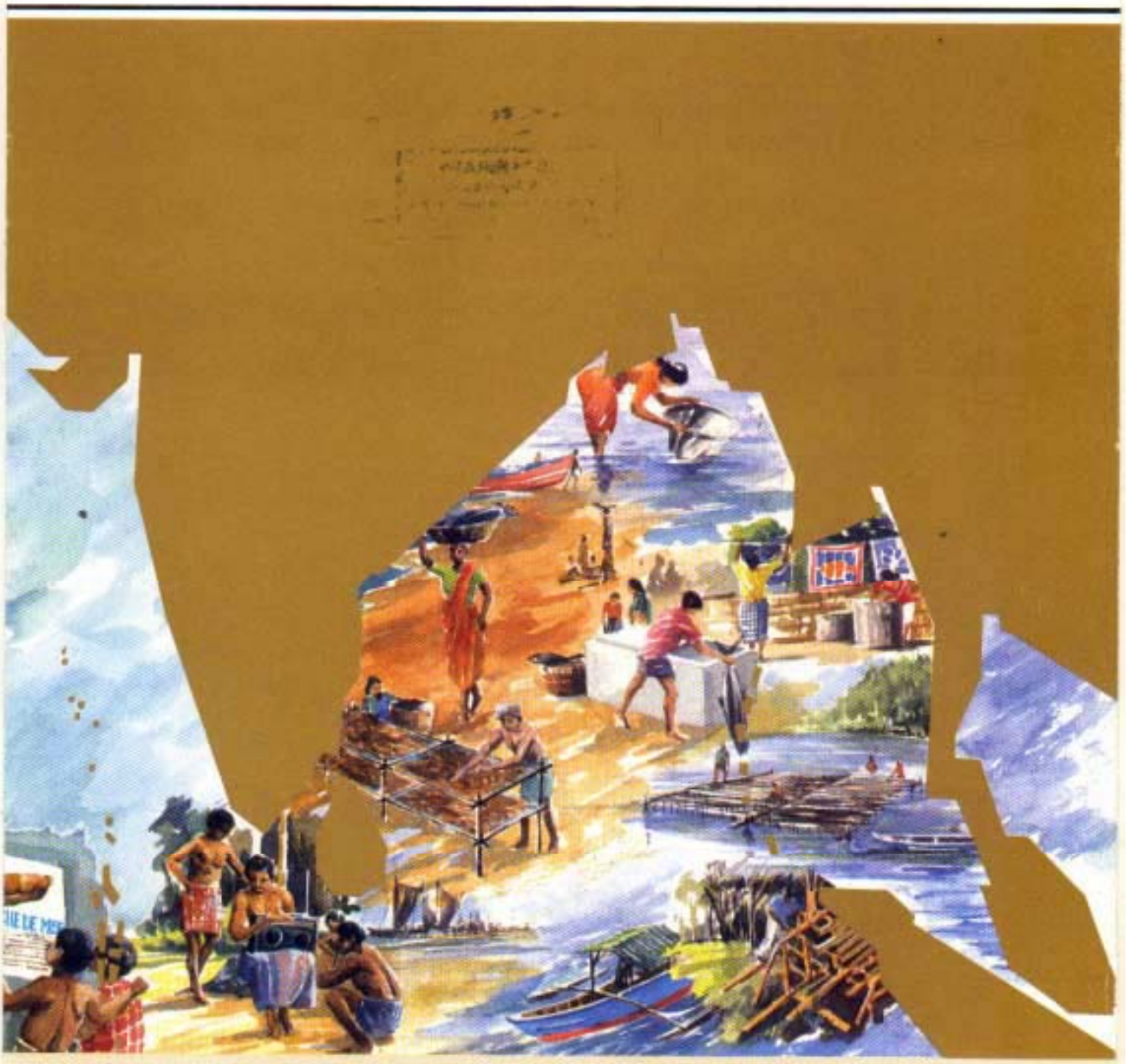
BOBP/WP/97

The effect of artificial reef installation on the biosocioeconomics of small-scale fisheries in Ranong Province, Thailand



BOBP For Fisheries Development
BAY OF BENGAL PROGRAMME

BAY OF BENGAL PROGRAMME BOBP/WP/97

Small-scale Fisherfolk Communities GCP/RAS/l 88/MUL
Bioeconomics of Small-scale Fisheries RAS/9 1/006

The effect of artificial reef installation on the biosocioeconomics of small-scale fisheries in Ranong Province, Thailand

BAY OF BENGAL PROGRAMME
Madras, India
1994

The Government of Thailand felt that installation of suitable Artificial Reefs (ARs) in the coastal waters around the country would contribute towards management of coastal fisheries resources, restrict operation of such efficient methods as trawling in the coastal waters, reduce conflicts among fishermen, and increase opportunities for small-scale fisherfolk to improve their income from fishing.

In 1989, ARs were installed in three locations in Ranong Province. The three ARs covered an area of 50.8 km^2, about 9-11 km from the shoreline and at depths ranging from 12 to 17 m.

The Bay of Bengal Programme (BOBP), within the framework of its project RAS/9J/006, Biosocioeconomics of Small-scale Fisheries, agreed to support the implementation of a subproject that would take up as a case study and assess the impact of the ARs by applying biosocioeconomic analytic methods. The investigations between 1991 and 1993 were done under BOBP's 'Small-scale Fisherfolk Communities' project funded by DANIDA and SIDA and the reporting under 'Bioeconomics of Small-scale Fisheries' funded by UNDP.

This document is a compilation of working documents describing the separate but simultaneously carried out investigations into the suitability of the locations, the environmental conditions around the ARs, colonization of the ARs, enhancement of the resources, the influence of the ARs on the fisheries, and the impact of income changes, if any, on the socioeconomic conditions of the small-scale fisherfolk fishing at the ARs.

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, Sri Lanka and Thailand. The Programme plays a catalytic and consultative role: it develops, demonstrates and promotes new technologies, methodologies and 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, and also by UNDP (United Nations Development Programme). The main executing agency is the FAO (Food and Agriculture Organization of the United Nations).

This document is a working paper and has not been cleared by the Government concerned or the FAO.

July 1994

Published by the Bay of Bengal Programme, 91 St. Mary's Road, Abhiramapuram, Madras 600 018, India. Designed and typeset for the BOBP by Pace Systems, Madras 600 028 and printed for the BOBP by Nagaraj & Co, Madras 600 041.

CONTENTS

PREFACE

The marine coastal fisheries in Thailand have developed rapidly and reached a stage where the need for management has become extremely urgent. Development of the small-scale fisheries has proceeded parallel to large-scale fisheries such as the bottom trawl fisheries for shrimp and demersal finfish and purse seine fisheries for small and large pelagics. Competitive and interactive fisheries between the large-scale and small-scale fisheries not only tend to affect the resources, hut also affect the small-scale fisherfolk whose fishing methods are relatively less efficient than those of the large-scale fisheries.

The Government of Thailand considered that installation of suitable Artificial Reefs (ARs) in the coastal waters around the country would contribute towards management of coastal fisheries resources, restrict operation of very efficient fishing methods – such as trawling – in the coastal waters, reduce conflicts among fishermen, and also increase opportunities for small-scale fisherfolk to improve their income from fishing.

In 1989, ARs were installed in three locations in Ranong Province – AR1, AR2 and AR3. The three ARs cover a total area of 50.8 km^2, about 9 - 11 km from the shoreline and at depths ranging from 12 to 17 m.

An FAO/DANIDA workshop on Fisheries Research Planning was held in 1991 at Phuket to discuss management aspects and methods to assess the impact of ARs on the marine resources in and around the areas where they were installed. The BOBP, within the framework of its project RAS/9l/006, 'Biosocioeconomics of Small-scale Fisheries', agreed to support the implementation of a subproject that would take up as a case study and assess the impact of ARs by applying biosocioeconomic analytic methods.

The objective of this case study was to investigate:

- The suitability of the locations and environmental conditions for ARs;
- The influence of the ARs on the environmental conditions;
- Colonization of the ARs by various organisms and animals of commercial value; and
- Enhancement of the resources through increase in biomass of commercially valuable species;

The case study was also to assess:

- The influence of these ARs on the fisheries;
- Changes in income from fisheries; and

– The impact of income changes on the socioeconomic conditions of the fisherfolk fishing at the ARs.

Well-designed pre-deployment surveys had not been carried out prior to this case study and the ARs were nearly two years old. The analysis, therefore, had to resort to indirect assessments of the environmental conditions, fisheries and income levels to attempt quantification of the pre-deployment scenario and to compare them with quantified parameters assessed by the post-deployment surveys carried out under this case study from mid-1991 to mid-1993.

This document is a compilation of working documents describing the separate but simultaneously carried out investigations concerning:

– Specifications, installation and locations of the ARs.

– Water conditions and nutrient content at AR sites.

– Colonization of the artificial reef structure, association of other fauna and productivity of the ARs.

– Fish aggregation at ARs.

– Fishing gear and methods used in AR areas, before and after deployment of ARs.

– Fisheries resources and bioeconomics of fishing with the different fishing gear, at the ARs.

– Socioeconomic changes in fisherfolk communities whose fishing is influenced by the presence of ARs.