenings. Oniy nails and bolts that have been hot dip galvanized are recommended. Note that electroplating is not suitable.

The design, with sharp forebody and moderate width of transom, is suitable lor low-powered diesel engines. The INS-5 canoe is fitted with an inboard diesel engine of 6-8 hp with no reverse/reduction gear or clutch. It is a horizontal cylinder engine used for many purposes, such as irrigation pumps and generators. The price of this engine is relatively low and spare parts are easily available. Because the fuel consumption is only half that of a similar outboard engine, it has become the most popular fishing boat engine between 5 hp and 15 hp in Sumatera, Indonesia.

Though this manual has been prepared specially for small-scale carpenters with basic tools, engaged in the construction of small timber craft in remote villages, it could also be useful for trainers teaching in fisheries schools and extension workers in small-scale fisheries.

The Bay of Bengal Programme (BOBP) is a multi-agency regional fisheries programme which covers seven countries around the Bay of Bengal — Bangladesh, India, Indonesia, Malaysia, Maldives, Shri Lanka and Thailand. The Programme plays a catalytic and consultative role: it develops, demonstrates and promotes new techniques, technologies or ideas to help improve the conditions of small-scale fisherfolk communities in member-countries. The BOBP is sponsored by the governments of Denmark, Sweden and the United Kingdom, by member-governments in the Bay of Bengal region, and also by AGFUND (Arab Gulf Fund for United Nations Development Organizations) and UNDP (United Nations Development Programme). The main executing agency is the FAO (Food and Agriculture Organization of the United Nations).

This document is a manual which has been prepared by *0* Gulbrandsen, Consultant Naval Architect. It has not been cleared by the Government concerned or the FAO.

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