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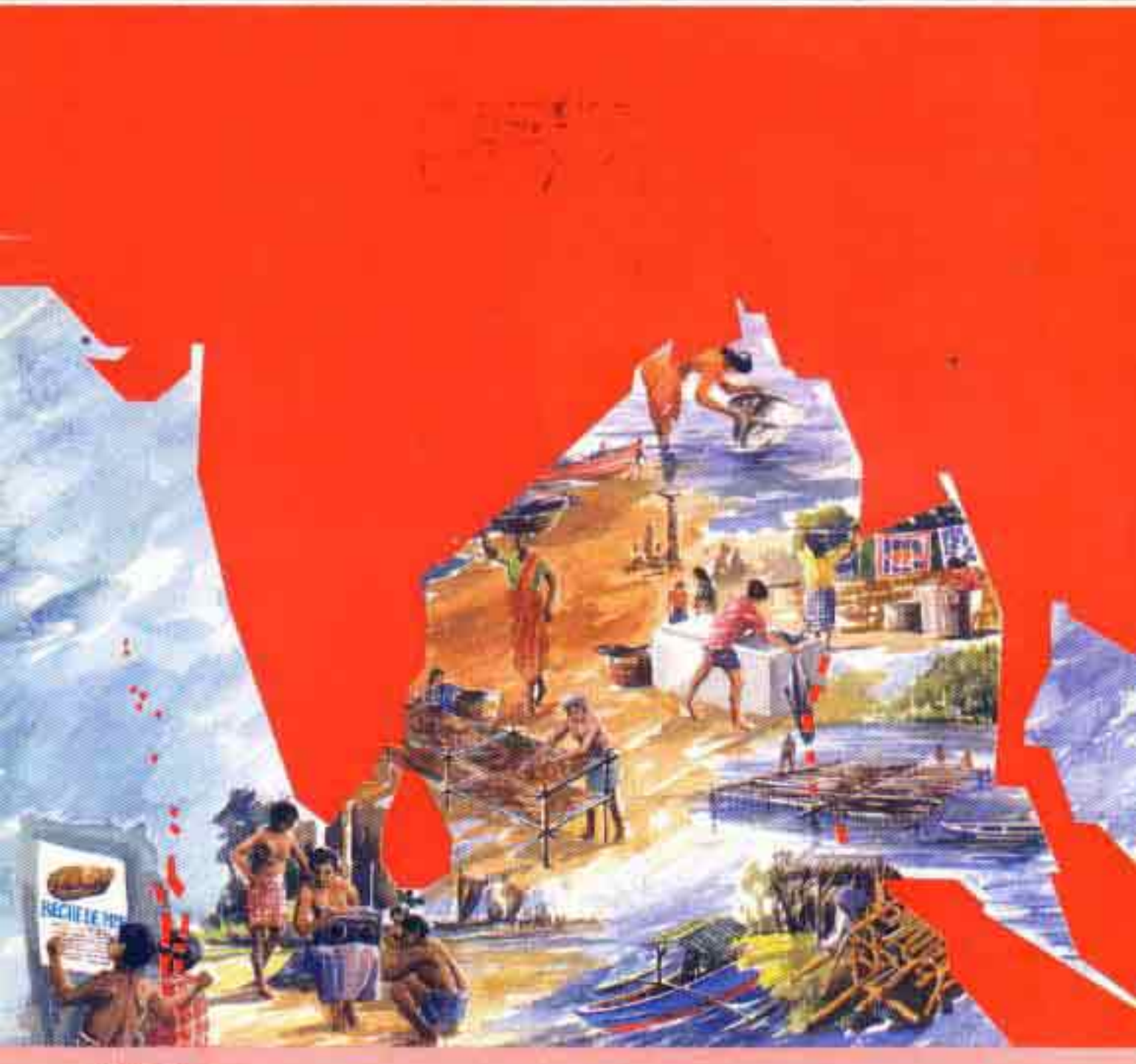

BOBP For Fisheries Development
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Small-Scale Fisherfolk Communities GCP/RAS/118/MUL

# Introduction of New Outrigger Canoes in Indonesia

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This report gives an account of the successful attempts to develop and introduce a new type of outrigger canoe for the benefit of small-scale fisherfolk in Nias Island, North Sumatera, Indonesia. It summarizes the activities of canoe construction, training of carpenters, demonstration and long-term fishing trials and discusses the impact and prospects for further development.

The work was undertaken from late 1988 till early 1993 as a subproject under BOBP's "Small-Scale Fisherfolk Communities" project GCP/RAS/118/MUL. The subproject was channelled through the Provincial Fisheries Service (PFS) of North Sumatera but was, to a very large extent, an autonomous unit in Nias with a Field Assistant, Tafonaha Gulo, as the only staff. The Boatbuilder Consultant assisting in construction of prototype canoes and training of carpenters was M Savins, from Australia.

The Bay of Bengal Programme (BOBP) is a multiagency 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 methodologies, 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 UNDP (United Nations Development Programme) and AGFUND (Arab Gulf Fund for United Nations Development Organizations). The main executing agency is the FAO (Food and Agriculture Grganization of the United Nations).

This document is a project report and had not been cleared by the Governments concerned or the FAO.

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**CONTENTS**

# 1. *BACKGROUND*

The Eleventh Advisory Committee of the Bay of Bengal Programme (BOBP) recommended in March 1987 that suitable activities in small-scale fishing technology should be identified in Indonesia for development and assistance. The Provincial Fishery Service of North Sumatera (PFS) and BOBP staff, after a survey on the east coast of Sumatera in May 1988, concluded that the pressure on the fishery resources was very high and that there was very limited scope for improvement in technology that could lead to increased earnings of small-scale fishermen. Further investigations, this time on the west coast of Sumatera, indicated that Nias Island (Figure 1, facing page) would be an appropriate location for the upgrading of fishing technology to improve the incomes of fisherfolk. It was felt that there was a low level of exploitation of resources here, and that too within limited ranges and by largely artisanal fisherfolk. A study was conducted in June 1988 and possibilities for increased production of large pelagic species, like Skipjack, Yellowfin, billfish and shark, and demersal species, like Snapper, Bream, Grouper, Emperor and others, were identified.

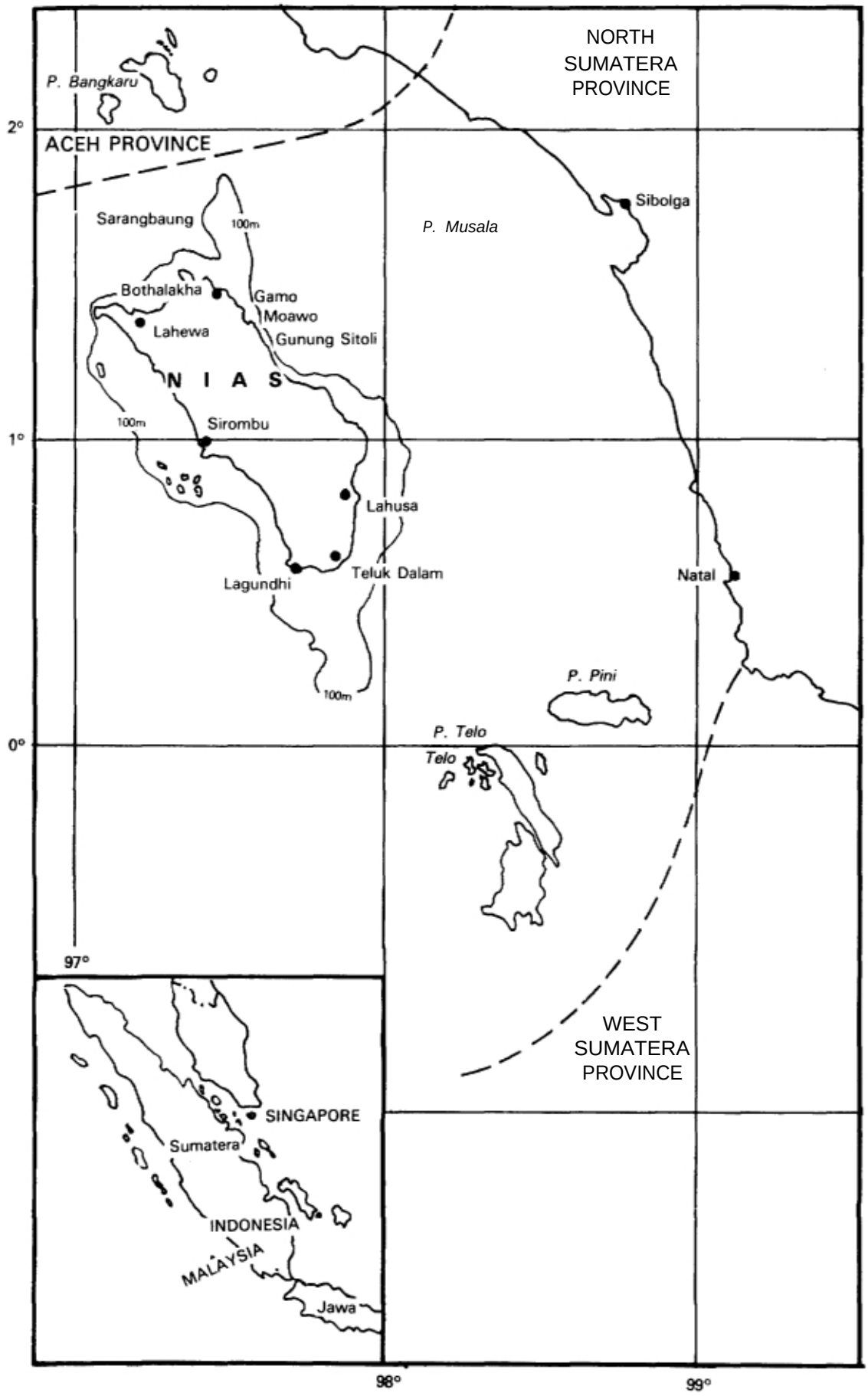
Nias Island has a population of about 528,000. Agriculture is by far the most important activity, but in all villages along the coast there are communities who earn their main income from fisheries.

The double-outrigger canoe of 4-5 m in length is the only type of fishing craft used in the traditional fishery. The main hull is a dugout; sail and paddles are used for propulsion. There are about 2100 of these canoes, of which about 70 had been motorized with 2-8 hp outboard motors at the time the project got underway.

*Non-motorised outrigger dugout 4-5 m.*

*Outrigger dugout 4-5 m. with outboard motor.*

**Fig. 1. Map of** Nias Island



The size of the outrigger canoes and lack of motorization limited the range of fisbing to close inshore areas and to, mainly, hooks-and-line, for small pelagic and demersal species, and gillnets, for small pelagics. About five larger (6-7 m) outrigger canoes had been fitted with small inboard diesel engines of 5 hp each.

For fishing further offshore with large-mesh driftnets, two types of planked fishing craft had been introduced: The 7-10 m 'speed boat' with a 20-25 hp kerosene driven outboard motor and the 10-12 m 'half-decked boat' with a 12-30 hp inboard diesel engine.

There were about 40 of these fishing craft operating, mainly from Gunung Sitoli and Teluk Dalam.

For a village fishery, none of these introduced planked fishing craft are satisfactory. The 'speed boat' has a high cost of operation because of its outboard motor. The 'half-decked boat', on the other hand, is too heavy and big, which, in the absence of sheltered harbours, makes frequent hauling up on the beach difficult.

**1.** *Planked 'speed boats' (7-10 m) with outboard motors.*

2. *'Half-decked boat' (10-12 m) with inboard diesel engines (12-30 lip).*

**3.** *Outrigger canoe (6-7 m) with inboard diesel engine.*

2

3

In October 1988, PFS staff, together with BOBP's Fishing Technologist and Naval Architect Consultant, visited Nias. During discussions in various fishing centres, it was found that the fishermen strongly desired motorization of their craft, preferably with inboard diesel engines. The fisherfolk also realized there was need for a fishing craft larger than the dugout, but had no clear idea of what type of fishing craft they wanted, since the only alternatives they knew were the 'speed boat', the 'half-decked boat' or the larger fishing boats from Sibolga, all too expensive and unsuitable for village operation.

Experience in other FAO fisheries projects in the Pacific and Shri Lanka had shown the advantage of not moving radically away from the type of fishing craft that the fishermen were used to : the outrigger canoe. This type of fishing craft has the following advantages compared with a monohull:

- Better fuel economy, because the long, slender hull has lower resistance.
- More comfortable to work from, because of the stabilizing effect of the outrigger.
- Easier to haul on to the beach, because the outrigger beams give a good grip for lifting and pushing.
- Lower cost and, therefore, more accessible to the small-scale fisherman.
- Can be constructed by local carpenters in the village.

A subproject, 'Development of Outrigger Canoe Fisheries', was prepared and Phase I of it was planned to have a duration of 18 months, with an expenditure from BOBP of US $ 95,000. If Phase I was successful, the subproject would go ahead with Phase II, pilot introduction of the craft. The subproject became operational in November 1988 and continued till April 1993, both phases being implemented. A chronology of activities is given in Appendix I.

## 2. SUBPROJECT ACTIVITIES — PHASE I

### 2.1 Design and construction of prototype canoes

The BOBP Naval Architect Consultant prepared drawings for three sizes of canoes:

| Desipnation | Length (m) | Engine (hp) | Fishing gear |
|---|---|---|---|
| INS-2 | 8.0 | 4.5 diesel | Handline, trollingline, vertical longline and small-mesh gillnet |
| INS-3 | 9.7 | 6.5 died | Large-mesh driftnet, bottomxt longline, trollingline and handline |
| INS-4 | 6.7 | 4.5 petrol | Handline, trollingline, vertical longline, and small-mesh gillnet |

The reason for three different sizes was to meet the needs of diverse fisheries and to determine, from the fishing trials, which canoe would technically and economically perform best and be acceptable to the fishermen. All three canoes would be outrigger canoes of simple design and suitable for village construction.

A BOBP Boatbuilder Consultant supervised the construction of the three prototype canoes and trained local carpenters in Gunung Sitoli in February-March 1989. Six carpenters were selected for training by the PFS and two of them showed considerable promise.