REPORT ON
THE SEVENTH REGIONAL WORKSHOP
ON FISHERY STATISTICS IN SOUTHEAST ASIA
BANGKOK, THAILAND
17-20 October 1989

THE TRAINING DEPARTMENT
SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER

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REPORT ON THE SEVENTH SEAFDEC REGIONAL WORKSHOP ON FISHERY STATISTICS IN SOUTHEAST ASIA

I. INTRODUCTION

1.   Statistical Workshops have become a regular and valuable activity of the SEAFDEC Training Department, a major outcome has been the publication of the Fishery Statistical Bulletin for the South China Sea Area which is now recognized as an important source of reference for fisheries statisticians concerned with Southeast Asia.

2.   It is however important for the user, that these data should not only be reliable but that they should be consistent with data published and used by other organizations. At the same time the growing number of organizations collecting data is placing an increasing demand on the national authorities for the supply of this information.

3.   It is with a view to tackling these problems, along with some other recent developments which complicate the problem of collecting data e.g. on aquaculture, and joint venture operations, that the SEAFDEC Training Department organized the Seventh Regional Workshop on Fishery Statistics in Bangkok from 17 to 20 October 1989.

4.   The objectives of Workshop were as follows:

   (a) To examine the methods by which statistics are collected in participating countries, their coverage and their reliability;

(b) To consider means to encourage cooperation between statistical collecting agencies e.g. between SEAFDEC and FAO and to examine the possibility of a joint approach to national authorities for data; and

(c) To review special problems in the collection and classification of data.

5. The Workshop was attended by 23 participants from Brunei Darussalam, Hong Kong, Indonesia, Malaysia, the Philippines, Taiwan, Thailand, the Food and Agriculture Organization (FAO), the Indo-Pacific Tuna Development and Management Programme of FAO (FAO/IPTP) and the FAO Regional Office for Asia and the Pacific (FAO/RAPA). Observers from the Eastern Marine Fisheries Development Center (EMDEC) and the FAO/UNDP Network of Aquaculture Centres in Asia (NACA) also attended the Workshop. The list of participants and observers is shown as Annex 1.

6. The opening address was given by Dr. Thiraphan Bhukaswan, Secretary-General of SEAFDEC. After welcoming the participants to the Workshop, he requested the active participation of those present in discussing needs and advising on ways and means of improving both the standard of fishery statistics in the region and the content of the SEAFDEC Statistical Bulletin. The text of his address appears as Annex 2.

II. ELECTION OF THE CHAIRMAN, TECHNICAL-SECRETARY, VICE-CHAIRMEN AND RAPPORTEURS

7. The Workshop elected Mr. Kazuo Inoue, Deputy Secretary-General of SEAFDEC, as Chairman and Mr. M.A. Robinson, FAO Senior Fishery Statistician, as Technical-Secretary. The Workshop also appointed a Vice-Chairman and Rapporteur for each major agenda item. The list of Vice-Chairmen and Rapporteurs is shown as Annex 3.

III. ADOPTION OF THE AGENDA

8. The agenda was adopted and appears as Annex 4.

IV. PRESENTATION OF COUNTRY REPORTS AND DISCUSSION

9. Representatives of each country, made a brief present-
ation on the current status of fisheries statistics with special
reference to the type of statistics available and problems and
constraints in their improvement.

10. In **Brunei Darussalam** the agency primarily responsible for
fisheries statistics is the Department of Fisheries. A separate
Fisheries Census is not conducted but incidental information on
fishermen and their status may be yielded by the periodic
Population Census. The Fisheries Department licenses all fishing
gears. This licensing system provides the basis for collection
of catch statistics. Catch statistics are collected from a
sample of the full-time operators of the various gears. In the
case of the trawlers and purse seiners of the industrial fishery
monthly catch details are sought from log-books issued to vessel
owners. In addition to the log-book, landings of the vessels at
the Fish Landing Complex are monitored. Processing of the
fisheries data thus obtained, yields the following statistics:
catch composition by gear, catch of gears by district, month,
year, catch per unit effort of gears, and total catch by
month/year. Although ad hoc socio-economic studies have been
conducted, a systematic socio-economic survey has not been
undertaken. Marketing data are collected from the country's
seven marketing outlets on government working days.

11. The following are the problems and constraints affecting
fisheries statistics:

- Shortage of staff which makes statistics collection
  one among many duties for staff and leads to delays in
  compilation and processing;

- Statistics are collected only from full-time fishermen who constitute only 23% of the total number of fishermen;

- Low quality of log-book data due to lack of interest by fishermen;

- Defects of the interview method of collecting statistics;

- Lack of systematic organized training in statistics collection; and

- Lack of a separate statistics section in the Department of Fisheries.

12.   In **Hong Kong** fisheries statistics are collected/compiled by the Agriculture and Fisheries Department, the Fish Marketing Organization, the Census and Statistics Department and the Marine Department.

13.   A separate Fisheries Census is not conducted but information on the number of fishing vessels by major methods of fishing and income for the main fishing operations are included in the Population Censuses.

14.   The fisheries statistics available consist of:

- Fishing vessel statistics obtained by a physical enumeration every three years with about 20% of the vessel owners interviewed for additional information. A half-yearly survey of boatyards is also conducted;

- Catch statistics consisting of production statistics and catch and effort statistics;

- Cost and earnings data of the different capture fisheries subsectors obtained from annual surveys;

- Information on the demand, supply and prices of major fisheries products; and

- Aquaculture statistics in respect of establishment, yield and economics.

15. The main problems and constraints are:

- Certain duplication of sampling effort within AFD remains a problem. Different personnel may be collecting data from the same people or groups to serve their own respective purposes. An integrated sampling program for the capture fisheries sector that would better coordinate sampling effort is necessary and has been under consideration; and

- Insufficient attention given to comprehensive computer program documentation which may lead to problems in subsequent revision by other users.

16. In **Indonesia** the Central Bureau of Statisitcs (CBS) is the coordinating body for all statistical activities and has within it a Fishery Statistics sub-division. Due to limitations of staff and budget, however, the development of fishery statistics is the responsibility of both CBS and the Directorate General of Fisheries, with the former responsible for fishery census and the latter for current fishery statistics.

17. The last Fishery Census in 1983 was conducted as part of the Agricultural Census. A Directory of Fishery Enterprises has been prepared as a product of the Census and is being updated annually.

18. The current statistics available consist of:

- The standard survey which covers a variety of statistical items including fishery inventory items, catch and effort data and disposition of catch;

- Fishing vessel statistics of powered and non-powered boats;

- Catch statistics (a) compiled in terms of both establishment approach and landing place approach; and (b) resulting from three types of survey of the number of trips and catch relating to some 30 fishing companies, major fish landing places and marine fishing villages, respectively surveys LI-III;

- Data obtained by a survey on distribution of catch and quantity of fisheries commodities produced;

- Statistics of brackishwater and freshwater culture obtained through sample surveys; and

- Statistics of inland fisheries collected on the basis of the same survey methods as those developed for the L-III marine fishery survey.

19. The fish processing survey is treated as a by-product of the fishery production survey. It does not involve a field survey and is merely an estimation of the disposition of the catch according to the knowledge of district fishery officers. Due to budget limitations only a few fish marketing surveys have been carried out.

20. In **Malaysia**, the main organization concerned with fisheries statistics is the Department of Fisheries.

21.   The first phase of a Fisheries Census of 19 districts comprising 39,665 households was conducted in 1983-84. Its second phase has still not been carried out.

22.   The types of fisheries statistics available consist of:

- Fishing vessel statistics obtained from the vessel licensing register grouped under gears, vessel types i.e., non-powered, outboard powered and inboard powered, tonnage, and horsepower;

- Catch statistics classified under commercial, traditional and offshore fisheries;

- Cost and earnings data for fishery enterprises based on monthly surveys since 1987, for the purpose of analysing the economic performance of the main fisheries;

- Prices of fish comprising ex-vessel, wholesale and retail prices which are further compiled into wholesale and retail value of the catch;

- Data on aquaculture covering freshwater pond and cage culture, brackishwater pond and cage culture, cockle and mussel culture collected by complete enumeration; and

- Data on inland fisheries.

23.   Statistics are now published with a time lag of only one year since 1986. Recently the upgrading and improvement of data collection has been emphasized. The field staff has been increased and in each district the field enumerators have data collection as their sole duty. Processing of data has been expedited by providing personal computers for processing of data at the state level followed by further computerized compilation at national level.

24. The main problems and constraints are:

- Administrative problems such as unfamiliarity of some of the staff with the changes introduced since 1986;

- Delay in receipt of data on imports and exports of fishery commodities, which are collected and compiled by the Department of Statistics; and

- Difficulties in obtaining data and information from fishing vessel owners.

25. In **the Philippines** the Bureau of Agricultural Statistics of the Department of Agriculture is the agency primarily responsible for collection, compilation and release of fishery statistics.

26. The Census of Agriculture and Fisheries is the responsibility of the National Statistics Office and is conducted every 10 years. It was last conducted in 1981.

27. The types of statistics available consist of:

- Fish catch statistics obtained by (a) the Commercial Fishery Survey of the marine fish catch together with prices from vessels of more than 3 gross tons by species, landing center, province and region; (b) the Municipal Fishery Survey or the marine and inland fish catch of vessels of 3 gross tons or less (of the small-scale fishermen) by gear, species, fishing ground and province; and (c) the Aquaculture Survey of a sample of aquaculture operators to provide an estimate of aquaculture production,

- Data on retail prices of fish from a marketing survey of public markets and supermarkets in Manila and public markets in the provinces;

- Data on wholesale prices from a marketing survey of 31 fish landing markets;

- Fishing vessel statistics consisting of the number of vessels by type, tonnage class and gear used, number of accessory craft by tonnage class and total number of fishermen employed, derived from vessel registration records; and

- Data on imports and exports obtained from the Customs Department are processed for publication by the National Census Office.

28.   The main problems and constraints are:

- Inadequate funds to carry out production surveys especially of aquaculture; and

- Lack of trained field personnel.

29.   In **Taiwan,** the primary responsibility for fishery statistics lies with the Directorate General of Budget, Accounting and Statistics and under this agency the Department of Fishery Census undertakes the Fishery Census while the Taiwan Fishery Bureau/Kaoshiung Fishery Administration is responsible for the production of annual fishery statistics.

30.   The Fishery Census is part of the Agricultural Census program within which a committee handles the fishery census which started in 1955 and is repeated every 5 years.

31.   The types of fishery statistics available can be categorized under 4 selected major programs:

- The capture fisheries survey program comprising (a) fishing vessel statistics classified as non-powered and powered fishing craft with the latter further classified into 10 tonnage classes; (b) catch statistics for marine fishery which have recently been reclassified under 3 categories, coastal, near-sea and far-sea in terms of operating distance from shore; and (c) inland fisheries;

- The culture fisheries survey program under which aquaculture statistics are classified under 4 categories, namely, brackishwater culture, freshwater culture, shallow-sea culture and culture in reservoirs;

- The fish market survey program to provide data on quantities marketed and prices realized; and

- The fishery economy survey program started only in 1989 to provide data on commercial fishery enterprises and on fishery households.

32.   The problems and constraints are:

- Insufficient knowledge of statistical survey methods on the part of personnel at the field level and also uncertain data quality due to the use of part-time workers;

- Insufficient cooperation in furnishing data by coastal fishermen due to the latter's low educational level and lack of communication between them and the Government; and

- Lack of funds to provide for computerization at data collecting sites leading to delay and inaccuracies.

33.   In Thailand the National Statistical Office (NSO) not only produces basic statistics at national level but also acts as the coordinating body for all statistical activities of government agencies.   The Fisheries Department (DOF), through it's Fisheries Statistics Section, handles data collection through the survey method or as part of it's administrative functions.

34.   A census of the marine fishery has been conducted twice in 1967 and 1985 jointly by the NSO and DOF.

35.   Types of fisheries statistics available are as follows:

(a) An annual regular Marine Production Survey:

- Production from major fishing gears;

- Production from fishing communities;

- Production from coastal aquaculture;

- Total quantity and value of fish landed by species at major landing places; and

- Fishery industries e.g. shipyards, ice plants, cold storages, processing plants, etc.

(b) An annual regular Freshwater Fish Production Survey:

- Production from freshwater fish farms ponds, paddy fields, ditches, pens and cages;

- Production from luring ponds or small water tanks; and

- Production from reservoirs and lakes, swamps and tanks created under the National Rural Employment Programme.

36.   In addition, data are also available from certain specific Cost and Earnings Surveys and Income and Expenditure Surveys.

37.   The main problems and constraints are:

- Limited number of staff available in relation to the amount of data collected resulting in delays of about 2 years in compilation and reporting;

- Budget constraints resulting in limited personnel and equipment; and

- Reluctance of people to furnish statistical data in spite of assurances of confidentiality.

V.   PROPOSAL FOR A COMMON SYSTEM FOR THE COLLECTION OF FISHERIES STATISTICAL DATA

38.   When first planned the original idea was that the main theme of the Workshop would be to consider proposals for combined SEAFDEC and FAO questionnaires for the collection of fishery statistics.   The advantages of a unified return were explained as:

a)   Reducing the work of the national government in completing two different sets of forms;

b) The provision of the same data to both agencies to the ultimate advantage of users of the data; and

c) The adoption of common standards and definitions.

39.   So far it has not proved possible to achieve the objective of a common system as not only does SEAFDEC collect more information than FAO but national data is submitted to SEAFDEC with many months delay compared with FAO.

40.   The IPTP representive inquired as to the reason for the late publication of the SEAFDEC bulletin and reiterated the importance of early reporting. He cited the Malaysian system as an example of fast reporting.

41.   The Chairman explained that the late publication of SEAFDEC's Fisheries Statistical Bulletin is caused by late submission of returns from some national governments. He also added that SEAFDEC's statistics are based on actual production data while FAO's are estimates which shorten the time required for publication. The Chairman agreed that speeding up the reporting of fisheries statistics in the region is necessary and recommended that the wider use of computers should be promoted.

42.   The representative from Malaysia considered that their reporting system is successful not solely because of the wider use of computers but was a combination of sufficient trained personnel, de-centralized processing and good staff motivation.

43.   The Chairman added that while computers can speed up processing, the human element in the collecting and inputting of computer data should also be examined in order to eliminate errors.

44.   The Chairman recommended that SEAFDEC study further the feasibility of the proposed common system.

VI. DEFINITION OF FISHERIES AND AQUACULTURE
AND IMPROVEMENT OF AQUACULTURE STATISTICS

45. The Technical-Secretary presented a new FAO definition of aquaculture.

46. The Chairman explained that a concise definition of aquaculture is essential so that there is no ambiguity in distinguishing aquaculture from fisheries and to facilitate international comparability. He agreed that SEAFDEC's and FAO's definitions of aquaculture are essentially the same but had difficulty with the use of the word "intervention" as it has a negative implication.

47. The SEAFDEC Consultant presented his comments and reminded the Chairman of the need of a complimentary definition for "fisheries". He also pointed out that the designation of production type presented was only suitable for European and African regions and needed modifying in the light of Asian conditions.

48. After some discussion, it was agreed to change the word "intervention" to "modification" along with some other minor changes.

49. The provisional definition of Aquaculture adopted by the Workshop is as follows:

> "Aquaculture is the farming of aquatic organisms. Farming implies some form of modification (artificial breeding, stocking, feeding, protection from predators, etc.) to the life cycle or habitat of an organism. Farming also implies a right of ownership and that the owner or person making the modification (individual, group or agency) receives the benefits."

50.   The Technical-Secretary informed the Workshop that FAO
had been collecting data on aquaculture since 1984 and it was
hoped that in the 1990 Yearbook of Fishery Statistics (with data
for 1989) it would be possible to show separate totals for
species fished and cultured.

51.   The Secretariat of the Workshop noted that returns
concerning aquaculture were particularly incomplete and did not
permit any serious analysis of the situation in the region. This
was unfortunate in view of the importance of aquaculture in
Southeast Asia.

52.   Attention was drawn to studies undertaken in other
countries in particular Japan and Thailand where rather detailed
information on yields per unit area by species was collected. It
was noted that the collection of such detailed data as would
permit the calculation of productivity could be costly, and was
in some cases collected by NACA. It was therefore recommended
that there should be closer cooperation between SEAFDEC and other
agencies involved in this work.

VII. GEOGRAPHICAL BASIS FOR REPORTING OF DATA

53.   The Technical-Secretary explained the criteria which had
been used in delimiting the major fishing areas for statistical
purposes used by FAO. On the basis of these criteria changes had
been proposed to the boundaries of Fishing Areas 57 and 71 some
of which had already been agreed by the Indo-Pacific Fisheries
Commission.

54.   Following detailed discussion during which several
minor modifications were made the proposed changes were agreed.
A map of the revised Area 71 is given in the Figure which appears
as Annex 5.

VIII. PROPOSALS FOR REVISION OF THE STATISTICAL CLASSIFICATION OF MARINE SPECIES

55.   The Secretariat of the Workshop presented proposals for modification of the SEAFDEC codification of species both to bring it more in line with ISSCAAP and also with the distribution of commercially important species in the region.   A number of suggestions for improvement were made including a generalization of the entry for crabs, since there were noted to be several types of swimming crab, not only Blue swimming crabs.   Changes were also required in the case of clams and non-penaeid prawns.

56.   The Workshop was informed however that the proposals were to be examined by taxonomic specialists in participating countries before firm decisions were made.   In view of the implications for ISSCAAP and the need to adopt three alpha codes FAO had also been informed and its comments sought.   In this regard participating countries are also requested to send comments before the end of December 1989.   The revised Comparative Tables of SEAFDEC Species Code Number and FAO (ISSCAAP) Species Code are shown as Annex 6, for study.

57.   A recently prepared paper concerning a possible revision of the species composition of ISSCAAP group 33 was also circulated for transmission to national taxonomic specialists whose comments were requested by FAO before February 1990 when the matter would be considered by the Co-ordinating Working Party on Atlantic Fishery Statistics.

IX. CATCH DATA OF FISHING VESSELS OPERATING IN FOREIGN WATERS

58.   The Chairman presented the paper which appears as Annex 7 and during the subsequent discussion it was noted that the practice of direct foreign landings in the region was increasing (Taiwan vessels landing in Indonesia, Malaysian vessels landing in Singapore, etc.) but that information on many of these activities was lacking or being incorrectly recorded.

59.   The flag of the vessel was, in principle, seen to be the determining factor deciding the nationality of the catch and when a vessel landed in a foreign port its catch should be regarded as an import.   In many cases, however, vessels landing in foreign ports did not report their catches to the home country and it would be encumbent on the receiving country to report these landings to SEAFDEC.   The Center was therefore requested to examine how a system for recording foreign landings could be implemented.

X.   PROBLEMS OF COMPILING THE FISHERY STATISTICAL BULLETIN FOR THE SOUTH CHINA SEA AREA

60.   The   principal   problem   in   producing   the   SEAFDEC statistical bulletin was noted to be timing and the long delay in the appearance of the data which much reduced their value to the user.   However, there were also frequent discrepancies in the data submitted in particular concerning import and export statistics, the simple total by commodity often differing from the total by the country of origin and destination.   Other problems included the failure to use the code number of the regional fishing gear classification and in some cases the submission of incomplete information.

61.   Statisticians responsible for the submission of information were asked to address these problems in future submissions especially the problem of timeliness.

62.   The Malaysian participant requested that only one form be submitted to her country in the future as information would be consolidated in Kuala Lumpur.

XI. AN OVERVIEW OF FISHERY STATISTICS IN THE REGION

63.   Certain salient points concerning fishery statistics in Southeast Asian Countries, namely, Malaysia, Thailand, Indonesia, and the Philippines were highlighted.   In most countries, a central statistical organization is responsible for conducting fishery censuses.   In almost all countries, a national fishery office, such as the Bureau of Fisheries or the Department of Fisheries, is responsible for the collection of annual fishery statistics.

64.   Since 1965 the staff engaged on fishery statistics has been strengthened in many countries by the location of a fishery statistics section within the national fisheries office. For the past two or three years, the use of microcomputers for data processing has been introduced in most countries. In Malaysia, a computer system has been adopted not only at national level but also at state level which has markedly sped up the availability of the data.   In many other countries, however it takes considerable time before fishery statistics for any given year can be released.

65.   Fishery censuses are conducted in most Southeast Asian countries. However, in many instances the fishery censuses taken in the region have been limited to a fishery inventory survey. On the other hand, although the fishery censuses have provided excellent bench marks in regard to the number of fishing establishments, fishing boats, fishermen, etc. no annual sample surveys have been conducted to trace yearly changes in these statistics.

66.   Certain items in the national fishery statistical yearbooks were reviewed in terms of their value to the user, i.e.:

(a) The purpose of annual fishery statistics is to show changes in the economic structure of a fishery at a specific time and over a certain period of time;

(b) A clear distinction between capture fishery and aquaculture is made by all countries. Likewise, all countries make a distinction between marine capture and inland capture; and

(c) Among the survey items covered are marine fishery, inland fishery, aquaculture and fishery products statistics.

67.   National fishery statistical standards have been fairly well developed in the countries where fishery censuses have been taken.   Nevertheless, some improvements are needed in the statistical standards of many countries, such as on:

(a) Size classification of fishing establishments in terms of tonnage of fishing boats in use;

(b) Fishing gear classifications;

(c) Species classifications;

(d) Classifications of inland capture fishery;

(e) Statistics on aquaculture; and

(f) Timing of yearbook's issue, contents of its statistical tables, the form in which it is compiled.

68.   Malaysia recommended that SEAFDEC assist Member Countries in compiling relevant and useful tables and data to be adopted by all Member Countries. In some instances, catch and effort data are tabulated in greater detail and are of relevance for some purposes such as resources assessment. For such purposes, separate tabulation or compilation perhaps should be done by national agencies.

69.   The Workshop suggested that SEAFDEC hold a workshop with the participation of both national agencies and users, on how to compile a useful and relevant yearbook of fishery statistics. Such a workshop will, however, have to be selective in taking into consideration the needs of different users.

70.   It was also noted that economic data such as those concerning inputs, prices, etc. are equally important in analysing and monitoring the fisheries.

71.   A short-term training course on fisheries statistics was included in the Three-Year Plan of the SEAFDEC Training Department. With limited budget and resources SEAFDEC is unable to assist Member Countries in conducting their annual statistical surveys.

XII. IPTP TUNA CATCH STATISTICS

72.   The Indo-Pacific Tuna Programme (IPTP) was established in 1982 as a tuna data center. Statistical data are collected from countries fishing for tuna and tuna-like species in the Indian Ocean and Southeast Asian Area.

73.   IPTP provides the basic background data on the species within its competence for the purpose of stock assessment and economic studies. The data are categorized into 4 groups.

(a) Annual catch statistics by species and gear;

(b) Monthly catch and effort statistics by gear and fishing ground for industrial fisheries, and for coastal fisheries by gear;

(c) Monthly size frequency data by species, gear and fishing ground; and

(d) Fishing craft statistics by gear and type of vessel.

74. Many countries are assisting IPTP in collecting and compiling data which could not be provided by national statistics. In principle, catch data supplied by national statistical offices are widely used for the purposes of IPTP, but in some cases these require to be supplemented by estimates made by national scientists.

75. IPTP is monitoring the catch trend of tuna species of participating countries, some of which are also participating Members of SEAFDEC. A rapidly increasing catch is noticed in the case of Thailand, especially in the period 1981-1983; while other countries show an increasing trend with annual fluctuations.

76. Under a Japanese trust fund project, IPTP assists selected member countries in implementing sampling and tagging programs. Since this project is scheduled to terminate at the end of 1990 a review mission has been requested to FAO to evaluate the possible extension of the project.

XIII. DISCUSSION OF OTHER MATTERS

77.   The Secretariat of the Workshop informed the participants that SEAFDEC/MFRD has produced two publications, namely, Proceedings of the Twentieth Anniversary Seminar on Development of Fish Products in Southeast Asia, and Southeast Asian Fish Products, these are available to participants upon request. The Workshop was also informed that surimi was of growing importance in the region and may have to be recorded separately when its volume has increased sufficiently.

78.   It was noted that problems are being encountered in the calculation of gross tonnage of fishing vessels. The method used differs from country to country and it was suggested that SEAFDEC should introduce a standard calculation for GRT.

79.   The Chairman said that SEAFDEC will revise the form for the collection of data on fishery products at the appropriate time. However, standardization of GRT cannot be done by SEAFDEC because this is decided by the appropriate authority in each country based on International Maritime Organization (IMO) standards.

XIV. RECOMMENDATIONS

80.   The participants made the following recommendations for consideration and action:

1. FAO and SEAFDEC should continue their efforts to devise common questionnaires and should continue their cooperation to ensure common fishery statistical standards and definitions in the collection of fishery statistics.

2. Efforts should be made to improve the compilation and processing of data at the provincial or local level to expedite the delivery and enhance the usefulness of fishery statistics to users; improvement could be effected through computerization, training of personnel and the use of appropriate procedures.

3. SEAFDEC should help Member Countries in the adoption of internationally accepted standards for species, gear, vessel and other classifications with a view to producing standardized national statistical publications to facilitate comparison among countries.

4. Countries in the region are requested to cooperate in the collection of data concerning landings by foreign fishing vessels in their ports. Participating countries are requested to assist by taking up the matter with the appropriate authorities in their respective country.

5. SEAFDEC should organize regional short-term training courses on the analysis of statistical data and computer operation. In the organization of these training courses support should be sought from FAO and other international organizations.

6. Participating countries should attempt to undertake periodical fisheries censuses, to clarify the change in the economic structure of the fisheries sector and to renew the frame to be used for annual fisheries statistical surveys. If appropriate, countries might consider the possibility of conducting fisheries censuses with other inquiries such as agricultural or population censuses.

XV. ADOPTION OF THE REPORT

81.   The Workshop adopted the Report on 20 October 1989 and requested that the Chairman submit the Report to the SEAFDEC Council of Directors for consideration and approval.

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OPENING ADDRESS

by

DR. THIRAPHAN BHUKASWAN

SECRETARY-GENERAL

and

CHIEF OF THE TRAINING DEPARTMENT

SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER

at

THE SEVENTH REGIONAL WORKSHOP ON FISHERY STATISTICS IN SOUTHEAST ASIA

Distinguished Participants, Ladies and Gentlemen:

On behalf of the Training Department of the Southeast Asian Fisheries Development Center, it gives me great pleasure to welcome you to the ceremony marking the commencement of the Seventh Regional Workshop on Fishery Statistics in Southeast Asia which has been organized by the SEAFDEC Training Department, starting today and will continue until the 20th of October 1989.

This is the seventh workshop on fishery statistics to be organized; the last one was held in 1986. The production of the Fishery Statistical Bulletin for the South China Sea Area, published since 1978, is one of the positive results from the six regional workshops on fishery statistics held between 1976 and 1986.

In view of the increasing need to improve the statistics being collected and compiled by national agencies as well as by SEAFDEC and FAO at regional and global levels, the FAO Fisheries Department agreed to cooperate with the SEAFDEC Training Department in organizing the Seventh Regional Workshop on Fishery Statistics in Southeast Asia, in Bangkok.

The objectives of this Workshop are to discuss a common system for collecting catch and aquaculture statistics in the region and to improve the questionnaires for reporting these statistics. Unification of the aquatic species codes employed by FAO and SEAFDEC will be discussed as well as the methodology for recording catches obtained from joint ventures in fisheries among the countries in the region.

This Workshop will not be an easy one. Your active participation in discussing needs and advising on ways and means of improving both the standard of fishery statistics in the region, and the content of our Bulletin, will be highly appreciated.

I am confident that, with the collective wisdom of all participants, this difficult task can be overcome and that we can look forward to seeing the statistics system strengthened in the years to come for the mutual benefit of all concerned. I therefore wish the Workshop every success.

Ladies and gentlemen, I now declare open the Seventh Regional Workshop on Fishery Statistics in Southeast Asia.

Thank you,

LIST OF VICE-CHAIRMEN AND RAPPORTEURS

Session	Item(s)	Chairman	Rapporteur
Tues. am	4	DR. T. YAMAMOTO (SEAFDEC CONSULTANT)	MR. V.L.C. PIETERSZ (FAO)
Tues. pm.	5 - 7	MR. K. INOUE (SEAFDEC)	MR. A.W.Y. LEUNG (HONG KONG)
Wed. am.	8 - 10	MR. T. SAKURAI (IPTP)	MR. M.A. ROBINSON (FAO)
Wed. pm.	11 - 12	DR. M. DUANGSAWASDI (THAILAND)	MRS. R. MAHMOOD (MALAYSIA)
Thur. am.	13 - 14	MR. M.A. ROBINSON (FAO)	MISS L.R. BAUTISTA (PHILIPPINES)
Fri. am.	15	MR. K. INOUE (SEAFDEC)	-

CHAIRMAN: **MR. K. INOUE**

TECHNICAL-SECRETARY: **MR. M.A. ROBINSON**

EDITOR, ASSISTANT TO TECHNICAL-SECRETARY: **MRS. AMANDA OWDEN CHALLALI**

AGENDA

1. Opening address by SEAFDEC
    Secretary-General, appointment of
    Chairman and Technical-Secretary,
    adoption of the Agenda

4. Country reports

5. Proposal for a common system for the collection
    of fishery statistical data

6. Definition of Fisheries and Aquaculture and
    Improvement of Aquaculture statistics

7. Geographical basis for reporting of data

8. Proposal for revision of the statistical
    classification of marine species

9. Catch Data of fishing vessels operating
    in foreign waters

10. Problems in compiling the Fishery Statitical
    Bulletin for the South China Sea Area

11. An overview of fishery statistics in
    the region

12. IPTP tuna catch statistics

13. Other matters

14. Recommendations

15. Adoption of Report

MAP OF THE REVISED AREA 71

PACIFIC, WESTERN CENTRAL (Major Fishing Area 71)
PACIFIQUE, CENTRE-OUEST (Principale zone de pêche 71)
PACIFICO, CENTRO-OCCIDENTAL (Area principal de pesca 71)

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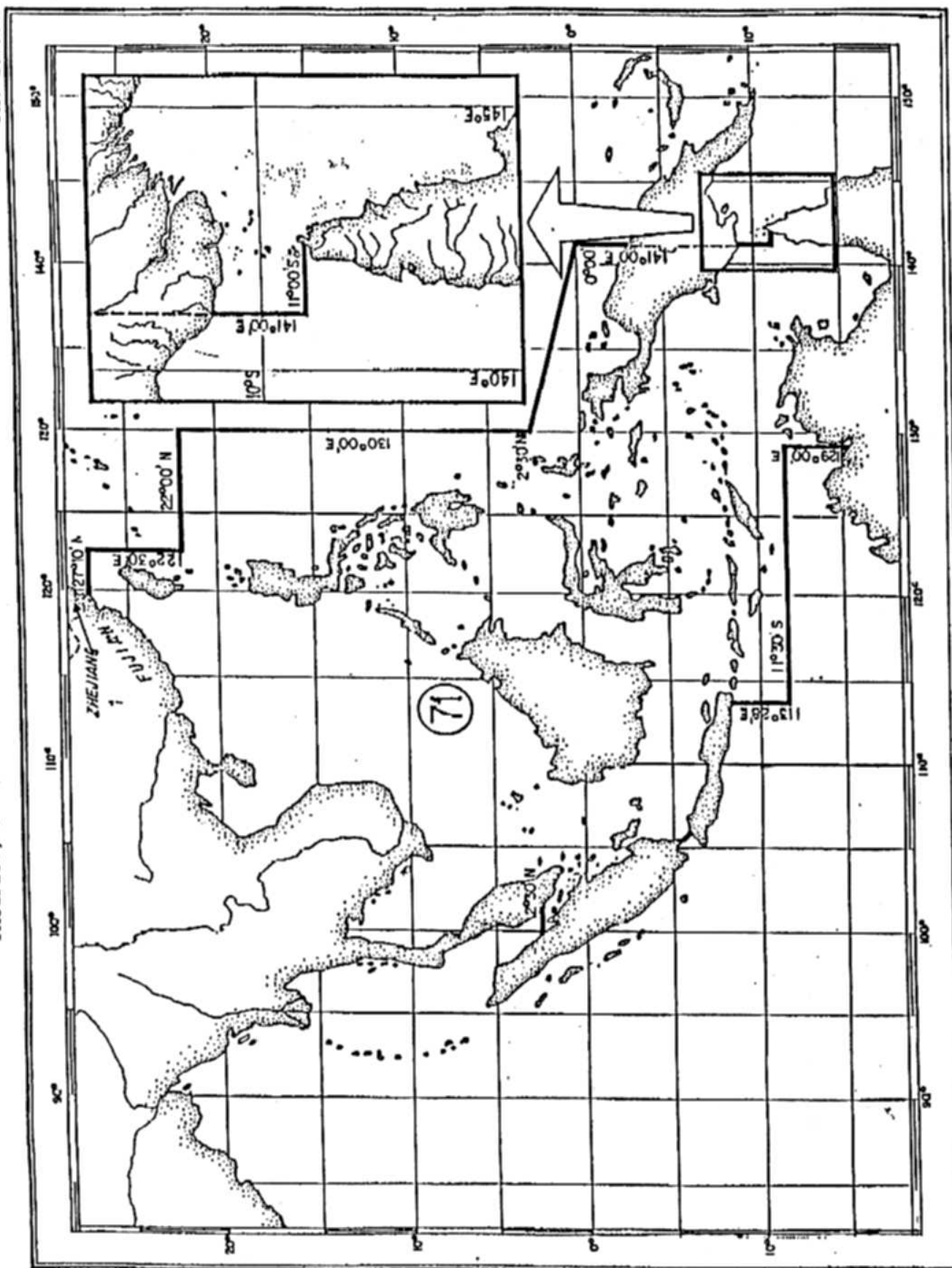
REVISED

Comparative Tables of SEAFDEC Species Code Number and FAO (ISSCAAP) Species Code

by

Hiroyuki Yanagawa

and

Pouchamarn Wongsanga

Training Department

Southeast Asian Fisheries Development Center

This Annex shows full tables of revised
codification of SEAFDEC Fishery Statistical
Bulletin and unified code of FAO (ISSCAAP).

Table 1. Species codes practiced by SEAFDEC and FAO. Asterisk (*) shows where a new species code has been added to FAO list. Bold and underlined characters show changed and/or added species group and code No. in SEAFDEC list.

Ref.	ISSCAAP Div.	ISSCAAP Group	Name	Code	SEAFDEC Code No.	SEAFDEC Family / Scientific name
01	2. Diadromous fishes	24. Shad, milkfish, etc.	1. Shads	CHG PEO	2401	Clupeidae - *Anodontostoma chacunda* *Pellona ditchela*
02			2. Milkfish	MIL	2402	Chanidae - *Chanos chanos*
03		25. Miscella- neous	1. Barramundi	GIP	2501	Centropomidae - *Lates calcarifer*
04	3. Marine fishes	31. Flounders, halibut, soles	1. Flounders	LEF	3101	Bothidae
05 *			2. Indian halibuts	HPX	3102	Psettodidae
06			3. Tongue soles	TOX	3103	Cynoglossidae
07			4. Soles	SOX	3104	Soleidae
08		33. Red fishes, bass, congers, etc.	1. Marine catfishes	CAX	3301	Ariidae
09			2. Catfish eels	CAE	3302	Plotosidae - *Plotosus* spp.
10 *			3. Lizard fishes	LSS	3303	Synodontidae - *Saurida* spp.

Code	Item	No.	Family / Species
PCX	4. Sharp-toothed pike eels and conger eels	3304	Muraenesocidae *Muraenesox* spp. (including Congridae, Muraenidae and Synbranchidae)
GPX	5. Groupers	3305	Serranidae - *Epinephelus* spp.
WHS	6. Sillago whitings	3306	Sillaginidae
SNA	7. Red snappers	3307	Lutjanidae - *Lutjanus* spp. (*L. argentimaculatus*, *L. sabae*, *L. malabaricus*, *L. sanguineus*, *L. altifrontalis*)
SNX	8. Other snappers	3308	Lutjanidae - *Lutjanus* spp. (*L. johni*, *L. vitta*, *L. russelli*, *L. lineolautus*, *L. lutjanus*, *L. fulviflamma*, *L. monostigma*) *Pristipomoides* spp.
FUS	9. Fusiliers	3309	Lutjanidae - *Caesio* spp.
THB	10. Threadfin breams	3310	Nemipteridae - *Nemipterus* spp. (including *Scolopsis* spp.)
PON	11. Pony fishes	3311	Leiognathidae
GRX	12. Grunters and sweetlips	3312	Pomadasyidae

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	Code	Description	No.	Family / species
20	CDX	13. Drums and croakers	3313	Sciaenidae
21	GOX	14. Goatfishes	3314	Mullidae - *Upeneus* spp. (including *Parupeneus* spp.)
22	ELL	15. Emperor breams	3315	Lethrinidae - *Lethrinus* spp. (including *Gymnocranius* spp.)
23	BIG	16. Big-eye snappers	3316	Priacanthidae - *Priacanthus* spp.
24	SBX	17. Breams	3317	Sparidae
25	TIS	18. Horseheads	3318	Branchiostegidae
26	SPI	19. Rabbitfishes	3319	Siganidae - *Siganus* spp.
27	DPX	20. Other species	3320	Main groups to be indicated, if possible
28	HAX NED	1. Halfbeaks and needlefishes	3401	Exocoetidae - *Hemirhamphus* spp. (including *Cypselurus* spp.) Belonidae - *Tylosurus* spp.
29	BAR	2. Barracudas	3402	Sphyraenidae - *Sphyraena* spp.
30	MUL	3. Mullets	3403	Mugilidae
31	THF	4. Threadfins	3404	Polynemidae

34. Jacks, mullets, sauries, etc.

No.	Code	Item	No.	Family - Species
32	SDX	5. Round scads	3405	Carangidae - *Decapterus* spp.
33	TRE GLT	6. Jacks, cavalla and trevallies	3406	Carangidae - *Caranx* spp, *Gnatanodon speciosus* (including *Alectis* spp. *Caranx chrysophrys, C. malabaricus, C. ignobilis*)
34	BIS TRY	7. Selar scads	3407	Carangidae - *Selar crumenophthalmus Selaroides leptolepis* (including *Alepes* spp., *Selar* spp.)
35	HAS	8. Hardtail scad	3408	Carangidae - *Megalaspis cordyla*
36	QUE	9. Queenfishes	3409	Carangidae - *Scomberoides* (=*Chorinemus*) spp.
37	POB	10. Black pomfret	3410	Formionidae - *Formio niger*
38	SIP	11. White pomfrets	3411	Stromateidae - *Pampus argenteus* (including *Pampus chinensis*)
39	PPX	12. Other species	3412	Main groups to be indicated, if possible
40	SIX	35. Herrings, sardines, anchovies 1. Sardines	3501	Clupeidae - *Sardinella* spp.
41	RAS	2. Round herrings	3502	Clupeidae - *Dussumieria acute*
42	STO	3. Anchovies	3503	Engraulidae - *Stolephorus* spp.

No.	Code	Name	No.	Family – Species
43	CLU	4. Clupeoids	3504	Clupeoidei
44	DOB	5. Wolf herring	3505	Chirocentridae – Chirocentrus dorab
45	SKJ	1. Skipjack tuna	3601	Scombridae – Katsuwonus pelamis
46	YFT	2. Yellowfin tuna	3602	Scombridae – Thunnus albacares
47	BET	3. Big-eye tuna	3603	Scombridae – Thunnus obesus
48	LOT	4. Longtail tuna	3604	Scombridae – Thunnus tonggol
49	ALB	5. Albacore	3605	Scombridae – Thunnus alalunga
50	KAW	6. Eastern little tuna	3606	Scombridae – Euthynnus affinis
51	FRZ	7. Frigate and bullet tuna	3607	Scombridae – Auxis thazard / Auxis rochei
52	BIL / XIP	8. Indo-Pacific swordfish, sailfishes and marlins	3608	Istiophoridae (Istiophorus spp.) (Makaira spp.) / Xiphiidae (Xiphias spp.)
53	COM	9. Narrow-barred king mackerel	3609	Scombridae – Scomberomorus commerson
54	GUT STS	10. King mackerels	3610	Scombridae – Scomberomorus guttatus / Scomberomorus lineolatus

36. Tunas

55	37. Mackerels	RAG	1. Indian mackerel	3701	Scombridae - *Rastrelliger kanagurta* (including *Rastrelliger faughni*)
56		RAB	2. Indo-Pacific mackerel	3702	Scombridae - *Rastrelliger brachysoma*
57		CUT	3. Hairtails	3703	Trichiuridae
58	38. Sharks & rays	SKH	1. Sharks	3801	Carcharhinidae, Sphyrnidae, Orectolobidae, etc.
59		BAI	2. Rays	3802	Trygonidae, Sphyrnidae, Myliobatidae, etc.
60	39. Miscellaneous	MZZ	1. Miscellaneous	3901	Mixed species
61		MZZ	2. Trash fish	3902	Mixed species
	4. Crustaceans				
62	42. Crabs	CRS ***	1. Swimming crabs **************	4201	Portunidae - *Portunnus spp.* ************
63		MUD	2. Mangrove crab	4202	Portunidae - *Scylla serrata*
64	43. Lobsters	SLV	1. Spiny lobsters	4301	Palinuridae - *Panulirus* spp.
65 *		SSI	2. Slipper lobster	4302	Scyllaridae - *Thenus orientalis*

No.	Category	Species item	Code	No.	Family / Genus
66	45. Shrimps, prawns, etc.	1. Tiger prawn	GIT	4501	Penaeidae – *Penaeus monodon*
67		2. Penaeid prawns **************	PEN MET	4502	Penaeidae – *Penaeus* spp. / *Metapenaeus* spp.
68 *		3. Other prawns ************	?	4503	Penaeidae – *Parapenaeopsis* spp. – Other family (genus) name will be added – **************************************
69	47. Miscellaneous marine crustaceans	1. Miscellaneous	CRU	4701	Mixed species
70	53. Oysters	1. Flat oysters	OYX	5301	Ostreidae – *Ostrea* spp.
71		2. Cupped oysters	OYC	5302	Ostreidae – *Crassostrea* spp.
72	54. Mussels	1. Sea mussels	MSX	5401	Mytilidae (*Mytilus* spp., *Modiolus* spp., *Perna* spp., *Glauconome* spp.)
73	55. Scallops, pectens, etc.	1. Scallops	SCX	5501	Pectinidae
74	56. Cockles, clams	1. Blood cockle	BLS BLC	5601	Arcidae – *Anadara* spp. / *Anadara granosa*
75		2. Clams and cone shell **********************	MAT	5602	Mactridae – Other family name will be added – **************************************

5. Molluscs

#		Group	Code	1.		ISSCAAP
76	7. Miscellaneous aquatic animals	57. Cuttlefish, squid and octopus	CTL	1. Cuttlefishes	5701	Sepiidae, Sepiolidae
77			SQC	2. Squids	5702	Loliginidae - *Loligo* spp.
78			OCZ	3. Octopus	5703	Octopodidae - *Octopus* spp.
79		58. Miscellaneous marine molluscs	MOL	1. Miscellaneous	5801	Other molluscs
80		72. Turtles and other reptiles	TTX	1. Sea turtles	7201	Chelonia
81		75. Sea urchins, sea cucumbers and other echinoderms	URX	1. Sea urchins	7501	Echinoidea
82			CUX	2. Sea cucumbers	7502	Holothurioidea
83		76. Miscellaneous aquatic invertebrates	JEL	1. Jellyfishes	7601	*Rhopilema* spp.
84		77. Miscellaneous aquatic animals	INV	1. Miscellaneous	7701	Invertebrata

85	8. Miscellaneous aquatic products	81. Pearls, mother-of-pearl, shells, etc.		Delete "Pearl" ************	
86			OSH	1. Mother-of-pearl	8101	Pearl oyster shells
			MSH	2. Other shells	8102	Ex Mollusca
87		82. Corals	CSS	1. Corals	8201	Faviidae
88		83. Sponges	SPO	1. Sponges	8301	Spongidae
89	9. Aquatic plants	91. Brown seaweeds	SWB	1. Brown seaweeds	9101	Phaeophyceae
90		92. Red seaweeds	SWR	1. Red seaweeds	9201	Rhodophyceae
91		93. Green seaweeds and other algae	SWG	1. Green seaweeds	9301	Chlorophyceae
92		94. Miscellaneous aquatic plants	APL	1. Miscellaneous aquatic plants	9401	Algae

CATCH DATA OF FISHING VESSELS OPERATING IN FOREIGN WATERS

1. Coverage of Catch Data

There are two different concepts for compiling catch statistics; they can either cover (a) the total catch landed at domestic fishing ports, or (b) the total catch in each fishing area of capture, irrespective of whether the catch was taken by vessels of different countries and then landed at fishing ports other than those of the country of registration.

Total catch by domestic fishing ports is useful for economic analysis and is widely applied in all countries; and total catch by area of capture is needed for fish resources assessment in a given fishing area.

FAO has been compiling catch statistics for each area of capture separately, and SEAFDEC has been issuing annually, since 1978, the Fishery Statistical Bulletin for the South China Sea Area, that is FAO fishing area 71. However, the coverage of the data submitted for compilation in the SEAFDEC Statistical Bulletin is not very clear. Some countries include the catch data of different areas of capture, while others do not include the catch taken by fishing vessels operating in foreign waters.

The small and medium-sized fishing vessels of all countries operate within their jurisdictional waters - either coastal or off-shore waters - and land their catch mainly at their domestic fishing ports. Therefore, in this case, there will be no discrepancy between the catch data based on landing places and the catch data for the area of operation.

However, catch data from the large-sized fishing vessels operating in foreign waters or on the high seas are more difficult to obtain with high accuracy. This has caused duplication or omissions in the catch data, especially since the EEZs came into effect.

Many deep-sea fishing vessels, such as large-sized trawlers and purse seiners, are operating on the high seas or inside the EEZs of foreign countries under various forms of agreement with governments or the private sector of coastal countries, such as official licences, joint venture agreements or lease contrats with a partner. Whereas, from the legal point of view, there are many different types of agreement with foreign countries, from the point of view of statistics, the fishing vessels operating within the jurisdiction of foreign countries are classified into two categories, namely, (1) those operating under their own national flag, and (2) those operating under the flag of a foreign country.
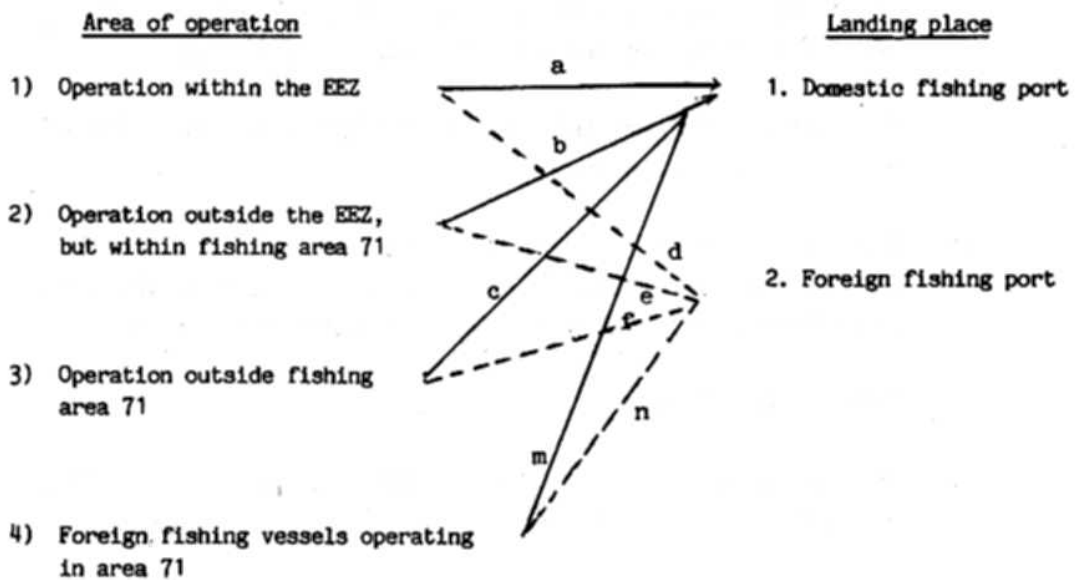
In the case of (1) above, the vessels are operating with or without an official licence issued by the foreign country, while the vessels referred to in (2) are operating under a joint venture agreement or lease contract with a partner in a foreign country and the fishing vessels are registered in the foreign country.

In the case of (2), the catch data should be included in the statistics of the flag country (i.e., the country of registration) as the catch taken by its domestic fishing vessels. When the vessels land their catch at foreign ports, the catch is to be treated as an import. There is, therefore, no need to discuss case (2) further.

2. <u>Catch Data of Fishing Vessels Operating Under Their Country's Flag.</u>

It is essential to clarify how catch of fishing vessels operating under their country's flag is to be dealt with, in order to avoid duplication or omissions.

In the region, fishing operations and landings may take the following forms:

<u>Area of operation</u>   <u>Landing place</u>

1) Operation within the EEZ   1. Domestic fishing port

2) Operation outside the EEZ, but within fishing area 71   2. Foreign fishing port

3) Operation outside fishing area 71

4) Foreign fishing vessels operating in area 71

3. Treatment of Catch Data

With reference to the preceding diagram, catch data should be treated as follows:

a: The majority of fishing vessels operating within their country's EEZ and landing their catch at domestic fishing ports: the catch should be included in the SEAFDEC Statistical Bulletin.

b: The fishing vessels operating outside their country's EEZ, but operating inside fishing area 71 and landing their catch at a domestic fishing port: the catch should be included in the SEAFDEC Statistical Bulletin .

c: The catch data should not be included in the SEAFDEC Statistical Bulletin.

d: The catch data should be included in the SEAFDEC Statistical Bulletin. The catch data should be obtained from the country where the landing place is located.

e: Same as for d. above.

f: The catch data should not be included in the SEAFDEC Statistical Bulletin.

m: The catch data should be included in the SEAFDEC Statistical Bulletin. The catch data should be obtained from the Customs Department as the landed catch is recorded as an import of fish products.

n: The catch should be included in the SEAFDEC Statistical Bulletin. The catch data should be obtained from FAO.

In order to obtain catch data from the fishing vessels operating in foreign waters, it is recommended that a separate fishing licence be issued on condition that the captains of the vessels keep a log-book and submit the catch report yearly.

In order to study the present situation, participating countries are requested to fill in the form below.

Number of Fishing Vessels Operating Outside the EEZ

Country/Area	Total	With in Fishing Area 71			Outside Fishing Area 71		
		Total	A	B	Total	A	B
Brunei							
Hong Kong							
Indonesia							
Malaysia							
Philippines							
Taiwan							
Thailand							

Notes: A - Catch landed at ports of country of registration.

B - Catch landed at ports of countries other than country of registration.