



**REVIEW OF THE ACTIVITIES
OF THE
SEAFDEC TRAINING DEPARTMENT
1968 - 1985**

**TRAINING DEPARTMENT
SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER**

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1968 - 1985**

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**REVIEW OF THE ACTIVITIES OF THE SEAFDEC TRAINING DEPARTMENT
1968 - 1985**

1. INTRODUCTION

At the First Ministerial Conference for the Economic Development of Southeast Asian held in Tokyo in April 1966, it was proposed by the Delegation from Thailand that, with the cooperation of Japan, a Marine Fisheries Research and Development Center be established in Southeast Asia for the promotion of fisheries as a means of increasing the food supply in the region. As a consequence, the Southeast Asian Fisheries Development Center (SEAFDEC) was established under the auspices of the Council of Ministers for the Economic Development of Southeast Asia in 1968. An agreement signed by representatives from Japan, Malaysia, the Philippines, Singapore, Thailand, and the Republic of Vietnam indicates that the main purpose of the Center is to enhance and support regional fisheries development through mutual efforts among member countries and non-member countries as well as organizations interested in regional fisheries development.

It was generally agreed among the member countries at the inception of the Center that regional cooperation in fisheries should be directed towards coastal and offshore fisheries, with emphasis on offshore fisheries. In the coastal fisheries development of this region, there is need for modernization of vessels and gear, whereas in offshore fisheries more attention should be paid to fishing techniques and the training of technicians. The anticipated contribution of the Center towards regional fisheries development thus includes the development of skilled and experienced manpower for the primary sector of the fishing industry, in particular deep-sea fishing, and the transfer of knowledge concerning the marine fishery resources and fishing grounds in the waters surrounding and adjacent to the Southeast Asian countries, with a view to developing and conserving these resources for the mutual benefit of the countries in the region. Another major contribution of the Center is the development of suitable and economical types of fishing gear and methods for effective harvesting of the resources.

At the Inaugural Meeting of the Council of the Center in Bangkok, in March 1968, the Council decided to establish, initially, two departments, namely the Training Department in Thailand and the Marine Fisheries Research Department (MFRD) in Singapore, and laid down the plans of operation and the programs of activity for these two departments. The third department of the Center, the Aquaculture Department, was established in the Philippines in 1973.

According to Article 17 of the Agreement Establishing the Center, the Agreement shall remain in force for ten years and thereafter until all the Members agree to terminate it. It is therefore of particular importance to review the development of the Departments and the activities undertaken by them during the past years so that the future direction of the Center as a regional fisheries development body may be considered by the countries concerned.

This paper presents a review of the activities undertaken by the SEAFDEC Training Department from 1968 to 1985, as well as the problems and constraints it faces for its development.

2. **PROGRAMS AND ACTIVITIES OF THE TRAINING DEPARTMENT,
1968 - 1985**

The Training Department's activities was formulated in March 1967 when a Working Group on the establishment of SEAFDEC met for the first time to discuss the organization and the structure of the proposed Center. The Government of Thailand accepted, in April 1967, to be the host government of the Training Department which was established at Samutprakarn, Thailand.

In accordance with the provision of Article 11 of the Agreement, the Training Department was provided with land, buildings, equipment, and professional and general service staff by the Government of Thailand. The Government of Japan contributed a fully-equipped training vessel, i.e. M.V. PAKNAM, machinery and equipment as well as a number of professional staff and fellowships. The shore facilities, including the construction of the Department buildings, were completed in early 1972 and were officially opened on 5 June 1972, by Field Marshal Thanom Kittikachorn, then Prime Minister and Chairman of the National Executive Council of Thailand.

Being aware that the shortage of fisheries technicians and ship officers such as masterfishermen and marine engineers, capable of directing fishing activities or operating medium-size fishing vessels, is the major bottleneck in fisheries development in the Southeast Asian countries, the Training Department was established to perform the following functions:

- (1) to train fisheries technicians of the Southeast Asian countries in various aspects of modern marine fisheries, engineering and navigation techniques;
- (2) to undertake studies on the types of fishing gear and methods suitable to the fisheries in Southeast Asia; and
- (3) to carry out other activities as determined by the Council.

The Council agreed at its thirteenth meeting that the plans of operation and working programs of the SEAFDEC Departments should be reviewed every three years in order to adjust them to the current needs of member countries. Subsequently, the Plan of Operation and Working Program of the Training Department were revised in 1980 and 1983. The present Plan of Operation states the functions of the Department as follows:

- (1) Primarily, to train fisheries technicians of Member Countries, and other countries as approved by the Council of the Center, in various aspects of modern marine capture fisheries, particularly coastal and small-scale fisheries, and marine engineering, so that the available fishery resources will be effectively and rationally utilized;
- (2) Secondly, to undertake research and studies on fisheries resources and fishing grounds, fishing gear improvement, and statistics and socio-economic aspects related to marine capture fisheries, in order to facilitate the management and rational use of the fisheries resources in Southeast Asian waters.

In line with the functions indicated in the Plan of Operation, the Department has implemented training and research activities as approved by the Council of the Center. The activities undertaken by the Training Department during 1968-1985 can be summarized under the following categories:

- (1) Regular training programs
- (2) Short-term training courses
- (3) Seminars/Workshops/Technical Meetings
- (4) Training cruises
- (5) Research programs

2.1 REGULAR TRAINING PROGRAMS

The Training Department has offered a regular two-year training program in fishing technology and marine engineering for trainees from member countries since May 1970. In 1970 and 1971, however, when the shore facilities of the Department were being constructed, two Special One-Year Training Courses were offered.

As emphasized in the Working Program of the Training Department, technical training has been the mainstay of the curricula of the training program from the beginning. For the Special One-Year Training Courses (1970-1972), the curriculum consisted of lectures on six major subjects in fisheries and marine engineering as well as practical training on shore and at sea. The regular Two-Year Training Program, which began in June 1972, consisted of two courses, from which the trainees could select one of the following:

- a) Fishing Course: Nine major subjects on fisheries, marine engineering, navigation and seamanship;
- b) Engineering Course: Eight major subjects on marine engineering and marine electricity, and two subjects on fisheries.

Each course included about 1,000 hours of lectures and about 1,000 hours of practical work, the trainees were also required to spend six months on board the training vessels M.V. PAKNAM and PLATOO (obtained from Japan in 1980) for practical shipboard training in the effective use of the vessel's equipment as well as training in stern trawling, tuna long-lining, purse seining and other fishing methods.

In general, the regular Two-Year Training Courses gave the trainees basic knowledge of the use of modern fishing techniques, navigation, seamanship, marine engineering, marine electronics, etc. The training offered was designed particularly

for the operation of medium-sized and large-sized fishing vessels whose operation require ship officers. The curricula of these courses appear as Annex 1.

Upon the successful completion of their training, each trainee is granted a certificate of proficiency by the Center. It is expected that the graduates of the Training Department's Fishing Technology Course should be able to serve as competent fishery officers or as third mate on a foreign trade vessel over 500 gross tons or as chief officer or skipper of a local trade vessel under 500 gross tons. Similarly, the graduates of the Marine Engineering Course were trained to serve as third engineer on a foreign trade vessel.

During the period from May 1970 to June 1976, two Special One-Year Courses on Navigation and Fishing Technology, and three Two-Year Training Courses on Fishing and Marine Engineering were completed. Eighty trainees from member countries (Table 1) graduated from the Training Department.

In order to maximize the use of available facilities and manpower within the financial resources of the Department, the Training Department proposed to the SEAFDEC Council, at its eighth meeting in December 1975, to change the regular two-year training program for 25 trainees to an 18-month training program for 35 trainees from the region. The Council, being assured that the new program would maintain the quality of training and the annual output of graduates, approved the proposal. The sixth training program organized by the Department for the period 1976-1977 was therefore offered as a special 18-month training program. However, only twenty trainees from member countries, as well as two trainees from Indonesia and Sri Lanka funded by the Government of Australia, were enrolled in this program. The two-year training program was reinstated in 1977 and continued until 1985.

A total of 216 trainees from member and non-member countries in the region graduated from eleven regular training courses offered by the Training Department from 1970 to 1985. This included 51 (23.6%) from Malaysia, 50 (23.1%) from Philippines, 10 (4.6%) from Singapore, 89 (41.2%) from Thailand and 8 (3.7%) from the Republic of Vietnam (1971-1975). In

Table 1. List of the number of trainees having attended the regular training courses offered by the SEAFDEC Training Department from 1970 to 1985.

Program No.	Year	Duration (Year)	Number of trainees from ^{1/}						Total	Man-month (m/m)
			M	P	S	T	V	Others ^{2/}		
I	1970/71	1	2	2	2	4	-	-	10	120
II	1971/72	1	3	3	2	4	2	-	14	140
III	1972/74	2	5	4	2	7	2	-	20	480
IV	1973/75	2	3	3	1	10	-	-	17	408
V	1974/76	2	4	4	1	6	4	-	19	456
VI	1976/77	1.5	5	5	-	10	-	2	22	396
VII	1977/79	2	4	7	-	10	-	-	21	504
VIII	1978/80	2	6	4	-	11	-	2	23	552
IX	1979/81	2	6	6	-	9	-	3	24	576
X	1981/83	2	7	6	2	9	-	1	25	600
XI	1983/85	2	6	6	-	10 ^{3/}	-	-	22	528
Total:		19.5	51	50	10	90	8	8	217	5,288

^{1/} SEAFDEC member countries in Southeast Asia : Malaysia (M), Philippines (P), Singapore (S), Thailand (T) and the Republic of Vietnam (V)

^{2/} Brunei (one in X), Indonesia (one in VI, two in VIII, three in IX) and Sri Lanka (one in VI).

^{3/} One trainee resigned owing to a health problem before graduation

addition, there were six graduates from Indonesia and one each from Brunei and Sri Lanka. Most of these graduates are now serving as fishery officers in their respective countries.

At its sixteenth meeting in December 1983, the Council approved the revised Plan of Operation and Program of Work of the Training Department which provided for regular training courses to be organized for a 12 to 24-month period on a biennial basis.

The Training Department organized a seminar on fishery training requirements in Bangkok, from 15 to 18 November 1983, to assess the needs for training of member countries and to suggest improvements to the regular training courses offered by the Department. The seminar assessed the training requirements for regional fisheries development and reviewed the existing curricula of the regular two-year training courses. Most participants were of the opinion that, if the current levels of the curricula and trainees were to be maintained, then a two-year program was required to ensure adequate training. If the duration of training was reduced, preliminary training of the candidates in basic subjects and practical fishery experience should be provided by national fishery training centers.

In accordance with the suggestions made at the Seminar and later by the Program Committee at its seventh meeting in 1984, the Training Department submitted five different proposals on revised training programs to the Council at its seventeenth meeting in November 1984. The Council, after deliberation, selected and approved the proposal for an 18-month training course consisting of three semesters (see Annex 1), which was implemented by the Department in April 1986, as the twelfth program of regular training in fishing technology and in marine engineering.

The present 18-month regular training courses require higher level candidates than the past eleven programs. To qualify for enrollment, candidates must be graduates of national fishery training schools/centers, or fishery officers with at least three years experience, with a strong background in basic science and

English. A total of twenty candidates from member countries was accepted by the Department for the 1986/87 regular training courses, i.e. six from Malaysia, four from the Philippines, and ten from Thailand.

At the seventeenth meeting, the Council Director for the Philippines urged the Department to look into the possibility of implementing a one-year training program in order to provide more trainers, who are urgently needed for the national training centers. After discussion, the Council agreed that the experience gained by the Training Department during the implementation of the new 18-month program might lead to a one-year course which would offer more practical training. An alternative to the present curricula as a one-year training program is being formulated by the Department. Tentative curricula for the purpose of comparison are given in Annex 1. It is hoped that, taking into consideration the limited personnel for advanced training and the financial constraints faced by the Training Department, the new one-year regular training program will be implemented, with the approval of the Council, in early 1988.

2.2 SHORT-TERM TRAINING COURSES

In addition to the regular training programs, a series of special short-term training courses has been offered by the Training Department since 1977. The purpose of the special short-term courses is to provide practical knowledge on marine capture fishing technology for fisheries personnel, undergraduates and others as well as for local fishermen in Member Countries in order to upgrade their skills to be applied to fisheries development in the region.

The training is generally conducted for a period of up to two months on such specialized subjects as fishing technology, coastal navigation and seamanship, fishing gear construction, marine engineering, fish handling and fishery extension methodology.

Thirty-one special short-term training courses, with a total of 835 participants, were organized by the Department from 1977 to 1985 (see Table 2).

These courses are listed as follows:

- (1) Training/demonstration courses for local fishermen;
- (2) Special training courses for government officers;
- (3) Summer courses for university students;
- (4) Regional training courses for fishery extension officers;
- (5) Regional training courses on specialized subjects; and
- (6) On-the-job training.

2.2.1 Training/demonstration courses for local fishermen

The short-term training courses for local fishermen started in May 1977. The first two special courses, of a duration of four weeks each, were organized in cooperation with

Table 2. List of the number of participants having attended the short-term training courses organized by the SEAFDEC Training Department from 1977 to 1985

Course No.	Year	Period	Duration (month)	Course Title	No. participants					Total	man-month (m/m)
					M	P	S	T	Others		
1.	1977:	2 May - 3 June	1.10	1st course in navigation for Thai fishermen	-	-	-	32	-	32	35
2.		4 Aug.- 1 Sept.	0.97	2nd course in navigation for Thai fishermen	-	-	-	25	-	25	24
3.	1978:	21 Mar.- 6 Apr.	0.57	1st course for university students	-	-	-	18	-	18	10
4.		15 June - 30 July	1.53	3rd course for Thai skippers	-	-	-	19	-	19	29
5.		4 Sept.- 13 Oct.	1.33	4th course for Thai skippers	-	-	-	50	-	50	66
6.	1979:	8-22 Jan.	0.50	5th course in fishing technology for Thai fishermen	-	-	-	23	-	23	11
7.		2-18 Apr.	0.57	2nd course for University students	-	-	-	33	-	33	19
8.		5-10 Nov.	0.20	FAO/SEAFDEC crash course in fishery extension	1	-	-	15	4	20	4
9.	1980:	7-21 Jan.	0.50	6th course for Thai fishermen	-	-	-	16	-	16	8

Table 2. (cont.):

Course No.	Year	Period	Duration (month)	Course Title	No. participants					Total	man-month (m/m)
					M	P	S	T	Others		
10.	1980:	31 Mar.- 18 Apr.	0.63	3rd course for university students	-	-	-	30	-	30	19
11.		7-25 July	0.60	1st course for Thai customs officers	-	-	-	25	-	25	15
12.		18-29 Aug.	0.40	2nd course for Thai customs officers	-	-	-	15	-	15	6
13.	1981:	6-7 Jan.	0.07	7th course for Thai fishermen (shipboard training)	-	-	-	13	-	13	1
14.		2 Feb.- 27 Mar.	1.83	1st regional course for fishery extension officers	4	4	4	7	2	21	38
15.		30 Mar.- 10 Apr.	0.40	4th summer course for university students	-	-	-	47	-	47	19
16.		1 Sept.- 9 Oct.	1.30	ADB/SCSP/BOBP/SEAFDEC Regional course on Fishery Statistics	3	5	-	13	20	41	53
17.		1 Sept.- 9 Oct.	1.30	ADB/SCSP/BOBP/SEAFDEC Regional Course on Fishery Stock Assessment	3	3	-	14	19	39	51
18.	1982:	25 Jan.- 19 Mar.	0.87	2nd regional course for fishery extension officers	4	5	2	8	4	23	20

Table 2. (cont.):

Course No.	Year	Period	Duration (month)	Course Title	No. participants					Total	man-month (m/m)
					M	P	S	T	Others		
19.	1982:	22 Mar.- 2 Apr.	0.40	5th summer course for university students	-	-	-	40	-	40	16
20.		26 Jul.- 17 Sept.	1.80	3rd regional course for fishery extension officers	4	4	2	7	10	27	49
21.		18-29 Oct.	0.40	1st course for Thai fishery officers on coastal navigation	-	-	-	31	-	31	12
22.	1983:	28 Mar.- 8 Apr.	0.40	6th summer course for university students	-	-	-	27	-	27	11
23.		2 May - 9 Feb.	9.47	On-the-job training for fishery scientists	1	1	-	2	-	4	38
24.		1 June - 8 July	1.27	4th regional course for fishery extension officers	4	4	2	8	5	23	29
25.		26 July - 26 Aug.	1.00	8th Fishing Demonstration for Thai fishermen	-	-	-	45	-	45	45
26.	1984:	19-28 Mar.	0.33	7th summer course for university students	-	-	-	34	-	34	11
27.		3 Apr.- 9 May	1.23	5th regional course for fishery extension officers	5	5	-	8	4	22	27

Table 2. (cont.):

Course No.	Year	Period	Duration (month)	Course Title	No. participants					Total	man-month (m/m)
					M	P	S	T	Others		
28.	1984:	1-15 Oct.	0.50	2nd course for Thai fishery officers on marine engineering	-	-	-	31	-	31	15
29.	1985:	6-30 Mar.	0.83	ASEAN/CIDA/SEAFDEC Regional Training course in Fish Handling and Processing	2	2	1	4	3	12	10
30.		6-31 May	0.87	IOC/SEAFDEC Regional Training Course in Fisheries Oceanography in the Western Pacific	2	3	-	14	5	24	21
31.		1 July - 15 Aug.	1.53	6th regional course for fishery extension officers	4	4	-	8	9	25	38
Total number of participants:					37	40	11	662	85	835	-
Percentages by country:					4.4	4.8	1.3	79.3	10.2	100.0	-
Total man-months by country:					56	60	16	510	108	-	750
Percentages by country:					7.5	8.0	2.1	68.0	14.4	-	100.0

the Department of Fisheries, the Harbour Department and the Fish Marketing Organization of Thailand. The objective of these courses was to familiarize Thai fishermen with modern fishing technology, navigation techniques, map reading, marine meteorology, marine engineering, etc., which are necessary for coastal and high sea navigation. The trainees were also briefed on maritime law and international maritime regulations.

Following the successful implementation of the abovementioned special courses, the Department organized six more practical training courses for Thai fishermen from 1978 to 1983. In view of the difficulties faced by the fishermen in attending the courses at the Department, the training courses for local fishermen were modified into training-cum-demonstration courses (external training) using training vessel, M.V. PLATOO, donated to the Department by the Government of Japan in 1980. The training vessels and instructors visited major fishing communities and invited the local fishermen to observe the fishing demonstration on board M.V. PLATOO and M.V. PLALUNG. A total of 223 Thai fishermen participated in training/demonstration courses of this nature during 1977 to 1983.

2.2.2 Special training courses for government officers

The Department organized a series of short-term training courses in fishing technology and marine engineering for government officers upon request. The first two courses of this nature were organized for Thai customs officers, on request and with financial support from USAID, in 1980. The subjects covered were seamanship, boat handling, marine electricity and diesel engine. A total of 40 officers participated. Thereafter, the Department organized special training courses in coastal navigation and marine engineering for the ship personnel of the Thai Department of Fisheries in 1982 and 1984.

In addition, upon request by the Fisheries Departments of Malaysia and Brunei Darussalam, the Training Department conducted special fishing demonstration and shipboard training for fishery officers from Malaysia on board M.V. PLATOO off Songkhla in June 1984 and more recently for Brunei, in April 1986, in Brunei Darussalam.

2.2.3 Summer courses for university students

At present, there are four national universities in Thailand that offer programs of study in fisheries and marine science, namely Chulalongkorn University (CU) and Kasetsart University (KU) in Bangkok, Prince of Songkhla University in Songkhla and Srinakharinwirot University in Chon Buri. None of these universities however has training or research vessel for their students, most of whom will become fishery officers after graduation, to gain experience at sea.

In response to the requests made by the universities concerned, the Training Department organized seven summer courses on fishing technology and marine science for Thai university students during 1978 to 1984. These summer courses, of a duration of about two weeks each, provided the students with classroom lectures on modern fishing technology and shipboard training on board M.V. PAKNAM, M.V. PLATOO and M.V. PLALUNG. The courses also provided the university instructors and researchers with an opportunity to collect oceanographic data and samples for their research. A total of 229 students and instructors from four major universities in Thailand have participated in these summer courses.

The Seminar on Fisheries and Marine Science Education in Thailand, was organized by the Training Department, in collaboration with Chulalongkorn and Kasetsart Universities, at Bangkok from 13 to 15 May 1986. The Seminar commended the Department for its role in supporting fisheries and marine science education and requested that this type of practical training at sea be continued to strengthen the experience of the students and instructors in modern fishing technology and oceanographic research.

2.2.4 Regional training courses for fishery extension officers

It is generally recognized that more than 90 per cent of fishermen in the South and Southeast Asian regions are engaged in small-scale fisheries. Most of them are poor and

lack the basic necessities. Thus they need assistance from their government to acquire a better standard of living. On the other hand, their government usually has an insufficient number of experienced fishery extension officers who are not only knowledgeable in essential subjects relating to appropriate technology, but who can also effectively communicate this knowledge to the small-scale fishermen. The ways and means to improve the transfer of technology to meet the needs of the small-scale fishermen are therefore urgently required by all concerned governments in the region.

The Consultative Meeting on Fisheries Education and Training in Southeast Asia, organized by the Training Department in Bangkok in 1978, recommended that SEAFDEC should provide training for various types of fishery personnel, priority being given to the training of instructors, extension workers, administrators, managers and selected fishermen. The Meeting also recommended that the Training Department should conduct courses in teaching techniques and extension methodology for instructors and extension workers from the regions. In accordance with these recommendations, the Training Department organized a crash course for extension officers engaged in small-scale fisheries development, in cooperation with FAO and the Thai Department of Fisheries, in November 1979. The objectives of this course were to ascertain the problems inherent to this type of training course, to examine the subjects to be covered and to evaluate the response of the trainees during and after the course.

At its twelfth meeting in 1979, the Council approved the establishing of fishery extension courses as an integral part of the curricula of the Training Department. The Training Department therefore established a series of regional training courses for fishery extension officers from the South and Southeast Asian regions, with funds provided by the Royal Netherlands Government under the program for "Studies in the Region" (SIR), to be conducted at the Department, starting in 1981.

To date, six regional training courses for fishery extension officers have been organized by the Training Department with 141 participants from the South and Southeast Asian regions (Table 3). The general objectives of these courses were: (a) to expose fishery extension officers from the region to the problems facing the livelihood of small-scale fishermen and their families; (b) to familiarize them with the methodology and techniques pertaining to extension services as well as ways and means to assist small-scale fishermen; and (c) to provide practical experience and knowledge relating to the development of coastal fisheries, with particular reference to the efficient and rational utilization of fishery resources in the coastal and inshore waters.

Emphasis in the curriculum was placed on fishing gear and methods, fishing technology, marine engineering and extension methodology and media. Shipboard training and field trips to fishing communities and related fishery infrastructure were also organized as an integral part of the course.

In the past six courses, training was designed to be practical than theoretical. It aimed to furnish the extension officers with basic skills appropriate to marine capture fisheries in the region, together with a knowledge and understanding of the concepts involved in fishery extension. It was hoped that the participants would be able to adapt the knowledge and experience obtained to their national problems, and serve as trainers of local fishery extension workers at the national level in order to expand the cadre of extension workers required by their governments.

It should be noted that, in addition to the training and production of the audio-visual materials for use in extension services by the Department, the SEAFDEC Secretariat has also produced a series of extension booklets on fisheries and aquaculture called SAFIS Extension Manuals as well as the Handbook for Fishery Extension Workers, which is being prepared and will be published in mid-1986.

Table 3. List of the number of participants from South and Southeast Asia having attended the regional training courses for fishery extension officers organized by the SEAFDEC Training Department from 1981 to 1985

Country \ Course No.	I (1981)	II (1982)	III (1982)	IV (1983)	V (1984)	VI (1985)	Total	%
1. Bangladesh	-	2	-	-	-	2	4	2.8
2. Brunei	-	-	2	-	-	-	2	1.4
3. Burma	-	-	2	-	-	-	2	1.4
4. India	-	-	2	1	1	2	6	4.3
5. Indonesia	-	-	2	2	2	2	8	5.7
6. Malaysia	4	4	4	4	5	4	25	17.7
7. Maldives	-	-	-	-	-	1	1	0.7
8. Philippines	4	5	4	4	5	4	26	18.4
9. Singapore	4	2	2	2	-	-	10	7.1
10. Sri Lanka	2	2	2	2	1	2	11	7.8
11. Thailand	7	8	7	8	8	8	46	32.6
Total	21	23	27	23	22	25	141	100.0

2.2.5 Regional training courses on specialized subjects

Recognizing the needs of Member Countries in various aspects of fishery management and development which could not be fulfilled by the regular training programs offered annually by the Department, the Training Department has attempted to provide additional training courses on specialized subjects as required by the fishery officers or fishery scientists in the region. The first course of this type was the Crash Course for Fishery Extension Officers in 1979, as mentioned in Section 2.2.4, which was a prototype of its kind in the region and became a regular short-term training program offered annually by the Department in the years thereafter.

In 1981, the Department organized simultaneously two regional training courses on fishery statistics and on fishery stock assessment, in collaboration with the FAO/UNDP South China Sea Fisheries Development and Coordinating Programme (SCSP) and the FAO/SIDA Bay of Bengal Programme (BOBP), with funding support from the Asian Development Bank (AsDB). Eighty participants from South and Southeast Asia attended the courses, which were conducted at the premises of the Training Department in Samutprakarn, Thailand, from 1 September to 9 October 1981. These courses provided both lectures and practices on the collection, analysis and interpretation of the fishery data and information obtained from statistical collections and on research for development and management of marine fisheries in the region. The success of these courses paved the way for more training and technical meetings in these fields by many other organizations in the years that followed.

Upon the request of the Steering Committee of the ASEAN/Canada Fisheries Post-Harvest Technology Project, the Department organized a regional training course in fish handling and processing, in cooperation with the Fishery Technological Development Division of the Thai Department of Fisheries and funded by CIDA of Canada, for fish technologists from the ASEAN countries, in March 1985. Subsequently, a course on quality control and inspection of fishery products was organized by the SEAFDEC Marine Fisheries Research Department under similar arrangements with ASEAN/CIDA.

The Department also organized the regional training course in fishery oceanography in the Western Pacific, in cooperation with Unesco/IOC, in May 1985. This course was designed to upgrade knowledge and understanding of the measurements of various oceanographic parameters that play an important role in the lives and behaviour of fishery resources, in particular in nearshore areas. It also emphasized the methodology for collecting and interpreting the oceanographic data which are more difficult and expensive to collect than land-based data in order to maximize the benefits from the surveys presently being carried out by a number of research vessels in the region.

In summary, the training courses on specialized subjects were conducted by the Department to fulfill the special needs of Member Countries as identified by the governments concerned or through technical meetings organized at both the national and regional level. However, owing to its limited manpower and financial resources, the Department endeavoured to organize such courses in cooperation with other organizations/agencies. This resulted in expanding the range of subjects covered and the number of participating countries. This type of arrangement moreover proved the most effective way to transfer technological knowledge in the region at a minimum cost to be shared by the concerned agencies/organizations.

2.2.6 On-the-job training

The Training Department offers special fellowships which are provided by the Government of Japan for selected graduates of the regular training programs to continue their training at the Department after completion of their two-year training course as in-house or on-the-job training in the fields of fishing technology and marine engineering. During 1976-1985, special fellowships, ranged from one to two years, were granted to 19 special trainees from Thailand and Vietnam. Four of them resumed their duties at the Thai Department of Fisheries and nine were recruited as staff of the Department.

Special on-the-job training for researchers from Member Countries was offered in May 1983. Four fishery scientists from Malaysia (1), Philippines (1) and Thailand (2) received grants for a 9-month in-house training on research methodology at the Research Division of the Department. This

program is designed to train the participants in conducting research projects of their interest, or analysing and preparing research paper based on data collected previously by their respective agencies, together with research personnel of the Training Department. As a result, the research trainees conducted a number of research projects and submitted reports which were published by the Training Department in 1984. These research projects included an assessment of demersal fisheries resources in Peninsular Malaysia (TD Publication series CTP nos. 27 and 29), an analysis of annual changes in marine fisheries production in the Philippines (CTP no. 25) and a study on bottom gill net and trap for catching swimming crab (CTP no. 26).

Although the usefulness of on-the-job research training is generally recognized by both Member Countries and the Training Department, the high cost involved has become a constraint in providing more such fellowships, resulting in the postponement of the second course. It is expected however that, in 1987, the Department may be able to offer special fellowships for fishery researchers from Malaysia, Philippines or Singapore to conduct research at the Training Department in subjects of mutual interest.

The total number of participants and the total man-months of all short-term training courses mentioned earlier, which were organized by the Training Department during 1977 to 1985 are summarized in Table 2. It is noted that while the participants from Thailand, the Host Government of the Department, form the largest group (79 per cent in numbers and 68 per cent in terms of man-months), the participations of Member Countries have increased steadily since 1981. The participants from the Philippines were the second largest group with 40 persons and 60 man-months, followed by Malaysia and Singapore with 56 and 16 man-months respectively. The number of participants from non-member countries also increased from four persons in 1979 to a total of 85 during the period 1979 to 1985, which is equivalent to a total of 108 man-months. All of them however were funded by the collaborating organizations or donor agencies such as FAO for the Crash Course in Fishery Extension, by the Asian Development Bank for the regional courses in fishery statistics and fishery stock assessment, by the Royal Netherlands Government for the regional courses for fishery extension officers, by Unesco/IOC for the regional course on fishery oceanography and by CIDA for the fish handling and processing course for ASEAN fishery personnel.

2.3 SEMINARS/WORKSHOPS/TECHNICAL MEETINGS

In order to promote fishery development and management in Southeast Asia which is the main objective of the Center, the Training Department has organized a number of technical meetings to assess and assist Member Countries in preparing national programs on various aspects of fishery development and management planning.

The first and one of the most important technical seminars organized by the Center was the Seminar on South China Sea Fisheries Resources, held in Bangkok, in May 1973. For some considerable time, the countries bordering the South China Sea had been aware of the need for more detailed knowledge of the fishery resources of the South China Sea. At the fourteenth session of the Indo-Pacific Fisheries Council (IPFC) in 1970, it was recommended that SEAFDEC or some other regional body organize a technical seminar on matters pertaining to the South China Sea and make available to the IPFC the results arising from such efforts.

With the approval of the SEAFDEC Council at its fifth meeting in 1972, the Technical Seminar on South China Sea Fisheries Resources was convened by the SEAFDEC Secretariat, in Bangkok, from 21 to 25 May 1973. The technical part of the Seminar was prepared jointly by the Training Department and the Marine Fisheries Research Department of the Center.

At the Seminar, the current status of fisheries research and management in Member Countries of SEAFDEC were reviewed. Thirty-one technical papers on fishery resources and aquaculture potentials for development were presented. Recommendations were made to SEAFDEC on improvements to fishery statistical systems at both the national and regional level, on promoting monitoring surveys of demersal resources, on exploratory fishing surveys, on development of pelagic resources, on a comparative study of the efficiency of local traditional fishing gear, on the needs to coordinate international actions for fishery management in the region and on holding a SEAFDEC aquaculture seminar to promote aquaculture development.

The Seminar, noting the value of this meeting in bringing together fishery workers from all Member Countries and the fruitful discussions that resulted, also recommended that arrangements be made by SEAFDEC for future seminars on specialized topics of regional interest.

It is important to note that most of the recommendations made at the Seminar were implemented in the programs of activities carried out by the Department in the years that followed, especially in research programs and technical meetings organized by the Training Department from 1976 up to the present.

Two major series of technical meetings were organized by the Department during 1976 to 1983 (Table 4). The first series was the Technical Workshops on Fishery Statistics, which included five workshops conducted from 1976 to 1980. The second was consultative meetings on fisheries education and training requirements in Southeast Asia, with a meeting in 1979 and a seminar in 1983.

The workshops on fishery statistics originated from the need to improve collection, compilation and standardization of the fishery statistics in the Southeast Asian region. Through the technical workshops organized by the Department, the fishery statisticians from Southeast Asian countries have opportunities to review the statistical systems currently employed by each country and discuss with the fishery statistics experts on ways and means to improve their systems so that these would be compatible with those of neighbouring countries. The most significant outcome of these workshops is the production of the Annual Fishery Statistical Bulletin for the South China Sea Area, compiled by the statistical staff of the Training Department in close cooperation with the participating countries, including Indonesia, Hong Kong and Taiwan, and published annually by the Department since 1978 (1976 statistics)^{1/}. The Bulletin has received world-wide recognition as the only regional fishery statistical bulletin which is used as a companion volume to the FAO Yearbook on Fishery Statistics for reference purposes.

^{1/} The printing of this publication has been the responsibility of the SEAFDEC Secretariat since 1982.

Table 4. List of the number of participants having attended the seminars/workshops/technical meetings organized by the SEAFDEC Training Department from 1973 to 1985

No.	Year	Title	No. of Participants from						Total
			J.	M.	P.	S.	T.	Others	
<u>1973</u>									
1.		Seminar on South China Sea Fisheries Resources (21-25 May 1973)	16	7	4	6	26	11	70
<u>1976</u>									
2.		First Technical Workshop on Fishery Statistics (8-12 November 1976)	2	2	2	2	4	19	31
<u>1977</u>									
3.		Second Technical Workshop on Fishery Statistics (17-21 October 1977)	-	2	1	1	6	6	16
<u>1978</u>									
4.		Third Technical Workshop on Fishery Statistics (16-20 October 1978)	1	3	1	-	16	3	24

No.	Year	Title	No. of Participants from						Total
			J.	M.	P.	S.	T.	Others	
<u>1979</u>									
5.		Consultative Meeting on Fisheries Education and Training in Southeast Asia (14-18 May 1979)	2	2	2	-	20	-	26
6.		Fourth Technical Workshop on Fishery Statistics (11-14 December 1979)	2	3	2	-	8	2	17
<u>1980</u>									
7.		Technical Workshop on Fisheries Statistics and Stock Assessment (8-12 September 1980)	2	4	1	-	14	5	26
<u>1983</u>									
8.		Post-graduate Seminar on Fishery Training Requirements (15-18 November 1983)	6	3	-	-	21	1	31
<u>1985</u>									
9.		FAO/SEAFDEC Workshop on Shared Stocks in Southeast Asia (18-22 February 1985)	4	4	5	-	15	9	37
10.		FAO/SEAFDEC Seminar on Fisheries Planning, Management and Development (7-18 October 1985)	7	2	2	-	8	23	42
TOTAL PARTICIPANTS:			42	32	20	9	138	79	320
Percentage:			13.1	10.0	6.3	2.8	43.1	24.7	100

It is important to note that improvements of national and regional statistics included the compilation of catch and effort statistics, which are needed for fish stock assessments and fishery management. At its fourth meeting in 1980, the workshop discussed the need for compiling such statistics and agreed to supply these to be incorporated as integral part of the Bulletin. The Training Department therefore compiled and published the catch and effort statistics for the region in 1981 (1978 statistics) and has incorporated these statistics in the Bulletin since 1983 (1981 statistics).

The Training Department plans to organize the sixth technical workshop on fishery statistics in Southeast Asia in early July 1986, with the objective to discuss recent developments and the need for further improvements to the Bulletin in order that the Bulletin can serve as a reference on fishery statistics of the region for all users, i.e. fishery administrators, policy-makers, researchers, fishing industries and importers/exporters in the region.

As regards the meetings/seminars on fisheries education and training requirements, the Training Department organized a consultative meeting on this subject in May 1979. The meeting reviewed and appraised existing facilities and programs for the education and training of fisheries personnel and ascertained the gaps and deficiencies to be filled or remedied through national, regional and international efforts. The meeting recommended that SEAFDEC initiate training courses in fishery extension services; compile and translate literature on fishery education, training and related subjects; organize a task force to assess the training requirements of the countries in the region; and find ways and means to strengthen cooperation among the organizations concerned as well as to prepare a directory of fishery training institutions in the region.

In accordance with these recommendations, the Training Department has implemented, with approval from the Council, the regional training courses for fishery extension officers since 1981 (see 2.2.4), organized missions to evaluate training facilities in the region in November 1980 (TD Report No. 5) and in February 1983. In addition, the Secretariat initiated the Southeast Asian Fisheries Information Service (SAFIS), in cooperation with IDRC of Canada, in 1982, to collect and compile

fishery extension literature and translate appropriate texts into local languages of the region. The Secretariat also compiled and published the directory of fishery training institutions in the Southeast Asian region in 1979 (TD Report No. 3, pages 224-292), a directory of organizations/agencies concerned with fisheries development in Southeast Asia in 1982 (Special publication No. 3 of the Secretariat, revised editions published in 1984 and 1986) as well as a directory of fisheries information sources in Southeast Asia (Special Publication No. 10, November 1985) and a directory of fishery scientists and technologists in Southeast Asia (Special Publication No. 2, September 1979; revised edition as Special Publication No. 11, March 1986) under the SAFIS Project to fill in the gaps in fisheries information in the region.

In November 1983, following the approval of the Council at its fourteenth meeting, the Training Department invited government officials who had graduated from its regular training programs, as well as officials connected with fishery planning in the Southeast Asian region, to participate in the Post-graduate Seminar on Fishery Training Requirements. The Seminar appraised the status of fishery training requirements in Southeast Asia and training activities undertaken by the Department. It likewise reviewed existing curricula and discussed ways and means to improve the training efficiency of future courses.

In discussing the training requirements in Southeast Asia as outlined by the Department (reprinted herewith as Annex 2), the participants stressed the need for more comprehensive training of extension workers. Training programs in both fishery administration and information services were also required. To improve training efficiency, training aids should be developed further. The Training Department was encouraged to accelerate its audio-visual program in order to provide relevant fishing demonstration video tapes to other training centers in the region.

In addition to technical meetings/seminars on fishery statistics and training requirements in the region, the Department has, since 1985, embarked on a third category of technical meetings, i.e. those on fishery management and development.

The World Conference on Fisheries Management and Development, organized by FAO in Rome from 27 June to 6 July 1984, adopted the Strategy for Fisheries Management and Development and the Programmes of Action for the Management and

Development of Fisheries. Since the Strategy and Programmes of Action were endorsed by all Member Countries of SEAFDEC, the Training Department collaborated with FAO in implementing two projects, under the Programme of Action No. I : the planning, management and development of fisheries, in the Southeast Asian region.

The first project was the joint FAO/SEAFDEC Workshop on Shared Stocks in Southeast Asia, organized in Bangkok from 18 to 22 February 1985. The workshop identified at least 32 possible shared stocks of pelagic and demersal species in the region and discussed the problems inherent to their management strategies by countries concerned. The workshop also clarified the important items to be taken into account for the management purpose of the shared stocks and the major lines to be followed in the future research, data collection and processing, including international collaboration. This workshop is therefore one of the first actions undertaken in the fields of fisheries in response to the new International Law of the Sea, adopted at the Third United Nations Conference (UNCLOS III) in December 1982.

The second collaborative effort undertaken jointly between the Training Department and the Fisheries Department of FAO was the FAO/SEAFDEC Seminar in Fisheries Planning, Management and Development, held in Bangkok from 7 to 18 October 1985. It was designed for high-level fishery administrators and was attended by 44 participants and observers. The Seminar focussed its attention and discussion on the objectives of fishery management, management at various stages of development, economic considerations for management and identification of various constraints to fishery development as well as information requirements for fisheries planning, management and development. The Seminar also recommended issues that deserve the attention of international organizations, including SEAFDEC, in order to assist countries in the region to achieve their long-term objectives of attaining self-reliance in fisheries management and development in the near future.

The workshop and seminar received world-wide recognition as indicated by numerous requests for the reports (FAO Fisheries Report No. 337 and TD Report No. 18). It also highlighted the role of SEAFDEC as a leading organization for fishery development in Southeast Asian region.

A total of ten seminars/workshops/technical meetings was organized by the Training Department from 1973 to 1985, with a total of 320 participants, with 243 participants (76 per cent) from the SEAFDEC Member Countries. It is considered that this type of meeting has a direct impact on the national programs by improving the fishery statistical systems and encouraging research programs of mutual interest to the participating countries in the region. It also provide a forum where fishery administrators and researchers from all countries can meet and exchange knowledge and experience as recommended by the first Seminar on South China Sea Fisheries Resources in 1973.

In summary, the Training Department has organized 11 regular training programs, 31 short-term training courses and ten technical meetings from 1970 to 1985. The total number of participants having attended these courses/meetings is 1,372 persons, with 1,206 participants (88 per cent) coming from the SEAFDEC Member Countries (Table 5). In terms of total man-months for training courses provided to the participants from the Member Countries in Southeast Asia, Thailand received training for 2,514 man-months (47.9 per cent), followed by Malaysia and Philippines for 1,190 and 1,170 man-months respectively (22.7 and 22.3 per cent), while Singapore and the Republic of Vietnam shared about 4 per cent each (Table 6). It is therefore evident that the training activities conducted by the Training Department were aimed at and thus have benefited the Member Countries directly. On the other hand, the Department also provided opportunities for training to non-member countries in both South and Southeast Asia in order to foster fishery development in the region as a whole.

Table 5. Summary list of the number of participants having attended the training courses and technical meetings organized by the SEAFDEC Training Department from 1970 to 1985.

Category	Regular Training Programs	Short-term Training Courses	Technical Meetings	Total Participants	%
A. Member Countries:					
1. Japan	-	4	42	46	3.35
2. Malaysia	51	37	32	120	8.75
3. Philippines	50	40	20	110	8.02
4. Singapore	10	11	9	30	2.19
5. Thailand	90	662	138	890	64.87
6. Vietnam, Rep.	8	-	2	10	0.73
Total	209	754	243	1,206	87.90
B. Non-member Countries:					
1. Bangladesh	-	9	2	11	0.80
2. Brunei	1	3	2	6	0.44
3. Burma	-	6	2	8	0.58
4. China	-	1	1	2	0.15
5. Hong Kong	-	1	6	7	0.51
6. India	-	13	2	15	1.09
7. Indonesia	6	23	13	42	3.06
8. Maldives	-	3	2	5	0.36
9. Pakistan	-	1	-	1	0.07
10. Solomon Island	-	1	-	1	0.07
11. Sri Lanka	1	16	2	19	1.38
12. Taiwan	-	2	1	3	0.22
13. Vietnam, Socialist Rep.	-	2	-	2	0.15
Total	8	81	33	122	8.89
C. Organizations/Agencies:					
1. FAO	-	-	23	23	1.68
2. SEAFDEC/MFRD	-	-	4	4	0.29
3. SEAFDEC/AQD	-	-	7	7	0.51
4. Others	-	-	10	10	0.73
Total	-	-	44	44	3.21
GRAND TOTAL	217	835	320	1,372	100.00

Table 6. Total man-months (m/m) for training courses conducted by the Training Department for the SEAFDEC Member Countries in Southeast Asia from 1970 to 1985

Countries	Regular courses ^{1/}	Short-term courses ^{2/}	Total m/m	%
Malaysia	1,134	56	1,190	22.7
Philippines	1,110	60	1,170	22.3
Singapore	192	16	208	4.0
Thailand	2,004	510	2,514	47.9
Vietnam (Rep.)	168	-	168	3.2
Total	4,608	642	5,250	100

^{1/} Calculated from Table 1

^{2/} From Table 2

2.4 TRAINING CRUISES

The Training Department acquired three training vessels during the period under review. The first two vessels, M.V. PAKNAM and M.V. PLATOO, were donated by the Government of Japan to the Department in 1969 and 1980 respectively. The third vessel, a second-handed locally made wooden trawler, M.V. PLALUNG, was purchased by the Department in 1982.

M.V. PAKNAM was built in November 1968 by the Hayashikane Shipbuilding & Engineering Co., Ltd. in Yokosuka City, Japan, at the cost of 206 million yens (US\$ 572,222). It was delivered to the Center on 30 June 1969 and arrived at Bangkok on 21 October 1969. PAKNAM is a steel stern-trawler, with an overall length of 41.80 metres and 386.82 gross tons (see principal particulars in Annex 3).

M.V. PLATOO is a fibreglass purse seiner with an overall length of 23.67 metres and 65.47 gross tons (see also Annex 3). It was built in May 1980 by the Nishii Ship Yard Co., Ltd. in Ise City, Mie Prefecture, Japan, at the cost of 255 million yens (US\$ 1,307,950). It was delivered to the Center on 17 October 1980.

As part of the training program offered by the Department, practical shipboard training on fishing technology, navigation, seamanship and marine engineering were emphasized in all training courses. For the two-year regular training courses, the Council decided at its second meeting in 1969 and again at its twelfth meeting in 1979 that the period of training at sea should be a minimum of six months. The shipboard training for the regular trainees therefore was targeted to be no less than 180 days throughout the regular training programs during the period 1970-1985. Nevertheless, the Council, in considering the proposed 18-month regular training program to be implemented in 1986/87, agreed that the training period at sea for the revised course could be shortened from the present 180 days in order to reduce the overall training period and the cost involved. The shipboard training therefore was reduced in the 12th regular training program to 150 days. The training period at sea for other short-term courses depended on the durations of the courses, generally ranging from 5 to 12 days.

During each training cruise, emphasis was placed upon fishing techniques (mostly trawling, purse seining, longlining and squid lift netting), marine engineering, navigation, seamanship and telecommunications. Trainee were assigned the responsibility of duty officer by shift rotation. Other duties comprised duty watch, fixing the vessel's position, operating the navigation equipment and participating in fishing operations carried out under the supervision of the masterfisherman. The trainees in the marine engineering course would practice on the operation and maintenance of the main and auxiliary engines, electrical equipments, trawl winch and other deck machinery.

In addition to training in fishing methods and marine engineering on board the training vessels, the trainees also participated in the exploratory fishing surveys and fishery oceanographic surveys carried out as part of the research activities undertaken by the Department. Major surveys were conducted in the central Gulf of Thailand and the southern part of the South China Sea where little information on fishery resources is available.

From 1970 to 1985, M.V. PAKNAM completed 74 cruises with a total days at sea of 1,749 days, M.V. PLATOO completed 30 cruises and M.V. PLALUNG for 14 cruises with 418 and 168 total days at sea respectively (Table 7). On the average, fifteen shipboard training were organized with a total of 235 days at sea per year.

Table 7. Total days at sea of shipboard training on board the training vessels of the Training Department from 1970 to 1985

A. M.V. PAKNAM

Year	No. of cruise	No. of trainees on board	Total days at sea
1970	3	32	79
1971	5	59	95
1972	5	93	74
1973	4	83	84
1974	5	88	179
1975	4	74	173
1976	4	113	50
1977	4	126	150
1978	6	179	104
1979	8	168	144
1980	6	140	198
1981	3	70	121
1982	4	119	52
1983	4	127	65
1984	5	104	79
1985	4	76	102
Total	74	1,651	1,749
Average/yr	5	103	109

B. M.V. PLATOO

Year	No. of cruises	No. of trainees	Total days at sea
1980	4	-	20
1981	8	117	99
1982	7	162	95
1983	4	84	79
1984	4	109	66
1985	3	56	59
Total	30	528	418
Average/yr	5	88	70

C. M.V. PLALUNG

Year	No. of cruises	No. of trainees	Total days at sea
1983	4	1	23
1984	7	109	86
1985	3	56	59
Total	14	166	168
Average/yr	5	55	56

2.5 RESEARCH PROGRAMS

The marine fisheries research program of the Center was first carried out by the Marine Fisheries Research Department (MFRD) of the Center in Singapore. A number of research projects were implemented and presented at the Seminar on South China Sea Resources in 1973 (see Section 2.3). In 1977, owing to the loss of its research vessel M.V. CHANGI in 1974, MFRD began placing more emphasis on research work in the field of post-harvest technology.

In view of the problems facing the marine fishing industry of the region and recent developments affecting the fishing industry such as those arising from overfishing and the declaration of exclusive economic zones, it is desirable to continue and intensify the research activities of the Center for the improvement of small-scale fishing gear and for the study of the state of fishery resources in the region. The Training Department therefore initiated research programs on marine fisheries in 1980. The newly organized Research Unit of the Department started preliminary studies on fish stock assessment and fishing ground surveys in the Gulf of Thailand as well as on fishing gear improvement.

At its thirteenth meeting in November 1980, the Council approved the revised Plan of Operation and Working Program of the Department, which included research programs and the establishment of the Research Division of the Department in 1981. The Training Department therefore formulated its research activities into three major areas, namely,

- a. Stock assessment and fishing grounds survey;
- b. Fishing gear and craft improvement; and
- c. Statistics and socio-economics.

The Department further revised its research programs when the Council, at its sixteenth meeting in 1983, approved the new Plan of Operation. The research function includes research and studies on fisheries resources and fishing grounds, fishing gear improvement, statistics and socio-economic aspects related to marine capture fisheries in order to facilitate the management and rational use of the fishery resources in Southeast Asian

waters. In accordance with its Program of Work (1984 to the present), the Department will conduct research in three major fields, as follows:

- a. Resource evaluation;
- b. Fishing gear technology; and
- c. Statistics and socio-economics.

The resource evaluation research programs include the fishery stock assessment and the fishery oceanographic study of nearshore and offshore fishing grounds in the Southeast Asian waters. Special emphasis is given to the assessment of pelagic and demersal resources in the region. The Research Division has compiled a list of important pelagic fishes in Southeast Asia (TD/MP/13) as well as a list and descriptions of the economically important marine fishes in the region (TD/TRB/17). The present status of pelagic fisheries and resources in the Gulf of Thailand was reviewed (TD/TRB/8 and TD/JRT/5) and a study on estimating the optimum mesh size of purse seines was conducted (TD/JRT/16), in cooperation with the research staff of the Thai Department of Fisheries. The assessment of demersal fish stocks along the Indian Ocean coast of Thailand and Peninsular Malaysia was carried out (TD/CTP/18,22,27 and 29) as well as the study on the changes in the stock density of demersal fishes and invertebrates in the Gulf of Thailand (TD/JRT/7 and TD/Res/5). In addition, in attempts to evaluate the potential fishery resources in Southeast Asian waters, the data obtained from the surveys by M.V. CHANGI (in cooperation with MFRD) and M.V. PAKNAM were computerized at the Department for further analyses. Efforts were also made to study the multispecies problems in the demersal fisheries and fish stocks in the Gulf of Thailand (TD/JRT/4) as well as to introduce tagging methods as a means to identify shared stocks in the region (TD/SP/10). A number of microcomputer programs for fish stock assessment, in particular for the PC-1500 microcomputer that is available in the region, were developed to assist the national scientists in their studies (TD/SP/1-2,4-9).

As for fishery oceanography, that is study of the ocean conditions that affect the productivity of the fishing grounds, surveys were carried out on the oceanographic conditions in both nearshore and offshore areas for comparison. A comprehensive study of the conditions of trawl fishing grounds in the Gulf of Thailand and Andaman Sea (TD/CTP/11,19,23,31) was

conducted. The coastal and estuarine areas which are of importance to the small-scale fisheries were also surveyed in order to provide indicators for the nearshore conditions (TD/CTP/24, 28). Special emphasis was given to surveys of suitable conditions for constructing artificial reefs, which are included in the fishery development programs of many SEAFDEC Member Countries in the region.

The study on fishing gear has been a major research activity of the Training Department since its establishment. During the 1970s, owing to limited manpower and funds, the study on fishing gear concentrated on the applications of modern fishing technology and on traditional fishing gear currently employed by the fishermen in the region (see TD/RP/1; CTP/1,4,6, 8,10; MP/5 and 10). After the establishment of the Research Division in 1981, the study on fishing gear was reoriented towards the improvements of the fishing efficiency of traditional fishing gear and included experiments on new types of fishing gear. Considerable progress was made during the exploratory fishing by using bottom vertical longline for deep water species, collapsible traps for coastal species and squids fishing with luring lights and lift net. (TD/CTP/16,21; RES/2-3; JRT/8; MP/8-10,14-15). Experiments were also carried out on the design of shrimp trawl nets and on the use of mud-skis for trawling on uneven muddy grounds of the sea, however, with little success.

As part of the program on small-scale fisheries development, the research staff of the Department carried out surveys on traditional fishing gear employed by local fishermen in Thailand. A monograph on these fishing gear will be published by the Department in July 1986. A similar survey was carried out along the west coast of Peninsular Malaysia and it is hoped that a companion volume on the fishing gear of Malaysia will be issued in the near future.

The exploratory fishing surveys, conducted in conjunction with the training cruises by M.V. PAKNAM, yielded satisfactory results. Rich fishery resources at the Vanguard Bank in the southern part of the South China Sea were discovered as well as fishing grounds for marlin at the outer part of the Gulf of Thailand (see TP/MP/7 and TD/JRT/3).

Regarding statistics and socio-economics, the Department continued to compile the annual fishery statistics supplied by countries bordering the South China Sea for inclusion in the

Fishery Statistical Bulletin printed by the SEAFDEC Secretariat. On the socio-economic aspect of small-scale fisheries, several surveys have been carried out since 1981 (TD/CTP/13). The role of fishery cooperatives and fishermen's groups in Thailand was also investigated (TD/CTP/12 and 20). In addition, since many countries in the region wish to develop coastal aquaculture as an alternative employment for small-scale fishing communities, a study was made on the economic returns of small-scale capture fisheries and coastal aquaculture in Thailand to serve as a guideline in planning fishery development in coastal areas (TD/CTP/30).

In addition to the research programs conducted by the staff of the Department, cooperative research projects were also implemented by the Department with other organizations/agencies such as the systematic trawl surveys off the Mekong River Plume, in cooperation with the Basinwide Fishery Study of the ESCAP/Mekong Project, in 1973; the training for surveys of pelagic fishery resources in the South China Sea employing acoustic techniques in cooperation with SCSP/NORAD, in 1975; the joint oceanographic and exploratory fishing surveys with the Nagasaki University on board T.V. Nagasaki-Maru during 1980-1982; joint surveys with the Thai Department of Fisheries on board R.V. Fishery Research No. 2 in the Andaman Sea, in 1983; joint research programs with the Marine Fisheries Division of the Thai Department of Fisheries on mesh size selectivity of Thai purse seines (1982-1983), analysis of species composition of demersal fishes and invertebrates in the Gulf of Thailand (1983-1984); and recently the joint fishery oceanographic survey in the central Gulf of Thailand with the Thai Department of Fisheries and researchers from Thai universities; and the Thai-Japan-SEAFDEC/TD cooperative research on the mechanism of marine productivity in the Gulf of Thailand with the Ocean Research Institute of the University of Tokyo and the Thai Department of Fisheries in 1984-1985.

The results of the research activities were published by the Department for distribution to Member Countries. The list of these publications is given in the "List of SEAFDEC Publications 1968-1985", issued by the SEAFDEC Secretariat in March 1986 (SEC/CIR/1, Rev. 2).

3. ADMINISTRATIVE AND FINANCIAL ASPECTS

In accordance with the provision of Article 11 of the Agreement Establishing the Center and the Plan of Operation of the Training Department, the Government of Thailand provides lands and buildings, furniture and equipment and services of professional and general service staff for the operation of the Department.

Through an agreement between the Ministry of Agriculture (now Ministry of Agriculture and Cooperatives) and the Ministry of Defense in 1968, a piece of land of approximately 6.5 acres on the west bank of the Chao Phya River, about 35 kilometers from Bangkok, which belongs to the Royal Thai Navy base at Pom Prachulchomklao, Samutprakarn, was allocated as the site of the Department. The Government of Thailand also provided, in 1968, an initial contribution for capital expenditure of US\$ 804,775 for the construction of the office buildings, including a trainee dormitory and living accommodation for staff members as well as other facilities. All buildings and facilities were completed in 1971 and officially opened in 1972, in time for the first two-year regular training course.

As for the services of professional and general service staff, the number of the staff members of the Department increased from eleven personnel in 1969 to 122 personnel at present (June 1986). These include eight professional staff serving as heads of Department/Divisions and instructors, 76 general service staff and 38 ship personnel. The salaries and allowances for these personnel are provided by the Government of Thailand. In addition, the Government of Japan has provided the services of Japanese experts assigned to the Training Department as fishing and marine engineering experts. A total of 37 Japanese experts was sent to the Department, funded by the Government of Japan through the Japan International Cooperation Agency (JICA), from 1969 to 1986 (Annex 4). Twelve additional experts were assigned to the Department from 1976 to 1985 as short-term experts in specific subjects, and two coordinators from JICA served at the Department from 1979 to 1983.

The organization of the Training Department as adopted at the Inaugural Meeting of the Council in 1968 consisted of three divisions, namely, the General Affairs Division, Training Division and Ship Division. In accordance with a revised Plan of

Operation adopted at the thirteenth meeting of the Council in 1980, the General Affairs Division was renamed the Administrative Division and the Research Division was established as a new division of the Department in an effort to expand its research activities. Following the revision of the Plan of Operation and Program of Work approved by the Council at its sixteenth meeting in 1983, the Liaison Office for the Secretariat and the Training Department, and the Finance Division were officially established in 1984. The Department therefore has five divisions at its headquarters at Samutprakarn, with the Liaison Office in the Bangkok Metropolitan area. The organization chart of the Department is given as Annex 5.

The administrative work of the Department is generally carried out by the Administrative Division to support the training activities, transportation, procurement of equipment and supplies, dormitory affairs and day-to-day management of the Department. The financial aspect of management however has been conducted by the Finance Division since its establishment in 1984.

The contributions received by the Training Department from Member Countries, non-member countries and other organizations/agencies in support of the activities undertaken from 1968 to 1985 amounted to a total of US\$ 12.8 million (Table 8 and Fig. 1). Among the SEAFDEC Member Countries, the Governments of Japan and Thailand provided more than 95 per cent of the total contribution, followed by 0.10 and 0.05 per cent from the Governments of Malaysia and the Philippines during 1968-1976, which represented the contribution from the non-host governments to the Center^{1/}.

^{1/} The contributions from the Government of the Philippines were given directly to the Aquaculture Department after 1972. The contributions from the Government of Malaysia were provided directly to the Secretariat after 1976.

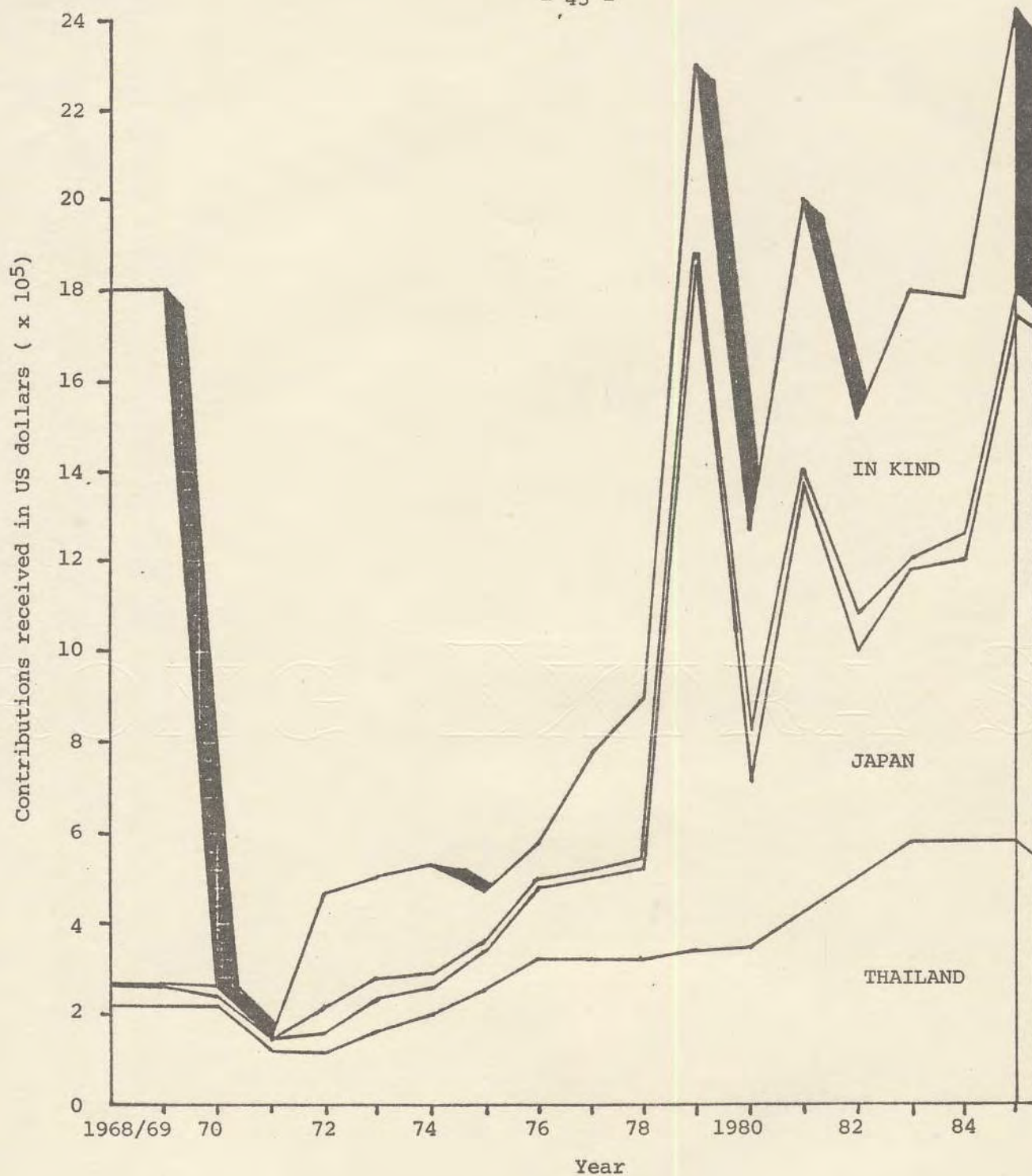


Figure 1. Contributions received by the SEAFDEC Training Department from Member Countries and other sources from 1968 to 1985

Table 8. Summary list of Contributions (in cash) to the SEAFDEC Training Department from Member Countries, non-member countries and other organizations/agencies from 1968 to 1985

Unit : 1,000 US Dollars

Sources \ Year	Year																		Total	%
	1968/69	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985			
A. <u>Member Countries</u>																				
Japan	45	28	25	42	68	53	85	155	179	209	1,504	360	945	487	591	619	1,145	6,540	51.09	
Malaysia	3	2	-	2	2	2	1	1	-	-	-	-	-	-	-	-	-	13	0.10	
Philippines	3	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	7	0.05	
Thailand	216	216	120	118	163	201	257	325	325	318	348	353	426	507	579	584	587	5,643	44.08	
Vietnam	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0.03	
Sub-total	269	250	145	164	233	256	343	481	504	527	1,852	713	1,371	994	1,170	1,203	1,732	12,207	95.36	
B. <u>Others</u>																				
Australia	-	-	-	-	-	9	18	7	8	12	8	-	-	-	-	-	-	62	0.48	
Brunei	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	16	0.12	
Canada: CIDA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	27	0.21	
Netherlands	-	-	-	-	-	-	-	-	-	-	-	49	29	66	47	49	43	283	2.22	
New Zealand	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	5	0.04	
USAID	-	19	3	50	50	-	-	-	-	-	-	-	-	-	-	-	-	122	0.95	
FAO	-	-	-	-	-	-	-	-	-	-	6	7	-	-	-	-	-	13	0.10	
Other organizations	-	-	-	-	-	21	-	-	3	1	1	25	10	2	2	1	-	66	0.52	
Sub-total	-	19	3	50	50	35	18	7	11	13	15	81	39	84	49	50	70	594	4.64	
TOTAL	269	269	148	214	283	291	361	488	515	540	1,559	794	1,410	1,078	1,219	1,253	1,802	12,801	100.00	

The contributions during 1968-1969 represented the initial contributions from Member Countries for the establishment of the Training Department. A large contribution in kind was received from the governments of Thailand and Japan for the construction of office buildings, procurement of M.V. PAKNAM and other equipment. In the years that followed, gradual increases in cash contribution from Thailand and Japan were observed. The peaks of the Japanese contributions as observed in 1979, 1981 and 1985 (Figure 1) however derived from the additional special contributions for the procurement of M.V. PLATOO in 1979 and the repairs of M.V. PAKNAM in Japan in 1981 and 1985.

As for contributions from non-member governments and other organizations/agencies, the Training Department received a total of US\$ 594,000 from 1970 to 1985. Major contributors were the United States of America (US\$ 122,000) during 1970 to 1973 and the Royal Government of the Netherlands (US\$ 283,000) for the regional training courses for fishery extension officers from 1980 to 1985. The governments of Australia, Brunei Darussalam, Canada (through CIDA), and New Zealand also provided fellowships for the regular training of participants from non-member countries of SEAFDEC. The Food and Agriculture Organization of the United Nations (FAO) provided some support to the mission from the Department for assessing the training requirements in the South and Southeast Asian regions in 1979.

The above-mentioned contributions do not reflect the contributions in kind provided to the Department by the governments of Thailand and Japan. The Government of Thailand provided budget for the construction of buildings and facilities to enable operation of the Department, rent-free use of these office buildings, provision for the rent of the Liaison Office in Bangkok and the secondment of a fishery official to serve as the Department Chief. On the other hand, the Government of Japan has provided contributions in kind of about 6 million US dollars since 1968 for M.V. PAKNAM and for services of experts assigned to the Department (Annex 4) and equipment accompanying experts, fellowships for regular trainees' visits and fellowships for training of selected staff member of the Department in Japan. The contributions (both in cash and in kind) received by the Department from its inception to 1985 therefore total 19.55 million US dollars.

As regards expenditures, Figure 2 shows the allocation of audited expenditure by major parts from 1968 to 1984. (The audited financial statement for 1985 of the Department has not yet been received from the official auditors, Ernst & Whinney, of the Department.) On an average, the Part I expenditures, which covered the project activities (training programs, meetings, research programs and publications), accounted for 33.3 per cent; Part II expenditures (non-project activities, general administration, salaries and allowances for staff as well as provision for the staff termination fund) represented 53.1 per cent; and Part III expenditure (capital investment), 13.6 per cent.

The exceptionally high capital expenditures in 1980 and 1981 includes the procurement of M.V. PLATOO and major repairs of M.V. PAKNAM in Japan. In addition, the office buildings of the Department, ten years after construction, also required major repairs in 1982. The improvements of the Department's facilities, including the construction of an asphalt road to the Research Division and the Dormitory, and the introduction of computer system for finance and research records, also took place during 1982 to 1985.

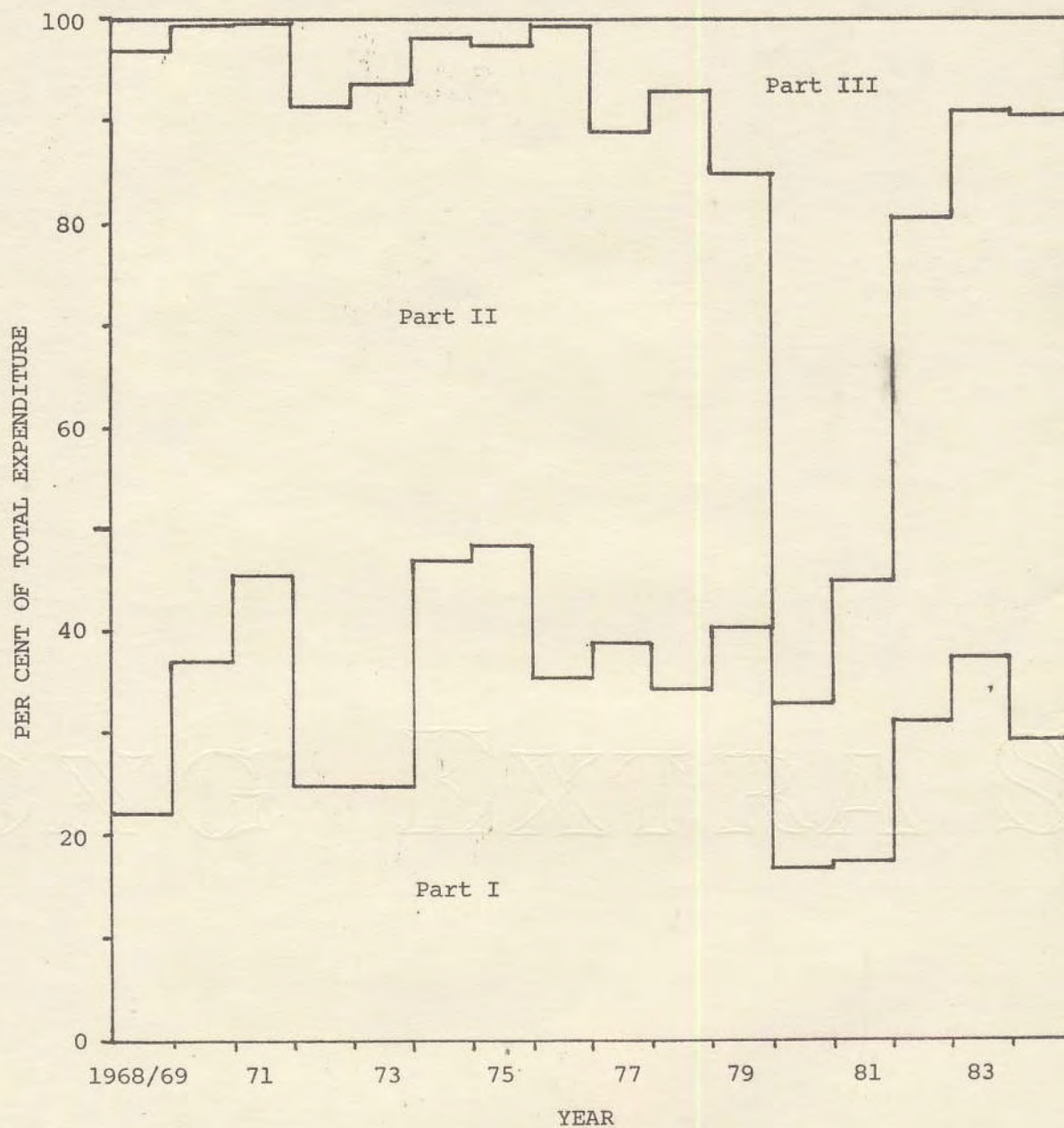


Figure 2. Percentages of major expenditures of the Training Department, 1968-1984

4. PROBLEMS AND CONSTRAINTS

Although the operations of the Training Department have generally been carried out smoothly in accordance with the Council's approval of its program of activities, the Department, like other organizations, faces a number of problems and constraints that are hindering its development. These deserve the attention and consideration of Member Countries in order to improve the Department's role in fishery development in the region.

The problems and constraints of the Training Department can be categorized as follows:

1. High cost of regular training programs;
2. Shortage of qualified trainees;
3. Recognition of the graduates' certificates of achievement;
4. Limitations on training of local fishermen;
5. Limitations on research programs; and
6. Limitations on fishery resource surveys.

4.1 High cost of regular training programs

The regular training programs are organized as the main activity of the Training Department in order to train fisheries technicians of Member Countries, which is stipulated as a primary function in the Plan of Operation of the Department.

In providing the long-term training courses, the Department has to shoulder not only training expenses but also living expenses including food and accommodation, clothing, medical treatment and welfare, sports and recreation as well as daily stipends to cover nearly all requirements of the trainees throughout the training period. The cost per head per day for regular trainees therefore has increased in direct proportion to the cost of living since 1970. The average total cost per man-month in the early 1980s was about US\$ 330. In 1985, however,

the average cost increased to US\$ 12.23 per head per day. It is estimated that it will reach US\$ 16.43 in 1986 if the standards of training and living conditions at the Dormitory are to be maintained.

Table 5 shows that a total of 4,608 man-months in regular training has been conducted for trainees from Member Countries. In addition, 642 man-months in short-term training were also organized by the Department, at an average expenditure of US\$ 1,050 per man-month. The costs of organizing the training programs of the Department from 1970 to 1985, expressed in terms of benefits gained by each Member Country, are as follows:

a. Malaysia (1,190 m/m)	\$ 433,020
b. Philippines (1,170 m/m)	\$ 429,300
c. Singapore (208 m/m)	\$ 80,160
d. Thailand (2,514 m/m)	\$ 1,196,820
e. Vietnam (168 m/m from 1971 to 1976 only)	<u>\$ 45,540</u>

Total US\$ 2,184,840

The fellowships for such training were granted by the Government of Thailand for Thai trainees and by the Government of Japan for trainees from other Member Countries in Southeast Asia. These fellowship funds have been increasingly limited by the budget constraints faced by both governments. Attempts have therefore been made to reduce the training costs by reducing the regular training period from a two-year to 18-month program in 1986/87, with a view to establishing a one-year training program in the near future.

4.2 Shortage of qualified trainees

The main objective of the regular training program is to upgrade the knowledge and experience of the fishery personnel of Member Countries in the fields of marine fishing technology and marine engineering. It is envisaged that, after graduation from the Training Department, these participants would be actively involved in training of other personnel at the national

level. The applications for fellowships therefore require endorsement of the Council Directors for the countries concerned, and, in most cases, the accepted trainees are officials of the Department of Fisheries of the respective Member Country.

It is noted however that Member Countries face increasing difficulties in selecting qualified nominees to the regular training programs. For example, Singapore did not send trainees to the regular programs from 1976 to 1979 and in 1986. The Philippines has had difficulty in sending qualified trainees to the marine engineering courses. Malaysia and Thailand have also had problems in nominating qualified trainees to both courses.

The shortage of qualified nominees derives from two main factors. Firstly, the Member Countries concerned are faced with the problem of shortage of manpower within their Departments. The secondment of officials, even a small number, for long-term training thus increases the burden on the remaining staff engaged in carrying out the national programs. Many officials also do not wish to attend a long-term non-degree training program in exchange for their annual promotion at home. This applies in particular to those who have already obtained degrees and are best qualified for practical training. Secondly, in an attempt to maintain the standard of training programs while reducing the training period, the Training Department has revised the qualifications of the nominees to be at least graduates of national fisheries training centers or universities or fishery officers with three years' experience in the field of training. Such qualifications will ensure an adequate background in the course subjects and thus assist trainees in keeping up with the training courses offered by the Department. Unfortunately, however, these factors remain a constraint in nominating and, subsequently, accepting trainees for the regular training program of the Training Department.

4.3 Recognition of the graduates' certificates of achievement

After completion of the regular training courses, each graduate is awarded a certificate of achievement by the Training Department. It is regrettable however that this certificate does not receive official recognition, neither for promotion nor as a valid document certifying the graduates' achievements, by any

government agency in the Member Countries. As a result, many trainees are discouraged from enrolling for long-term training, giving rise to mental problems during and after the course. More important, a number of graduates resigned from government service after their training to engage in other occupations. A preliminary survey on the current assignments of the graduates in their respective departments in Member Countries in 1984 indicated that only 52 per cent of the former trainees were still actively involved in fishery work after graduation from the Department.

The problem of the certificate's recognition was brought to the attention of the SEAFDEC Council as early as 1973. At the sixth meeting of the Council in 1973, the Secretary-General informed the Council that the Ministry of Communications of Thailand indicated favourable consideration with respect to the recognition of the certificate of proficiency from the Department. The other Member Countries in Southeast Asia however requested for more details of the curricula. At the following meeting of the Council, the Director for Malaysia pointed out that the question of recognition of the certificate depended on the requirements of the relevant laws existing in the respective Member Country and suggested that the Department formulate a training program that will be acceptable to the Member Countries (Para. 25 of the Report of the Seventh Meeting of the Council).

The Department has attempted to revise the curricula of the training programs at least three times since 1975. However, it has not been possible for the Department to formate a program that will be acceptable by all Member Countries for granting recognition of the Department's certificate as a valid certificate of professional/vocational education. For example, some countries require at least three to five years of training both onshore and at sea to qualify for the official certificate at the professional or vocational education level. Owing to the financial and manpower constraints as already discussed in Sections 4.1 and 4.2, the Department has to take the opposite action, i.e. reduction of the training period as well as of the number of days at sea, resulting in the same situation as in 1973.

In order to minimize this problem, the Department has requested all Member Countries in the region to give special consideration to the internal promotion of the officials who have

graduated from the Department in order to compensate the lack of promotion during the training period. The appointment of these officials in the appropriate positions/programs taking into account their knowledge and experience gained from the training courses provided by the Training Department would also stimulate motivation for their work and might thus minimize the problems mentioned in Section 4.2.

4.4 Limitations on training of local fishermen

In order to promote fishery development in particular for offshore fisheries in the region, emphasis has been given to the training of local fishermen in fishing technology, navigation, maritime law, etc. During 1977 to 1983, eight training courses were conducted for Thai fishermen by the Department (see Section 2.2.1). Attempts have been made to expand this activity to other Member Countries. However, in organizing such external training programs, the Department has faced a number of constraints including the counterpart fund from the recipient country and the cooperation of all agencies concerned. At the Fifteenth Meeting of the Council in 1982, the Council Director for Malaysia reiterated the need for the Department to hold close consultations with the authorities of Member Countries in order to avoid misunderstanding on the part of local fishermen regarding the activities of the training vessels in the waters under the respective national jurisdiction (Para. 61 of the Report of the 17th meeting). To date, the Department has to confine this activity to Thai waters, with financial assistance from the Fish Marketing Organization of Thailand under its fishery promotion program.

4.5 Limitation on research programs

The research activities of the Training Department were officially approved by the SEAFDEC Council with the establishment of the Research Division in 1981 (Section 2.5). Although considerable progress has been made, the research programs of the Department have been limited owing to the shortage of manpower and funds.

In planning research programs, special consideration has been given to the existing national research programs in Member Countries and the need to develop research programs that

take the regional characteristics into account in order that the outcome of the research can be used immediately by Member Countries. The Department thus needs the advice of Member Countries, through the Program Committee, on their research requirements and priorities, as well as specific requests from Member Countries for cooperative research projects, in order to avoid duplication of effort. However, in implementing such activities, as requested and later approved by the Council, the Department has to face limitations as regards funds and available research personnel. The research programs are therefore limited to a few subject areas and locations and are further restricted by the availability of experts.

Attempts have been made to expand research activities through cooperation with other national agencies in order to reduce cost and incorporate a multidisciplinary approach to the topic under study. At present, the Training Department conducts research programs jointly with the Thai Department of Fisheries and the Fish Marketing Organization of Thailand. It has not yet been possible to organize similar programs in other Member Countries as would be desirable since specific arrangements would have to be made as regards the counterpart funding for such ventures.

4.6 Limitations on fishery resource surveys

The study on the potential yields and the current exploitation of the fishery resources in the Southeast Asian region is undoubtedly one of the most important subjects for fishery development and management planning. Although Member Countries have, to some extent, conducted resource surveys under their national programs, there are a number of areas that require a systematic survey and exchange of information for the complete understanding of the availability of fishery resources in Southeast Asia.

The Training Department has conducted surveys in the South China Sea and Andaman Sea since 1978. Owing to the high cost involved in employing M.V. PAKNAM (US\$ 1,489 per day in 1985), these surveys were conducted in conjunction with the training cruises, which resulted in limitations on both the area covered and the number of days at sea. In addition, the recent changes in the ocean regime following UNCLOS III, i.e. the

declaration of the exclusive economic zones (EEZs) of Member Countries and the subsequent regulations as regards the expedition and exploitation of marine resources in the EEZs, have created constraints for further surveys by the Department's vessels.

It is anticipated that this activity may be resumed in cooperation with ASEAN member countries, of which four out of six are also SEAFDEC Member Countries, in order to determine the current status of marine fisheries in the region and future opportunities for their development.

5. CONCLUSION

The SEAFDEC Training Department was established in 1968. Its main functions as stipulated in the Agreement Establishing the Southeast Asian Fisheries Development Center are: "(1) to train fisheries technicians of the Southeast Asian countries; and (2) to study such fisheries techniques as are suited to the fisheries in Southeast Asia." In the late 1970s, the Department, with the approval of the Council, started its research activities to fulfil the third function of the Center's, i.e. "to develop fishing grounds and to conduct investigation of fisheries resources and research in fisheries oceanography in Southeast Asia".

From 1970 to 1985, the Training Department organized eleven long-term training programs which comprised of 20 regular training courses in marine fishing technology and in marine engineering. In addition, 31 short-term courses in fishing technology, marine engineering, fisheries oceanography, fishery extension services, fishery statistics and fish stock assessment and ten technical meetings were organized by the Department. A total of 1,372 fishery personnel from the region and other areas attended these courses/meetings. An equivalent of 5,250 man-months in training was provided by the Department to Member Countries in Southeast Asia.

In addition to the training/meeting programs, the Department has conducted research and surveys on fishing gear and fishing grounds in the region. The study on fishing gear aimed to improve the fishing efficiency of the traditional fishing gear employed by local fishermen in the region. The Department has also introduced modern fishing methods that are relevant to the region such as modern purse seining, bottom vertical longlining, squid fishing by luring lights and lift net, collapsible traps and others that are now used by the commercial fisheries in many Member Countries. The resource surveys in the South China Sea and Andaman Sea also discovered important fishing grounds which expanded the marine fisheries activities and thus increased fishery production in the area.

In relation to the training and research programs, a series of technical publications such as text books and reference papers, manuals and research papers were published and issued by the Department for use by Member Countries. Training aids in

the form of both printed lecture notes and audio-visual materials were also produced by the Department and are extensively used by training centers in the region.

At the Third Ministerial Conference for the Economic Development of Southeast Asia, held in Singapore from 9 to 11 April 1968, H.E. Mr. Pote Sarasin, then Minister of National Development and the Leader of the Thai Delegation, stated that:

"It is our hope and expectation that the Center will be able to play a useful and constructive role in the development of marine fisheries for the benefit of all Southeast Asian nations, and will thereby be able to fulfil all its objectives, including the provision, of a partial solution to the problem of food production, which will assist each and every developing nation of Southeast Asia."

Eighteen year have elapsed since the day on which the Training Department started its operations to fulfil the hope and expectations expressed above. Whether these has been achieved can best be answered by the Member Countries themselves.

CURRICULA OF THE REGULAR TRAINING COURSES
IN FISHING TECHNOLOGY AND MARINE ENGINEERING
ORGANIZED BY THE SEAFDEC TRAINING DEPARTMENT

A. FISHING TECHNOLOGY COURSE:

		Unit : hours		
No.	Subject	Two-year program (1977-1985)	1.5 year program (1986/87)	Tentative one-year program
1.	Basic science	70 (7L*)	-	-
2.	Fisheries in general	20 (2L)	-	-
3.	First aid at sea	40 (1L + 1P)	-	-
4.	Fishery biology	20 (2L)	20 (2L)	10 (1L)
5.	Fishery oceanography	40 (1L + 1P)	35 (2L + 0.5P)	15 (1.5L)
6.	Fishery statistics	-	25 (1L + 0.5P)	10 (1L)
7.	Fishery economics	55 (4L + 0.5P)	20 (2L)	10 (1L)
8.	Fishing boats	20 (2L)	20 (2L)	15 (1.5L)
9.	Fishing gear and methods	720 (30L + 14P)	520 (19L + 11P)	400 (16L + 8P)
10.	Post-harvest technology	55 (4L + 0.5P)	90 (6L + 1P)	10 (1L)
11.	Electronics	60 (3L + 1P)	60 (3L + 1P)	25 (1L + 0.5P)
12.	Acoustic equipments	20 (2L)	35 (2L + 0.5P)	20 (2L)
13.	Marine meteorology	60 (3L + 1P)	25 (1L + 0.5P)	25 (1L + 0.5P)
14.	Navigation	290 (14L + 5P)	155 (8L + 2.5P)	130 (7L + 2P)
15.	Seamanship	110 (5L + 2P)	40 (1L + 1P)	25 (1L + 0.5P)
16.	Marine Fishery extension	-	45 (3L + 0.5P)	25 (1L + 0.5P)
Total onshore training		1,580 (80L + 26P)	1,090 (52L + 19P)	720 (36L + 12P)
Shipboard training (days)		180	150	120

* 1L equivalent to 10 lecture hours
1P equivalent to 30 practice hours

B. MARINE ENGINEERING COURSE:

		Unit : hours		
No.	Subject	Two-year program (1977-1985)	1.5 year program (1986/87)	Tentative one-year program
1.	Basic science	150 (15L)	-	-
2.	Fisheries in general	20 (2L)	-	-
3.	First aid at sea	40 (1L + 1P)	-	-
4.	Seamanship	60 (3L + 1P)	35 (2L + 0.5P)	25 (1L + 0.5P)
5.	Fishing boats	20 (2L)	20 (2L)	15 (1.5L)
6.	General engineering	200 (11L + 3P)	85 (4L + 1.5P)	70 (4L + 1P)
7.	Marine engineering	220 (10L + 4P)	180 (9L + 3P)	130 (7L + 2P)
8.	Internal combustion engine	320 (14L + 6P)	195 (9L + 3.5P)	130 (7L + 2P)
9.	Electronics	130 (7L + 2P)	175 (7L + 3.5P)	100 (4L + 2P)
10.	Marine electricity	130 (7L + 2P)	120 (6L + 2P)	90 (4.5L + 1.5P)
11.	Refrigeration	130 (4L + 3P)	130 (7L + 2P)	70 (4L + 1P)
12.	Workshop technology	160 (4L + 4P)	150 (6L + 3P)	90 (3L + 2P)
Total onshore training:		1,580 (80L + 26P)	1,090 (52L + 19P)	720 (36L + 12P)
Shipboard training (days):		180	150	120

FISHERY TRAINING REQUIREMENTS IN SOUTHEAST ASIA*

1. The new international Convention on the Law of the Sea gives coastal states the right and responsibilities for the management, conservation and rational utilization of the fishery resources in their exclusive economic zones (EEZs). However, many of these resources, as well as inland fishery resources, including many of those harvested by small-scale fishermen of Southeast Asian countries, are already fully exploited or over-exploited and in need of a revised approach to management.

2. At the recent FAO World Conference on Fisheries Management and Development (Rome, 10-19 October 1983), it was recognized that many countries are experiencing difficulties in managing their fisheries. It was suggested that there should be a specific action program dealing with management covering marine and inland fisheries, both large-scale and small-scale (COFI/83/12, Add. 2). This program might have inter alia five elements:

- technical assistance
- training
- research
- statistics
- regional cooperation, particularly with regard to shared stocks.

3. In his opening address to the World Conference, the Director-General of FAO stated that:

"Training provides fertile ground for cooperation. It is the seed of development. Without training, without access to facilities and skilled instructors, without extension support for 'on the job' experience, any sustained effort to raise fisheries productivity is, in my view, destined to fail....

* Annex 4 of the Report of the Post-graduate Seminar on Fishery Training Requirements, Bangkok, 15-18 November 1983.

An important feature and the one that I believe is directly relevant here is our encouragement of self-reliance and cooperation in training among developing countries. We have modified that old Chinese adage "Give a man a fish and he will eat for a day, but teach a man to fish and he will eat every day". Even more can be gained, in our view, by first teaching a man to fish, then helping him to pass that experience on to others".

4. In fact, a central objective of all developing countries is greater self-reliance in skills required for fisheries management and development. Therefore, the time has now come to seek a more systematic approach in planning and implementing training programs and their integration with development planning. It is also recognized that the responsibility for large-scale training must lie at national level, with international assistance supplementing this as necessary but being mainly used to assist in advanced-level training. Training must also be associated with social development where necessary. There must be greater participation at community level in determining training needs, particularly in small-scale fisheries and aquaculture.

5. A number of training activities were discussed at the World Conference, including the following:

- assessment of manpower needs and planning of fisheries education and training activities at both national and regional levels;
- management-level training at advanced level in all disciplines concerned with the protection, catching and utilization of the resources;
- strengthening existing training institutes through training of training and extension staff in proven training techniques and methodologies;
- training of senior-level national staff to strengthen the national aquaculture programs;
- assistance to improve teaching and training methodologies of national development and extension staff, as well as the design and monitoring of on-the-job training programs for selected fishing communities in marine and inland small-scale fisheries; and

- training of senior and intermediate level fisheries staff in improving utilization of fish, as well as the "in plant" training for industry operatives.

6. For the Southeast Asian region, Thomson (1979) reviewed the training requirements in the field of fisheries. He identified four target groups, namely:

- (1) Government personal, i.e. scientists, researchers, technical officers, instructors, administrators and extension workers;
- (2) Large investment companies, i.e. vessel captains, engineers, fleet managers, plant managers, ships' husbandmen, fish processors, plant engineers;
- (3) Small-scale and traditional fisheries, i.e. small-boat fishermen, their sons and families, fishing cooperatives, small fish farmers;
- (4) Workers in allied industries, i.e. fish curers, salt producers, boat builders, net makers, fish transport and retail workers.

7. In terms of numbers involved and training requirements, there are enormous differences between the various groups. The small-scale fisheries and allied support industries are the sectors with by far the greatest numbers involved. From the socio-economic point of view, these are the sectors which merit most support for training and development.

8. The subject matter of fisheries training programs also varies with the level of training and the particular needs of the industry. Thomson suggested that emphasis should be placed on building up few centers of competence for higher fisheries education, and concentrate other resources on making the remaining fisheries schools into practical or vocational training institutes. In addition, new subjects related to the present problems that affected the fisheries, such as pollution, energy crisis, rural development and modern technology, should be added to the training curricula in order to equip fishermen and fishery officers with technical and socio-economic solutions.

9. At present, there are 11 national fishery training institutions and one regional training center in Southeast Asia (SEAFEC 1979, p. 227). All the institutions are government supported, while some of them have been established with international or bilateral assistance. At the Consultative Meeting on Fisheries Education and Training in Southeast Asia (Bangkok, 14-18 May 1979), organized by the SEAFDEC Training Department, the participants identified the training requirements as follows.

- (a) training of operatives for deep sea, offshore, coastal and inland fishing;
- (b) training of administrators and managers;
- (c) training of extension workers; and
- (d) training of instructors (SEAFDEC, 1979, Para. 12).

10. The Meeting also recognized the need for the training programs to be an integral part of the country's fishery development plan. The Meeting agreed that components necessary for the success should be adequate duration of training, equipment, competent instructors and commitment of trainees (Para. 44).

11. The Meeting agreed that the fisheries of Southeast Asia would face many formidable programs in the future. The situation in rural fishing villages involves complex interwoven factors of a technical, social and economic nature. The need to develop post-harvest technology at the grass-roots level to raise the income of these communities was also recognized. Training by demonstration in the villages is much needed. The merits and demerits of institutional and non-institutional training were discussed and the Meeting agreed that a combined approach was necessary to deal with different circumstances in terms of the level of training required and the needs of the clientele (Para. 20, 60-61).

12. The Meeting recommended that, among others, priority should be given to the training of instructors, extension workers, administrators, managers and selected fishermen (Recommendation No. 10, Para. 62).

13. The Meeting also recommended that a further meeting (on fisheries education and training in Southeast Asia) should be convened in the region in order to ascertain the progress made in this field (Recommendation No. 12, Para. 62).

14. Since 1979, a large number of technical training programs were organized by many international/regional/national agencies in the region. Reviews of these programs were published by ICLARM in late 1982 (Maclean 1982).

15. In reviewing the training in tropical fisheries science, Munro (1982) noted that: "throughout the tropics, fisheries departments or administrations are faced with problems of development, assessment and management of fisheries... This is due to, the fact that educational machineries have been unable to keep pace with specialized demand for highly trained fisheries scientists... Nevertheless, it is time that national and international agencies recognize that no amount of international training programs overseas will ever contribute significantly to development unless the recipients are themselves given the opportunity to become scientists or educators at home".

16. It should also be noted that the termination of the UNDP/FAO South China Sea Fisheries Development and Coordinating Programme (SCSP) at the end of 1983 will undoubtedly affect the training programs in this region. During 1975-1983, SCSP organized 27 training courses and 31 workshops/seminars in the region which provided opportunities for the fisheries scientists/officers in the region to exchange their experiences and thus upgrade their technical know how. Future arrangements for similar training/workshops can only be assessed after consultation with all the parties concerned.

17. As for SEAFDEC's role in fisheries training programs, Matics (1982) provided a summary of SEAFDEC's activities for training in the fields of marine fishing technology, marine engineering, extension services, fish post-harvest technology and aquaculture. In addition, the SEAFDEC Training Department also organized training courses in fishery statistics, stock assessment methodology, coastal navigation and seamanship, marine electricity and in situ training-cum-demonstration on modern purse-seining for local fishermen in order to serve the immediate needs of the Member Countries.

18. Although the needs to train skilled workers for the fishing industry and small-scale operatives are generally accepted, the difficulties in providing institutional training were also recognized. A more practical approach is needed to train fishermen and fishery industry personnel, such as on-board training-cum-demonstration as now provided by the Training Department or direct technical advice to commercial fish processors as conducted by the Marine Fisheries Research Department in Singapore. The Aquaculture Department of SEAFDEC also conducts training and extension programs for local fishfarmers in close collaboration with the Bureau of Fisheries and Aquatic Resources (BFAR) of the Philippines.

19. The present Seminar is directed to assess the fisheries training requirements in Southeast Asia. The participants to the Seminar are invited to discuss the subject matters required, the level of trainees, the duration of training, and the expected outcome of the training courses. Specific recommendations should be made to guide the institutions concerned, at both national and regional levels, for further modification of their training programs in order to better serve the immediate and urgent needs of the SEAFDEC Member Countries in Southeast Asia.

20. Finally, the participants are requested to consider:

"Are existing training programs provided by the Training Department adequate or should we be seeking to change them or introduce new emphases?"

POSTSCRIPT

This paper was prepared to provide background for discussion at the Post-graduate Seminar on Fishery Training Requirements organized by the Training Department in 1983. In view of the changing requirements and conditions of the fishery development in the region, the Member Countries are also requested to consider and to advise the Training Department on the question raised in Para. 20 for future programs.

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PRINCIPAL PARTICULARS OF THE TRAINING VESSELS
OF THE SEAFDEC TRAINING DEPARTMENT

	<u>M.V. PAKNAM</u>	<u>M.V. PLATOO</u>	<u>M.V. PLALUNG</u>
Year built:	1968	1980	1968
Year acquired:	1969	1980	1982
Length overall (m)	41.80	23.67	17.00
Length registered (m)	37.00	20.50	17.00
Breadth (moulded) (m)	8.50	5.90	3.50
Depth (moulded) (m)	4.40	2.25	1.20
Draft (full load) (m)	3.60	2.00	1.20
Gross tonnage (tons)	386.82	65.47	17.06
Main engine (PS)	1000	500	260
Max. trial speed (kts)	12.13	11.238	9.00
Service speed (kts)	10.5	9.00	8.30
Capacity (m ³): Fuel oil	103.94	19.00	1
Fresh water	71.53	9.60	4
Fish hold	28.66	16.32	-
Complement (persons)	54	16	15

List of long-term and short-term Japanese experts assigned
to the Training Department from 1969 to 1986

No.	Name	Post Title	Period
1.	Dr. Takashi Ino	Deputy Chief of the Training Department and concurrently Deputy Secretary-General	23 Mar. 1969 - 23 Mar. 1973
2.	Mr. Tomeyoshi Yamazaki	Fishing Technology Instructor	30 Mar. 1969 - 31 Aug. 1984
3.	Mr. Yasumasa Nishioka	Chief of Fishing Section	31 Mar. 1969 - 14 Sept. 1974
4.	Mr. Takashi Yamamoto	Marine Engineering Instructor	31 Mar. 1969 - 14 Sept. 1974
		Chief of the Training Division	29 May 1976 - 28 May 1979
5.	Mr. Kazushiko Kitagawa	Instructor in Navigation	31 Mar. 1969 - 16 Mar. 1974
6.	Mr. Akira Hashimoto	Captain of M.V. PAKNAM	25 June 1969 - 25 June 1972
7.	Mr. Takeo Tojo	Chief Engineer of M.V. PAKNAM	29 June 1969 - 29 June 1972
8.	Mr. Shigeo Kobayashi	Masterfisherman of M.V. PAKNAM	29 June 1969 - 29 June 1972
9.	Mr. Ryo Takashima	Chief Operator of M.V. PAKNAM	29 June 1969 - 29 June 1972
10.	Mr. Kiyoyasu Miyahara	Chief Officer of M.V. PAKNAM	29 June 1969 - 29 June 1972
11.	Mr. Akira Wada	Electronics and Telecommunication Instructor	29 June 1969 - 29 June 1972 28 Mar. 1976 - 31 Mar. 1979

No.	Name	Post Title	Period
12.	Dr. Matsatsune Nomura	Chief of the Training Division	31 Aug. 1969 - 30 Mar. 1972 31 Aug. 1973 - 11 Nov. 1975
13.	Mr. Hiroshi Mizuno	Marine Engineering Instructor	1 Apr. 1972 - 30 Mar. 1975
14.	Mr. Hiromi Gomyo	Captain of M.V. PAKNAM	1 June 1972 - 31 July 1975
15.	Mr. Shojiro Tamaru	Chief Engineer of M.V. PAKNAM	1 June 1972 - 31 July 1975
16.	Mr. Kakusuke Nagayama	Chief Officer of M.V. PAKNAM	1 June 1972 - 31 July 1975
17.	Mr. Tetsuhisa Nagasaki	Electronics and Telecommunication Instructor	17 July 1972 - 17 July 1975
18.	Mr. Tadashi Saito	Chief Operator of M.V. PAKNAM	21 July 1972 - 21 July 1975
19.	Mr. Hachiro Fujikawa	Masterfisherman of M.V. PAKNAM	24 Sept. 1972 - 14 Sept. 1975
20.	Dr. Shigeaki Shindo	Deputy Chief of the Training Department and concurrently Deputy Secretary- General	16 Mar. 1973 - 18 Mar. 1974 3 July 1976 - 23 July 1984
21.	Dr. Otohiko Suzuki	Fishing Technology Instructor	10 Aug. 1976 - 9 Sept. 1979
22.	Mr. Chuichi Miyata	Masterfisherman of M.V. PAKNAM	15 May 1976 - 14 May 1983
23.	Mr. Masaharu Tanaka	Marine Engineering Instructor	25 Nov. 1976 - 24 Nov. 1979
24.	Mr. Toshifumi Sakurai	Regional Fishery Statistician	20 Apr. 1977 - 20 Apr. 1979
25.	Mr. Shinzo Yamamoto	Marine Engineering Instructor	29 June 1979 - 28 June 1982

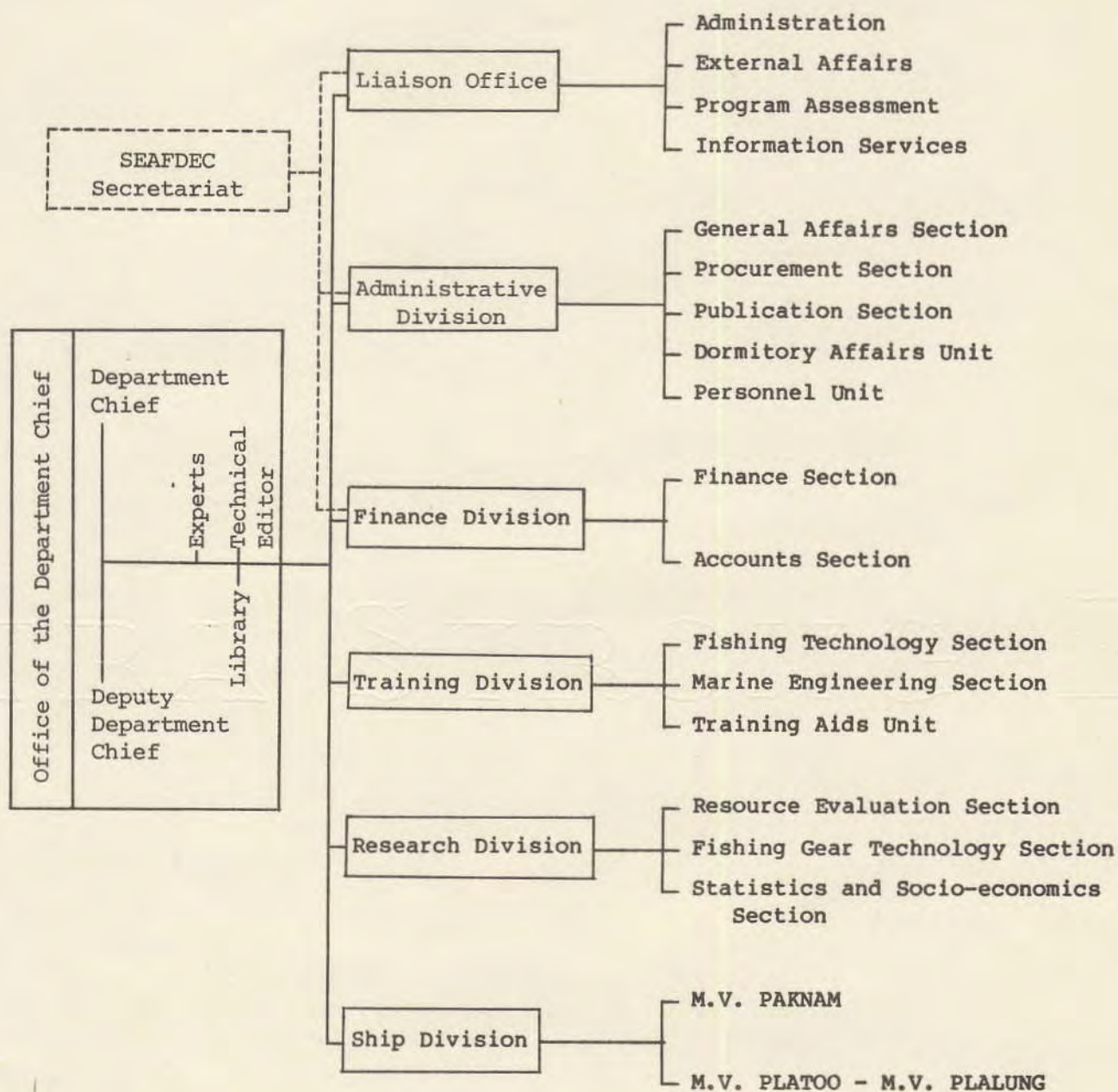
No.	Name	Post Title	Period
26.	Dr. Keishi Shibata	Fishing Technology Instructor	11 July 1979 - 11 July 1980
27.	Dr. Kozo Takahashi	Researcher on Fisheries Biology and Stock Assessment	11 Nov. 1979 - 6 Nov. 1986
28.	Mr. Mikihisa Sekioka	Marine Engineering Instructor	1 Feb. 1980 - 31 Oct. 1982
29.	Mr. Masatake Okawara	Fishing Technology Instructor	15 Apr. 1980 - 29 June 1986
30.	Dr. Shigeo Hayase	Expert on Fish Stock Assessment	7 Apr. 1981 - 6 Apr. 1986
31.	Mr. Kazuyuki Tobo	Marine Engineering Instructor	3 Aug. 1982 - 2 Aug. 1985
32.	Prof. Masahiro Yoshizawa	Marine Engineering Instructor	10 Dec. 1982 - 9 Dec. 1986
33.	Mr. Masato Oishi	Masterfisherman of M.V. PAKNAM	24 May 1983 - 23 May 1987
34.	Mr. Masahiro Yamao	Expert in Fisheries Socio-economics	18 Jan. 1984 - 16 Jan. 1987
35.	Mr. Kazuo Inoue	Deputy Chief of the Training Department and concurrently Deputy Secretary-General	24 July 1984 - 23 July 1988
36.	Mr. Yutaka Matsunaga	Marine Fishing Technology Instructor	11 Sept. 1984 - 10 Sept. 1987
37.	Mr. Toshio Imai	Marine Engineering Instructor	11 Dec. 1985 - 10 Dec. 1987

No.	Name	Post Title	Period
	<u>Short-term Experts</u>		
1.	Mr. Yozo Tawara	Expert on test-tank experiments	10 July - 31 Aug. 1976 18 June - 18 Aug. 1978 30 July - 30 Aug. 1979 18 Sept. 1978 - 18 Aug. 1980
2.	Mr. Yasumatsu Miyake	Expert on fishery economics	6 June - 20 July 1977 7 May - 5 Aug. 1979 13 May - 12 July 1980 3 July - 2 Sept. 1981 7 July - 4 Sept. 1982
3.	Dr. Hitoshi Uchiyama	Expert on fish handling and preservation	21 Aug. - 20 Sept. 1978 28 Jan. - 20 Feb. 1980 13 May - 12 July 1980
4.	Dr. Takiyuki Doi	Instructor on stock assessment	11 Nov. - 2 Dec. 1980
5.	Mr. Kazuo Senga	Instructor in fishing gear technology	19 Nov. - 18 Dec. 1980
6.	Mr. Tsutomu Okajima	Instructor in workshop technology	19 July - 30 Aug. 1981
7.	Mr. Keishino Mori	Expert on stationary fishing gear	23 July - 23 Aug. 1981
8.	Mr. Yutaka Matsunaga*	Expert on pole and line fishing	24 June - 23 Aug. 1981
9.	Prof. Tadashi Yamamoto	Expert on fishery statistics	5-26 Aug. 1981
10.	Mr. Tsunetashi Kato	Expert in electricity and refrigeration	7-28 Aug. 1981
11.	Dr. Matsatsune Nomura*	Expert on fishing techniques	7-21 Aug. 1981

* Also served as long-term experts

No.	Name	Post Title	Period
	<u>Short-term Experts</u>		
12.	Dr. Michio Ogura	Expert on fish luring lamp	15-25 Aug. 1981
13.	Dr. Syoiti Tanaka	Expert on fishery resource assessment	10-26 Sept. 1981
14.	Mr. Yaichi Asai	Instructor in refrigeration	20 May - 19 June 1985
	<u>JICA Coordinators</u>		
1.	Mr. Kai Yanaka	Expert Coordinator	29 Jan. 1979 - 30 Apr. 1981
2.	Mr. Ikuo Kameda	Expert Coordinator	26 Apr. 1981 - 25 Apr. 1983

ORGANIZATIONAL CHART OF THE TRAINING DEPARTMENT^{1/}



^{1/} As adopted by the Council at its sixteenth meeting in December 1983.