

Session I: Sectoral Management of Coastal Resources and Coastal Development: Problems and Policy Issues

Fisheries Resources Management in Southeast Asia: Why Bother?

DANIEL PAULY

*International Center for Living Aquatic
Resources Management
M.C. P.O. Box 1501
Makati, Metro Manila, Philippines*

PAULY, D. 1989. Fisheries resources management in Southeast Asia: why bother? p. 1-9. In T.-E. Chua and D. Pauly (eds.) Coastal area management in Southeast Asia: policies, management strategies and case studies. ICLARM Conference Proceedings 19, 254 p. Ministry of Science, Technology and the Environment, Kuala Lumpur; Johor State Economic Planning Unit, Johore Bahru, Malaysia; and International Center for Living Aquatic Resources Management, Manila, Philippines.

Abstract

Because, in general, the economies of Southeast Asian countries are "developing", policymakers generally assume that the fisheries sector also needs to be "developed" through soft loans, tax rebates, construction of ports, etc. This contribution shows that such classical fisheries development methods are no longer appropriate for fisheries in the ASEAN countries, where overfishing is the rule rather than the exception. A rationale and some strategies for rolling back excessive fishing effort in overfished areas are briefly presented.

Introduction

ASEAN countries are usually considered "developing" countries, although newly industrialized Singapore stretches the definition rather far, and Brunei Darussalam has one of the world's highest per capita gross national product (GNP).

However, even if we put only the remaining four ASEAN member states in the developing category, this still does not imply that all sectors of the economies of Indonesia, Malaysia, the Philippines and Thailand are also "developing". Thus, no one would argue that petroleum extraction in Indonesia is a developing industry, or that the high quality of service on the Thai national airline reflects this country's developing-country status.

This contribution deals specifically with the management of coastal marine fisheries resources, and I shall first ask whether the fisheries sector in each of the six ASEAN countries is a "developing" sector or not, and try to provide answers independent of the overall economic status of the countries in question.

Then, I shall proceed to examine briefly, by country, the type of intervention(s) needed, or presently considered, in each of the ASEAN member states, with regard to fostering their fisheries. For each country, except Singapore, one figure shall be presented illustrating what I believe is the key problem of fisheries management in the country in question.

Country-Specific Accounts

Brunei Darussalam

The marine fisheries sector of Brunei Darussalam lands about 2,500 t of fish per year, contributing 0.2% of the country's gross domestic product. This is extremely low, and most of the fish eaten in the country is imported. Internal production and imports (mainly from Malaysia) allow a consumption of 40 kg/person/year, one of the highest in Southeast Asia (Khoo et al. 1987).

The marine fisheries resources of Brunei are certainly not as strongly exploited as those of Western Indonesia, the Philippines or Thailand. However, the effort exerted in recent years by inshore fishermen and by a few licensed trawlers has significantly reduced the inshore fish stocks to about half their level a decade ago, at least in the areas that were regularly surveyed by the Fisheries Department's research vessel (Fig. 1).

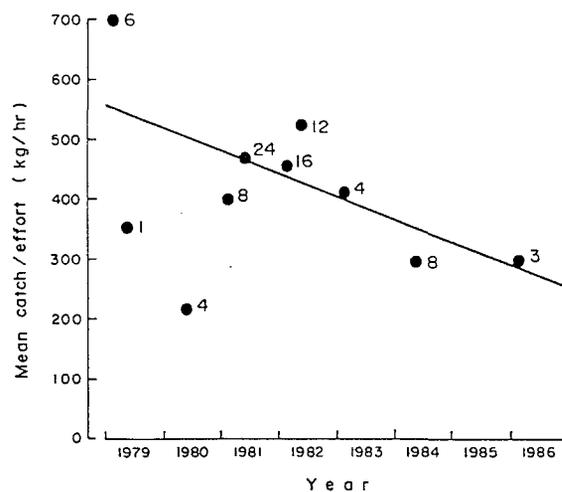


Fig. 1. Trend in catch/effort of demersal fishes off Brunei Darussalam, Squares 1 (Q35) and 2 (P35), 1979-1986. Trend line has a slope significantly different from zero (95% level of confidence) when fitted with a number of hauls used for computing means (black dots) as weighting factors.

This implies that:

1. Brunei Darussalam's demersal fish resources are not necessarily "under-exploited" as suggested by hasty comparisons with the overexploited fisheries resources in, e.g., Sabah or the Philippines.
2. Development of some fisheries (e.g., small pelagics) is possible; but the goal of complete import substitution is probably not achievable due to the increasing demand fueled by population growth and rising incomes.
3. Further development of Brunei Darussalam's marine fisheries should be extremely cautious in view of the overall smallness of the resources and the difficulties inherent in reducing the fishing effort in a fishery, once it has exceeded the optimum (see below).

Indonesia

Bailey et al. (1987) comprehensively reviewed the marine fisheries of Indonesia using provincial data collected throughout the country during the period overlapping the imposition of the trawling ban of 1980 (Sardjono 1980). This report emphasized the imbalance between Western Indonesia, where fishermen and markets are concentrated, and Eastern Indonesia, whose resources, although substantial, remain underfished, mainly because of the absence of local markets and/or of cost-effective shipping to Java, the major market. This dilemma is illustrated by Fig. 2.

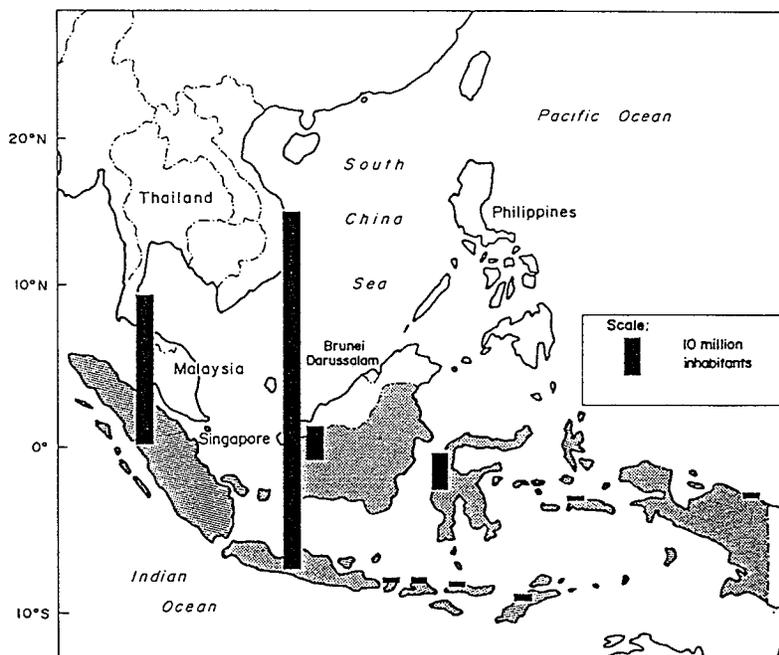


Fig. 2. Southeast Asia, showing countries discussed in the text and illustrating population imbalance between southwestern (Sumatra, Java) and northeastern Indonesia (Kalimantan, Sulawesi, Irian Jaya).

A large Indonesian-Dutch oceanographic research project, the Snellius II Expedition, was conducted in Eastern Indonesia in the early 1980s. During the course of this work, indications of localized seasonal upwelling provided additional evidence of the productivity of Eastern Indonesian waters, particularly with regard to small pelagic fish (sardines, anchovies, mackerel, scads, etc.).

Overall, one can conclude:

1. The government of Indonesia, through its radical ban on trawling, has successfully managed to reduce overall fishing effort in Western Indonesia, and to reallocate some of the inshore resources toward small-scale fisheries.
2. Population growth and rural landlessness will erode the gains obtained in (1) within a few years if no provisions are made to provide alternative income opportunities for would-be fishermen.
3. Development of Eastern Indonesian fish resources is contingent on access to larger markets. Lack of cheap inter-island transport of, e.g., dried or refrigerated fish products, will imply continued near exclusive use of the Arafura Shelf for shrimp trawling by foreign-oriented joint ventures which discard the bulk of their fish by-catch.

Malaysia

A single comprehensive review of Malaysian fisheries, such as cited above for Brunei Darussalam or Indonesia, does not appear to exist. However, fisheries catch statistics and reports on various aspects of the living marine resources of Peninsular Malaysia, Sarawak and Sabah do exist (see, e.g., contributions in IPFC 1987).

Overall, these contributions demonstrate the occurrence of overcapitalization of the demersal fisheries and overfishing of the nearshore demersal resources with, possibly, some potential left for the fisheries exploiting small-scale pelagic fish. In response to this situation, Malaysia is attempting to implement a fisheries management plan that involves, among other things:

1. implantation of artificial reefs in nearshore waters (e.g., in the Malacca Strait) to hinder larger trawlers and to serve as aggregating devices for small-scale fisheries;
2. identification of depth-specific fishing zones, with shallow, inshore waters reserved for small-scale fishermen and only the deeper offshore waters being accessible to large trawlers; and
3. material incentives for small-scale fishermen to move out of fishing.

The second element of this strategy implies that resources in the deeper part of the Malaysian Exclusive Economic Zone (EEZ) are of sufficient magnitude to sustain large trawlers. However, penaeid shrimp—the most valuable catch of demersal trawlers—occur only inshore, and demersal fish stocks in Southeast Asia have extremely low densities in deeper water (Fig. 3). I do not see how Malaysian trawl operators could be convinced to fish far offshore in the face of economic constraints that force them to operate close inshore.

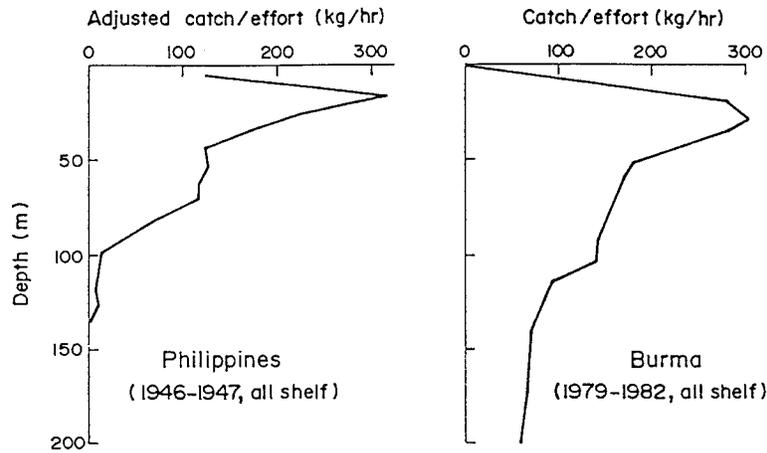


Fig. 3. Relationship between demersal fish abundance and depth at two typical Southeast Asian sites, prior to exploitation (Pauly 1987).

The conclusions are:

1. Malaysia is seriously attempting to manage its marine fisheries.
2. That part of the management plan that assumes an untapped deepwater demersal potential, towards which trawlers must be directed, is not likely to succeed, as previous experiences in a variety of other countries, e.g., India, Indonesia, the Philippines and Thailand, suggest.
3. The stated national goal of a population of 70 million for Malaysia will increase the pressure, with devastating effects, on the fisheries resources, and can be expected to force large numbers of (future) landless farmers into fishing.

Philippines

A number of comprehensive reviews in recent years document the main trends and aspects of the Philippine marine fisheries (Pauly et al. 1986, Dalzell et al. 1987). A clear pattern of overcapitalization and overfishing has emerged, with regard to the demersal, the small pelagics and the tuna fisheries. Indeed, effort in the fisheries sector as a whole is two to three times in excess of optimum exploitation rates. The results of this are: (1) declining catches during the last 5-10 years and (2) a more or less total dissipation of the economic rent which could be extracted from these fisheries (Fig. 4).

The Philippine fisheries are at present characterized by an extremely uneven distribution of benefits from fishing. Large-scale operators catch and earn hundreds, or even thousands of times, more than small-scale fishermen. Also, large-scale fish habitat destruction (e.g., clear-cutting of mangroves, and reef destruction through dynamiting and cyanide poisoning) is occurring throughout the country.

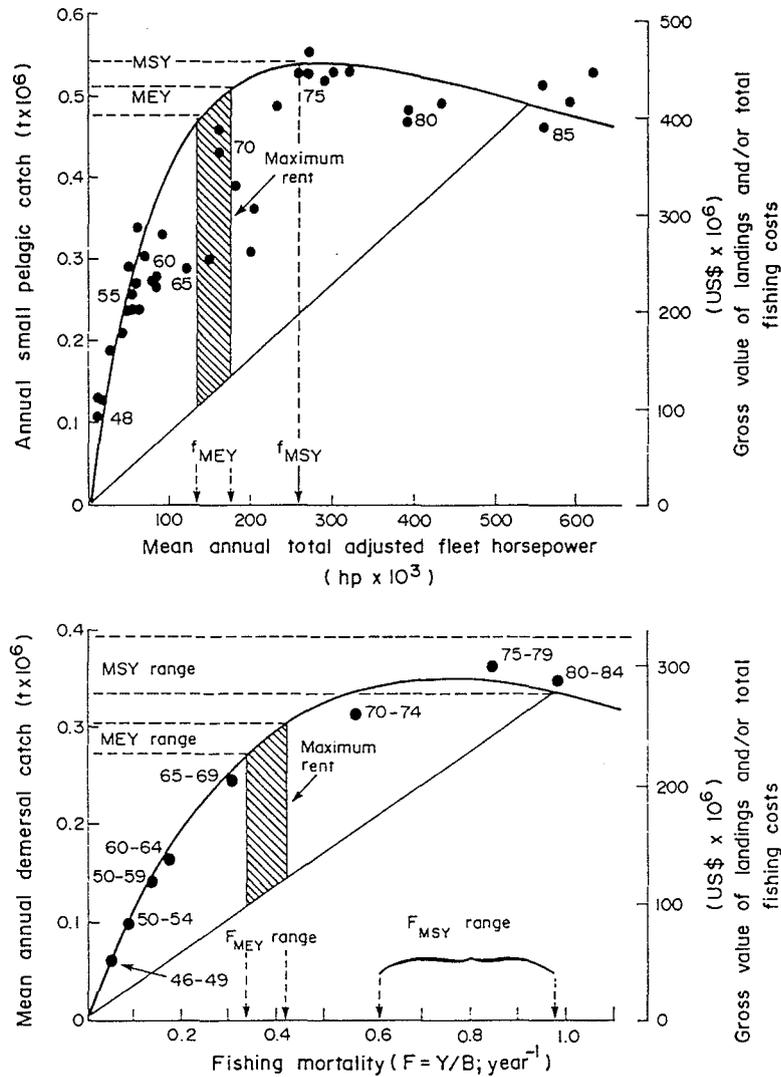


Fig. 4. Surplus production models of the Philippine pelagic and demersal fisheries; both models provide rough estimates of total fishing costs and economic rent if the assumption is made that equilibrium occurred in the early 1980s (modified from Dalzell et al. 1987 and Silvestre and Pauly 1986).

A key factor to the decline of the Philippine marine fisheries is rural landlessness and poverty and the population growth rate that both causes and results from such a situation. Fig. 5 shows the combined effect of local population growth and of landlessness on the number of small-scale fishermen operating in the Lingayen Gulf.

The key points emerging from this are:

1. The Philippines cannot "develop" its marine fisheries; they are fully

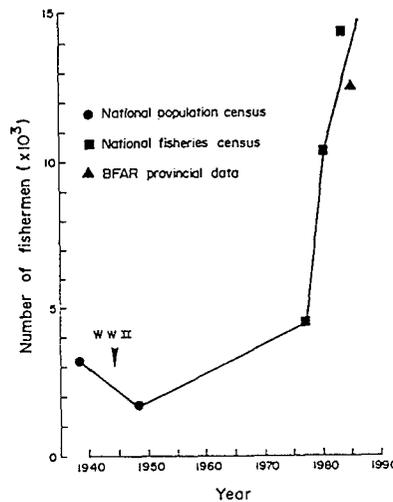


Fig. 5. Changes in the number of small-scale fishermen in the Lingayen Gulf area, Philippines, from the 1930s to the early 1980s. Note dip due to the Second World War and the tremendous increase in the 1980s. (The last point does not reflect a decrease, but a result of a different sampling methodology.)

developed to the extent that this country is now the twelfth fishing nation in the world.

2. Rehabilitation of the Philippine fisheries involves massive reduction of fishing effort (by at least a factor of two). Such reduction of effort involves providing material incentives for hundreds of thousands of small-scale fishermen to stop fishing.
3. Projections of the Philippine population and the status of the Philippine marine fisheries suggest that per capita availability and consumption of domestically produced marine fish will tend to decrease.

Singapore

Singapore's brief history as a city-state is that of a devolution of its fishing sector, i.e., the bulk of the marine fish consumed or marketed through Singapore is imported. To the extent that other countries continue to have suitable fish to export, and that Singapore has the cash to pay for these imports, this country will have no problem of capture fisheries management, and hence need not be considered in the context of the present paper.

Thailand

The explosive growth of the Thai demersal fisheries in the 1960s in the Gulf of Thailand, their expansion outside the gulf, their retrenchment following the 1973

oil crisis and the promulgation of EEZs by Southeast and South Asian countries where Thai trawlers had been operating are now so well-documented that they have become part of the folklore of fisheries biologists (Panayotou and Jetanavanich 1987; Fig. 6). What Thai fisheries managers are confronted with, however, is that the Gulf of Thailand is "empty" of fish and full of fishing boats, i.e., with a more urgent need than ever to impose effective regulations on the trawling fleet.

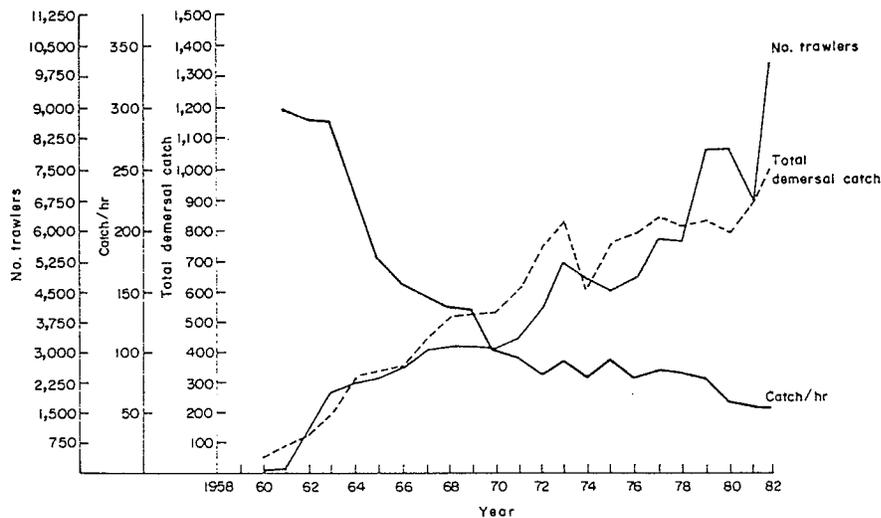


Fig. 6. Time trends in the number of trawlers, catch per hour and total demersal catch in the Gulf of Thailand, 1958-1982 (Panayotou and Jetanavanich 1987).

Approaches which are being studied are, among others:

1. imposition of larger mesh sizes for the cod end of the trawlers;
2. "buy-back" and restrictive licencing schemes; and
3. use of sturdy, concrete, artificial reefs to prevent inshore trawling and to allocate the nearshore resources to small-scale fishermen using passive gears.

These and other measures suggested to rehabilitate Thai demersal fisheries could succeed, especially if the Thai economy continues to do well and funds could be made available to implement these management interventions. Also, the land-based sectors of the economy may be able to absorb excess fishermen, given that Thailand has, in general, a low population growth rate.

Conclusions

The fisheries of the six ASEAN countries are not all "developing". In fact, a minority of ASEAN member states have scope to expand their fisheries. ASEAN

fisheries range in scope and sophistication from inshore-bound, traditional small-scale affairs to large-scale, capital-intensive international operations. Thus, the interventions needed by the fisheries sectors of the various ASEAN member states require a level of sophistication which go well beyond *laissez-faire*, or extending subsidized credit to fishermen, hitherto the favorite tools of fisheries developers.

Thus, getting back to the title of this contribution, one should "bother" about managing fisheries resources because not managing them turns one's fisheries sector from a healthy, productive factor of national development into a subsidy-guzzling drag on the economy. Management interventions will have a positive impact on the other hand, only if they are based on a combination of solid biological and economic research and on a political commitment to resolve issues rather than letting them fester.

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