

THE PLACE OF FISHERIES EDUCATION AND TRAINING IN
NATIONAL FISHERIES DEVELOPMENT PROGRAMMES
IN THE INDO-PACIFIC REGION

by

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ABSTRACT

Attention is drawn to the need to include fisheries education and training in National Development Programmes. Reasons are given for past neglect of this field in many countries of the region including the Federation of Malaya. The existing training facilities in the Federation of Malaya are outlined in brief together with plans for future expansion. Problems facing the Federation of Malaya in the development of oceanic fisheries are outlined.

A study of the fisheries development programmes of countries in the Indo-Pacific Region would tend to show that apart from Japan, Korea and Formosa, the importance of training of personnel for the development of the industry, as opposed to training of government fisheries administrative, research and technological personnel, has not been given its due emphasis. That this training is important in the context of fisheries development in the region is clearly shown by the pre-eminent position which Japan holds today in the field of fisheries, a position gained through more than seventy years of systematic fisheries education covering all aspects of the industry. Korea and Formosa too have made significant advances in the field of fisheries due no doubt to the basic training facilities in fisheries established in these countries long before independence. These facilities have, it is believed, since been improved upon and extended, and it is common knowledge now that Korean fishermen and Formosan fishermen are navigating distant seas in search of fish and that their tuna-boats are today fishing side by side with Japanese tuna-boats in both the Indian and the Pacific Oceans.

There are in Japan today no fewer than 37 Prefectural Fisheries High Schools giving 3-4 year courses in navigation, fishing techniques and technology of fish preservation. In addition there are six to seven universities offering courses in fisheries subjects, the best known of which is the Tokyo University of Fisheries, a university wholly devoted to fisheries science and technology, having an academic staff of 106 and an enrolment of about 1,000 students.* It has three faculties, namely fishing and navigation, fisheries technology and pisciculture. Formosa too has made rapid strides in the field of fisheries education in keeping with the development of her fisheries, and it is reported** that there are now three Fishery Vocational Schools and one maritime College having six departments viz. navigation, marine engineering, fishing, harbour operation, processing and ship-building. This college provides a four-year course, the last year of which is devoted to field-training. In addition to these, the National Taiwan University established a Fishery Biology Section under the department of Zoology for training personnel for research on marine fisheries.

It may be argued that there are compelling reasons why Japan had devoted so much of her energy, financial resources and effort towards training her people for the development of her fisheries. For example problems raised by the pressure of a rapidly expanding population and the scarcity of arable land have often been quoted as the compelling forces. This is undoubtedly true. However it is also true to say that in many countries of the Indo-Pacific Region there is already an urgent need to increase fish-

* Prospectus of the Tokyo University of Fisheries 1955.

** Fisheries of Taiwan 1960.

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production to (i) meet the requirements of a rapidly expanding population (ii) correct protein deficiency in national diets, and (iii) put the fishing industry on a sound scientific and economic basis. That these objectives can be achieved through planned education and systematic training to produce a cadre of men to serve the different sections of the fishing industry, namely navigation, fishing technology, boat-building, processing and refrigeration from the schools through the College and to the University level has been amply demonstrated in the case of Japan, and in an increasing degree in respect of Korea and Formosa.

In the fields of agriculture and many other industries, such training and other educational facilities as pertaining to them have long been accepted as prior requisites to development.

It will be interesting therefore to understand why this important aspect of fisheries education and training has not received due attention in fisheries development programmes of many countries in the region. One is that the science of fisheries is still young and is even now on the threshold of development. Whilst text-books dealing with the various aspects of agriculture and other industries are readily available, those dealing with fisheries are even now being written. Another is that many of the countries in the region were former dependencies or colonies of metropolitan countries where the development of the fishing industry was able to go forward on its own steam, as it were, without the provision under government sponsorship of training facilities. This happy position has undoubtedly been reached because of the availability of technical know-how in the metropolitan countries in the fields of oceanic navigation, marine engineering, naval architecture, ship-building, food processing and refrigeration, all of which are important adjuncts to the fishing industry. This lack of a background of training facilities in relation to the development of the fishing industry in the metropolitan countries could not but in its turn impose a natural handicap to the development of such facilities in the dependencies and colonies. This is so, because the fisheries administrators sent out from the mother countries would be men with

little experience or background knowledge of the scope or the role of fisheries education in relation to fisheries development. A further reason which may be controversial, is that fisheries development programmes in the region have been influenced more by biologists than by fisheries technologists. That this is so, is shown by the fact that the heads of fisheries administrations in most countries in the region are biologists by training.

The training of personnel for fisheries development poses, however, a number of problems. It is difficult to decide for example at what level the training facilities should start and what subjects should form the syllabus. Then there is the important point to decide as to who are the people who should be given training. Will these people remain in the industry? It must also be remembered the low level of development of the industry will mean low levels of income and therefore will the industry be able to absorb trained men, who will naturally demand higher rates of pay. All these are important considerations and in the case of the last problem it may well be argued that the industry is at a low level because it is under-developed and that it is underdeveloped because there are no trained men. Thus a vicious circle has been arrived at and at some point a break has to be made if progress is the goal. Since the status of the fishing industry in the Federation of Malaya is comparable to that of many countries in the region an account of what is done in the field of training and the future plans for extension in this direction might form the basis for an interesting discussion.

Status of Malayan Fisheries

Malaya is a small country. It has a coastline of some 1,500 miles. Strung out on the coast are some 350 fishing villages, many of them small and difficult of access, but a few like Pulau Ketam and Pangkor, islands off the West Coast have populations of from 7,000 to 10,000.

Some 50,000 fishermen are engaged in wresting a living from the sea. They operate some 23,000 boats and 21,000 gears of about 70 types ranging from purse-seines of 250-300 fathoms long to hand-lines, and from giant fishing stakes capitalised at M\$15,000/— to M\$20,000/—

each to small conical bag-nets set in tidal runs and held in place by two poles fixed to the seabed. They land a total of some 125,000 tons of fish annually valued at *M\$150/— million. Of the 23,000 boats, some 9,000 are mechanised, 4,000 with inboard engines ranging from 4 H.P. to 200

H.P. and 5,000 with outboard engines.

Mechanisation of fishing boats started in 1947 and the following statistics show how the numbers of mechanised boats increased over the years :—

	Powered		Total Powered	Non-Powered	Total (Powered & Non-Powered)
	Outboard	Inboard			
1947		92		16,101	16,193
1948		191		19,501	19,692
1949		327		21,466	21,793
1950		477		21,993	22,470
1951		709		20,196	20,905
1952		1,262		21,073	22,335
1953		1,570		21,037	22,607
1954		4,052		17,787	21,839
1955	3,947	603	4,550	18,879	23,429
1956	4,645	996	5,641	17,730	23,371
1957	4,742	1,541	6,283	17,541	23,824
1958	5,012	2,284	7,296	17,749	25,045
1959	4,761	3,123	7,884	14,379	22,263

Training Courses for Federation of Malaya Fishermen

To cope with the progress in mechanisation, training courses of three months duration for fishermen were commenced in 1953 in simple navigation and engine-maintenance and repairs. The trainees were selected from active young fishermen of over 21 years of age, preferably with an elementary vernacular education. They had to have at least three years fishing experience and they sit for the helmsmanship certificate of the Department of Marine and the third class engine driver's Certificate of the Surveyor-General of Ships. Trainees are paid \$85/—a month subsistence allowance. To date some 470 fishermen have been trained in simple navigation and engine maintenance and repairs. These courses have helped greatly towards providing a nucleus of men albeit at a low level to serve the industry at an important period of its transformation.

Training has now gone a step further and two residential fisheries schools, one on the East

Coast at Kuala Trengganu and one on the West Coast at Penang, have been built. The one on the East Coast will continue to hold three-month' courses in simple navigation and engine maintenance and repairs, whilst the one in Penang will from January 1961 cater for two five-months' courses in a year covering the following :—

1. Simple navigation, engine maintenance and repairs
2. Fishing techniques namely :—
 - 2 (i) *Line fishing*
 - (a) The hand-line in shallow water and deep sea; the use of artificial bait
 - (b) The troll line
 - (c) The bottom long-line for all kinds of bottom fish
 - (d) The drift long-line; the tuna long-line and the shark long-line
 - 2 (ii) *Portable trap fishing (Bubu)*

* M\$1) = approx. U.S. \$ 0.31.

To introduce a progressive method-i.e. hauling by mechanical means

2(iii) *Gill and Drift-net*

Their construction and operation

2(iv) *Purse-seines*

Their operation during the day and at night

3. Preservation of fish in ice.

4. Principles of Co-operation.

Each trainee will put in 10 days practical training in the departmental fishing vessel.

It is realised that the courses as planned are inadequate. However it is also realised that a start will have to be made at some point in keeping with the status of the industry and the availability of suitable teaching staff. The present plan therefore is that the Fisheries School in Penang should advance rapidly to the status of a Prefectural Fisheries High School in Japan, offering courses of 3-4 years in the fields of navigation, fishing technology, processing and refrigeration. In this way, it is hoped that a new cadre of men will be available to lead in the development of the industry.

Examples of how trained men can lead in the development of the industry

During his visit to Japan in 1957, the writer met many of the directors of the most important fishing combines in Japan. They were invariably graduates of Fisheries Universities or Fisheries Colleges. The managing director of the Malayan Marine Industries Ltd., a joint Malayan-Japanese tuna fishing and canning venture established in Penang in 1959, is a graduate of a Japanese Fisheries College. Similarly one of the most progressive leaders in the fishing industry in the Federation of Malaya today is a graduate of a fisheries college in China and a post-graduate of the Tokyo University of Fisheries.

Can fisheries education and training come too soon?

An important point for consideration is when should advanced fisheries education and training be started in a country? This is of course a question best answered in relation to the pace of development and the status of the industries in the individual countries. Developments can take place rapidly and even almost over-night to make it necessary to look into this question. Thus the establishment of the joint Malayan-Japanese tuna fishing company in Penang has already immediately opened up the possibilities of oceanic fishing by Malayan fishermen. However there are vital questions to be faced. There is a need for example to have trained men who could navigate ships of 100-200 tons, hundreds of miles away from home-bases. Fishing technicians, marine engineers and refrigeration technicians able to cope with modern freezing equipment are required. Thus the break-through from the traditional coastal fisheries by countries in this region brings on in its train a host of technological problems which, although easy of solution to countries advanced in science and technology, yet presents an almost impenetrable barrier to many countries in the region including the Federation of Malaya. The break-through, however, can be achieved if training facilities are provided, and as indicated above steps are being taken in this direction in the Federation of Malaya.

So far only marine fisheries has been touched on. In the development of freshwater fisheries, pisciculture undoubtedly holds pride of place in this region. In this case since the principle and practice of pisciculture are so similar to those employed in agriculture, the development of training facilities in this field should undoubtedly find an important place in national development programmes.