

# .....Marine Fisheries Statistics in Southeast Asia: A Critical Appraisal.....

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The major fishing countries of Southeast Asia—Indonesia, Malaysia, the Philippines and Thailand—exploit what is probably the richest and most extensive area of tropical fisheries in the world. The total annual landings in these four countries exceed five million tons. How that figure is derived, as well as the shortcomings in national statistics are discussed in this article. It is part of a larger paper by the author presented at the ICLARM-CSIRO Workshop on the Theory and Management of Tropical Multi-species Stocks, January 1981. ICLARM will publish the full proceedings later this year.

## National and other statistics

All countries around the South China Sea collect data on the commercial landings of fish and on the fishing boats and publish national annual reports. Also, they submit data to FAO for publication in the annual Yearbook of Fisheries Statistics. However, the number of years during which these data have been collected and published, the species groups adopted, and data collected on fishing effort vary considerably from country to country, as do the completeness and accuracy of the data.

### Indonesia

“Statistik perikanan—“Fisheries Statistics of Indonesia” (Published by the Directorate General of Fisheries, Jakarta, Indonesia). First published as a yearbook in 1972. However, catch data have been available since the data for 1940 and 1950-53 were published in 1954. The yearbook was enlarged to include more data from 1978. All titles, captions, etc., are in Indonesian and English.

### Malaysia, peninsular

“Perangkaan Tanunan Perikanan—Annual Fisheries Statistics—Malaysia” (Published by the Ministry of Agriculture and Rural Development, Fisheries Division, Kuala Lumpur, Malaysia). Includes summary tables for Sabah and Sarawak. First published in the early 1960s in present form. All titles, captions, etc., are in Malay and English. For many years the catches

by species/species groups have been given for different gears for each state. The number of fishing gears licensed and in operation in each state are tabulated separately. However, there are considerable incompatibilities between the numbers in these two tables.

### Malaysia, Sabah

“Laporan Tahunan bagi Jabatan Perikanan Sabah—Annual Report of the Department of Fisheries, Sabah.” First published in the early 1960s in English. The number of licenses for different gears is given for each district, but the only catch data corresponding to these measures of effort are estimated total landings of fish and shellfish in each district.

### Malaysia, Sarawak

“Annual report of the Department of Fisheries, Sarawak.” (Published by the Department of Fisheries, Kuching, Sarawak). Started in the late 1960s. In English. Data are given on total catch by gears and separately for total catch divided into species/species groups.

### Philippines

“Fisheries Statistics of the Philippines.” (Published by the Bureau of Fisheries and Aquatic Resources, Manila, Philippines) Started before 1954. In English. Since 1977 there has been additional information collected on fishing effort in general and for the first time on the “municipal” (small-scale) boats (under 3 tons), but this has not yet entered regularly into the annual statistics. The regular data, relating only to vessels of 3 tons and over, include catches by species/species groups by different gears for the country as a whole. In addition the catch made on each fishing ground by each kind of fishing gear is tabulated.

### Thailand

“The Marine Fisheries Statistics, based on the sample survey.” First published in 1969. In Thai and English. “Fisheries Record of Thailand.” First published in 1968. In Thai. “Fishing vessel statistics.” First published in 1971/72. In Thai by the

Department of Fisheries, Ministry of Agriculture and Co-operatives, Bangkok.

For the major fisheries, data are given on catch by species/species groups and detailed fishing effort for each of 10 regions. The data on the trawl fisheries are given separately for vessels of different size groups. The one major shortcoming at present is that the landings of the large trawlers fishing outside Thai waters are included in the data for the region in which they land their catch.

### SEAFDEC

“Fisheries Statistical Bulletin for the South China Sea Area.” First published in 1978 for the year 1976.

### FAO

“Yearbook of Fishery Statistics—catches and landings.” First published in 1948 for the year 1947.

In most countries, the FAO statistics of landings have closely mirrored the catch data in national annual statistical tables. However, there are two exceptions to note: 1) while the Indonesian total catch figures are the same in the national fisheries statistics and the FAO yearbook, the species breakdown is much more detailed in the FAO yearbook (40 groups of marine fish compared with 17 in the national publication); 2) in the Philippines before 1975, information on species composition of catches was only obtained for the “commercial” fishery which contributed about 40% of the marine catch. In the FAO yearbook, the species composition of the remainder, or “municipal” fishery, has been estimated by extrapolation. Figures of species composition for Philippine fisheries in the FAO yearbook prior to 1975 cannot therefore be taken as very reliable. No check has been made on more recent figures.

The main differences in coverage between the FAO, SEAFDEC and national tables are:

FAO yearbook: National totals by species groups and FAO major fishing areas.

SEAFDEC: National totals for Hongkong, Thailand, Malaysia (Peninsular, Sarawak, Sabah), Indonesia, Philippines, Brunei. Breakdowns to species and species groups and with some countries, to sub-national areas. Some data on fishing effort. Further breakdown is under discussion.

National : Very variable from country to country. Usually some further breakdown than SEAFDEC in fishing areas, by fishing gears and by months. Some data on fishing effort.

#### Species and species group reporting in national and FAO statistics

The majority of commercially exploited fish species are present throughout the area covered by this review, though they vary in relative abundance and in relative commercial importance between the countries. The reporting of landings by species, species groups or by families therefore varies greatly between countries and there are also surprisingly great differences between the groupings used in national statistics compared with

and Indonesia.

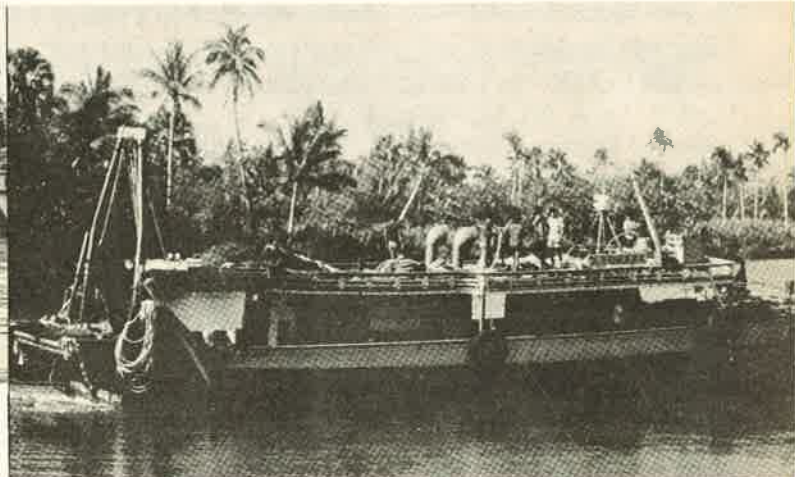
In the Philippines, nearly all fish are classified into one or another of some 65 named categories so that in 1974, for example, only 1.4% were left for a "miscellaneous" group in the national statistics, while figures submitted to FAO had no miscellaneous group. In other countries, the named categories are less comprehensive and there is a large "miscellaneous group."

Thai landings on both east and west coasts include substantial catches made by large trawlers fishing in distant waters. Malaysian catches are largely from grounds close to the landings port. However, some boats based on the west coast fish in different states from those at which the fish are landed. Some Philippine data on catches from fishing grounds

around the islands make the collection of effort data a major problem. With the large number of species, fishing boats and landing places, the amount of data collected is so great and the analysis so laborious that computerization is becoming essential. This is being started, but is running into serious difficulties with funding and training.

It is most important to know what data are essential and where simplifications can be made without loss of information. With the large numbers of species in tropical waters, there may be little lost by extensive groupings, provided that selected, representative species are kept separate.

Data on fishing effort are inadequate in most countries due to difficulties of collection or insufficient clarity on what



Top: Thailand problem: landings of large trawlers fishing outside Thai waters are recorded as belonging to the region where landed. Right: In the Philippines, landings by carrier boats confuse the picture.

those in the FAO yearbooks.

Taking the overall breakdown first, the number of categories is usually higher in the national statistics than in the FAO yearbook, with the exception of Indonesia, where the national statistics give a very limited breakdown. Few species are reported from all countries. Sabah does not report any species separately. Of the 50 species reported by one country or another or FAO, only one, *Megalaspis cordyla* (Carangidae), the hard-tail scad, is reported separately by the three adjacent countries Thailand, Peninsular Malaysia

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are inaccurate due to the difficulties of determining the origin of fish landed by carrier boats that have collected fish at sea in the south and landed them at Manila or other cities. Catches of shrimp in Sabah are given in 20 x 20 mile statistical squares and are the only landings in these countries reported in this fashion.

A large amount of information is collected by regional fisheries staff in each country on the numbers of fishing boats, their sizes and the types of gear used. Increasingly, these countries are improving the information collected on fishing boats and their gear, and they are starting to collect catch and effort data from each boat. Thailand is very much more advanced in this respect than any of the other countries in the area. In the Philippine and Indonesian archipelagos, the thousands of small vessels scattered

the essential data are that need to be collected so that there is a link-up with catch data. To permit the standardization of fishing effort in developing fisheries, there is need for more information on the changing technology of capture and the changing strategy of fishing.

A major problem with fishery research in Southeast Asia, finally, is the fact that results remain generally unpublished or are published, often in languages other than English, in reports of very limited distribution. This has created a large backlog of largely inaccessible "grey literature" which will be extremely difficult to reduce. It is particularly unfortunate since the nature of the resources and institutional problems, such as lack of well-trained scientists, render each study, even each bit of information—particularly valuable. **A**