



ASIA-PACIFIC FISHERY COMMISSION

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Report of the Meeting of the *Ad Hoc* Working Group of Experts in Capture Fishery Data Collection

Bangkok, Thailand, 7 – 9 September 1999

APFIC SECRETARIAT
REGIONAL OFFICE FOR ASIA AND THE PACIFIC
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS



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PREPARATION OF THIS REPORT

The report of the Meeting of the *Ad hoc* Working Group of Experts in Capture Fishery Data Collection was prepared by the Rapporteur, Ms. V.T. Sulit, and endorsed by its Chairman, Mr. Romeo S. Recide, and the Technical Secretary of the *Ad hoc* Working Group. It was further approved by the members of the *Ad hoc* Working Group.

ABSTRACT

The *Ad Hoc* Working Group of Experts in Capture Fishery Data Collection of APFIC held its meeting in Bangkok, Thailand, from 7 to 9 September 1999, to review the applicability of the FAO Guidelines for Routine Collection of Capture Fishery Data in the APFIC member countries. The Working Group endorsed the Guidelines for implementation and recommended case studies be conducted for further discussion at a Regional Workshop. The Working Group also discussed regional priorities and common approaches in developing sustainable data collection systems in the APFIC region.

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Members of the Ad hoc Working Group
Members of the Commission
FAO Fisheries Department
Fishery Officers in Regional Offices
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OPENING OF THE SESSION

1. The Meeting of the APFIC *Ad hoc* Working Group of Experts in Capture Fishery Data Collection was convened in Bangkok, Thailand, from 7 to 9 September 1999. Its main task was to discuss implementation of the Guidelines for the Routine Collection of Capture Fishery Data (Appendix A). The Guidelines were prepared during the FAO/DANIDA Expert Consultation in Bangkok, Thailand, in May 1998 following a recommendation made during the First Session of the APFIC Joint Working Party on Fisheries Statistics and Economics in August 1997. The Meeting was chaired by Mr Romeo Recide, in his capacity as Chairman of the Joint Working Party and for the inter-sessional period 1997-1999.

2. The Meeting, attended by experts in fishery data collection from the APFIC Member Countries (Appendix B), was specifically tasked to provide advice on priorities for implementation by Member Countries in order to improve the quality of capture fishery statistics; consider how sample survey data collection methodologies can be utilized to optimize data collection with limited financial and human resources; prepare the necessary follow-up action of the *Ad hoc* Working Group to promote common approaches and sustainable data collection systems in the region; and advise APFIC on the status and needs for further strengthening of fishery statistical programmes in the region.

3. In his opening remarks, the APFIC Secretary and Senior Fishery Officer of the FAO Regional Office for Asia and the Pacific (FAO/RAP), Dr Veravat Hongskul, challenged the experts to take active part in providing guidance for the proper collection of capture fishery data because such collection has not improved very much during the last 20 years. He asked the experts to review the Guidelines as means of designing data collection programmes. He mentioned that during the APFIC Meeting in Beijing, China in 1998, it was agreed that a meeting of an *Ad hoc* Working Group of Experts in Capture Fishery Data Collection be convened to make recommendations which will be submitted to the APFIC Executive Committee and then to the Commission for consideration at its 27th Session in November 2000.

4. The Technical Secretary of the *Ad hoc* Working Group and Chief of the Fishery Information, Data and Statistics of FAO, Dr Richard Grainger, informed that the Guidelines aimed to facilitate the identification of data needs for fishery policy-making and management; provided a new framework and approach to establishing sustainable statistical data collection; and provided a system for monitoring the effectiveness of data collection programme. He emphasized that the Meeting was a follow-up to the recommendations made during the First Session of the Joint Working Party in 1997 when the status of fishery statistics in the region was reviewed.

5. The Chairman asked the experts to respond to the challenge for better statistical data and for them to strive to make full use of the Guidelines for implementation in the region.

ADOPTION OF THE AGENDA

6. The Meeting adopted the Agenda as shown in Appendix C.

NATIONAL NEEDS AND INTERNATIONAL OBLIGATIONS FOR FISHERY DATA

Country Reports

7. The needs of the APFIC Member Countries for more reliable capture fishery data were assessed based on the country papers presented, which discussed the present status of capture fishery statistics and the problems and constraints countries faced in collecting such statistics.

Australia

8. The expert from Australia described the organizations responsible for the collection of fishery statistics and the development of such statistics in his country. The coordination of fisheries statistics collection issues between jurisdictions is achieved through the Fisheries Statistics Working Group (FSWG). The FSWG reports to the Research Committee of the Standing Committee on Fisheries and Aquaculture (SCFA). SCFA consists of the State and Commonwealth Directors of Fisheries, which in turn reports to the Ministerial Council on Forestry, Fisheries and Aquaculture (MCFFA). MCFFA consists of the State and Commonwealth Ministers for fisheries.

9. The Australian Bureau of Agricultural and Resource Economics (ABARE) is one of the committees that collects a range of economic statistics for fishery management purposes, through the conduct of economic surveys of the fishery industry. In Australia, industry cooperation has facilitated the generation of good quality data especially on catch-effort which are extracted from the licensing records and logbooks.

10. In cases where validation of data could not be made possible because of lack of resources, alternative data collection systems should be developed. Australia, for example, makes use of a vessel monitoring system through the INMARSAT for location tracking. The system also allows for observers to work on board foreign vessels. This strategy has led to an effective exchange of data within 24 hours after landing, thus facilitating validation of catch data. Australia is also developing a system of electronic logbooks to be implemented soon. Fishery-related data such as information on the ecosystems, socio-economics and potential ecological impacts of fisheries are collected by another office, the Australian Fishery Management Authority. In an effort to enhance the accessibility of collected data to users, Australia has made its fishery statistics available through its website in the internet for wider usage.

11. In Australia, the costs of data collection are paid by the fishing industry players. This takes out the financial burden from the agencies collecting the data. In some states, this is made possible through levies collected at the centralized fish markets where all fishery products pass. Although the levies have not led to 100% cost recovery, the intention is to achieve full cost recovery in the future.

China

12. The expert from China presented the current status of marine fishery statistics in China. It was noted that China had been successful in the conservation of its marine resources by controlling fishing. Closed seasons had been implemented in some

fisheries with full support from the fishermen. It was expected that such closed seasons would lead to the attainment of the country's "zero growth" target the marine fishery production in 1999.

13. The Bureau of Fisheries of the Ministry of Agriculture which is responsible for the compilation of the national fishery statistics of China gathers data from two original sources, government and folk sources. The government source is the national fisheries information system of the Ministry of Agriculture which has developed a nationwide tabulation system of fishery statistics collected through the network of local fisheries branches. The folk sources, on the other hand, are the non-government and semi-government associations whose business information are exchanged through their members.

14. Collection of fishery data in China is done regularly from the grassroots such as the villages, aggregated at township, county and provincial levels and then finally at the central government level. Data items included production, labor force, and fishing vessel information. The production data are aggregated and processed by production area, fishing gear and by species. After the processing of data, the Ministry of Agriculture disseminates monthly for data from important fisheries provinces, semi-annual data for some provinces, or annual for data other provinces, autonomous regions, municipal cities directly under the jurisdiction of the central government.

15. The expert from China suggested that training on computer usage and statistical methodology at the township level will strengthen the statistical programs and systems in China. Such training of personnel will upgrade their capabilities in collecting more accurate, reliable and timely data.

Indonesia

16. The expert from Indonesia, in presenting the status of fishery data collection in his country, mentioned that the Production Survey developed in the late 70s is the same method used in data collection for its Fishery Statistical Report. For capture fisheries, data collected include number of fishery establishments, fishing boats, fishing trips, and quantity and value of catch by species. Three approaches are used to collect the data, namely, collecting reports from fishing companies, sample surveys of selected major landing centers, and sample surveys of the villages.

17. The Central Bureau of Statistics (CBS) in Indonesia is responsible for the collection of basic data while sectoral data are collected by the respective sectors. The Directorate General of Fisheries of Indonesia collects and releases fishery statistics in the Fishery Statistical Report of Indonesia.

18. The conduct of the production survey in Indonesia has always been constrained with numerous issues leading to the delay in the completion of the survey. Among the problems of the survey are the use of outdated survey frame greatly affecting the raising factors in estimating the data at the district levels; the insufficient number of enumerators has slowed down or in some cases resulted in uncompleted surveys; and the lack of concern and little support shown by the local government during the conduct of surveys. One major problem arose when the 5% auction levy was abolished by the government. The fee was a source of revenue which associations used in maintaining

and operating auction facilities. Since the abolition, auctions were no longer carried out, thus making it difficult for the data collectors to monitor and accurately report the species of fish landed.

19. The Indonesian experience in data collection procedures has shown that sample survey have been more effective than complete enumeration because of the archipelagic geography of the country. One of the advantages of using sample survey over complete enumeration is its lesser human resource requirement.

20. Since not all enumerators in Indonesia have fishery background, they are provided with guide books on species and gear. The guide books are frequently revised to take into consideration the numerous fish species and their different local names.

Malaysia

21. Due to illness, the expert from Malaysia was unable to attend the meeting. However, his country report was presented to the meeting.

22. Malaysia collects catch and effort data to determine the status of the country's fishery industry as well as for improved fishery management. With these objectives, its data collection programmes have been well planned and have been given priority and importance by its government in terms of human and technical support making the country's data collection system effective and sustainable.

23. The National Database Management System in Malaysia takes care of the collection of catch and effort data. Government uses the indicators produced by the system to monitor fishery development in the country. Based on such data, it can be seen that the level of marine capture fisheries production is sustainable, even with the production from the coastal waters maintained at a maximum level.

Philippines

24. The expert from the Philippines and Chairman of the *Ad hoc* Working Group presented the general procedures for the generation of fishery statistics in his country which included the conduct of surveys of the commercial and municipal fisheries as well as surveys of inland municipal households. The surveys on commercial and municipal fisheries are conducted every other day at sample landing centers during peak hours of unloading, while the surveys of inland municipal households are conducted semi-annually.

25. In the surveys conducted, the frame used is based on the 1992 list of landing centers. The list of landing centers for the top 20 producing provinces was last updated in 1995.

26. The Bureau of Agricultural Statistics (BAS) is responsible for the conduct of fishery surveys and in the generation of fishery data which it publishes in the Fishery Statistics Report of the Philippines. On the other hand, the Bureau of Fisheries and Aquatic Resources (BFAR) collects data for stock assessment, cost and return and the like from its socio-economic investigations.

27. The decentralization of data processing has been effective in generating the country's capture fishery data in terms of quality and timeliness. Accessibility of data to the users, however, is an area that needs to be improved.

28. A number of constraints have been identified in data collection in the Philippines. These included the need to lower-disaggregated data especially at the provincial level; the presence of a gap of knowledge in production losses which could not be accounted for; and the lack of funds allocated to data collecting agencies such as BAS.

29. It was suggested that the quality of statistics can be improved by enhancing the capacity of the BAS to collect, process and disseminate statistical data. This can be achieved by streamlining its organizational structure, pursuing an aggressive human resource development programme through training, installing an information technology (IT)-based data handling system and providing adequate funding to support its operations.

Sri Lanka

30. The expert from Sri Lanka, in presenting the status of the fishery data collection of his country, explained that the collection, processing, analysis, and dissemination of marine fishery statistics is the responsibility of the Statistical Unit of the Ministry of Fisheries and Aquatic Resources Development. The data generated are used in the national planning, policy formulation, and project monitoring by his government as well as local and international organizations needing such data.

31. Sri Lanka adopts three types of systems for marine fishery data collection, namely, total enumeration for coastal fisheries, sample survey methodology for coastal fishing, and the use of logbooks for offshore and deep sea fisheries. The data on fish catch by major species is monitored by ocular inspection under normal situations. Producer and retail prices by main species and fishing craft are collected as ancillary information.

32. For the coastal fishery sampling programme, the primary sampling units are boats which are stratified as either large pelagic fishery, small pelagic fishery, demersal fishery, or crustacean fishery. On the other hand, about 200 logbooks have been distributed to boat owners for the estimation of offshore and deep sea fishery production. It was however noted that the use of different classification of sampling units could lead to the difficulty in harmonizing the data collected from Sri Lanka with those from the other countries in the region.

33. Among the major problems in data collection in Sri Lanka are the shortage of data collectors and the absence of a sampling frame for collecting data on fishing gear which are mostly of the traditional type.

Thailand

34. The expert from Thailand emphasized that his country has paid much attention on the establishment and improvement of fishery data collection system. The Department of Fisheries (DOF) collects fishery data in general through sampling surveys. The Fish Marketing Organization (FMO) collects data on fish landings and prices of fish landed at FMO landing centers. In addition, specific research programmes also generate specific fishery data. The National Statistics Office (NSO) collects fishery data through census and follows this up with sampling census of marine fishery every five years after the decennial census is conducted.

35. Although current fishery data may be adequate for national needs, the data collection system of Thailand is constrained with the unreliability of data brought about by the inability of data collectors to perform their assigned tasks. In the case of inland capture fisheries, data are not always reliable due to the lack of list frame on total number of fishing boats, fishing gear by type and by fishermen.

36. Other problems in fishery data collection in Thailand include the delay in the dissemination of fishery statistics reports resulting from lack of manpower and slow promotion of data collection officers, as well as the absence of an appropriate data interpretation system. It is expected that the reorganization of the statistics and information offices within the DOF would help solve most of the problems encountered in data collection.

United States of America

37. The expert from the United States of America (USA) described the data collection systems in the Atlantic Coast, Gulf Coast, and West Coast of the USA. He informed that each state in these areas has its own system of collecting data. It was explained that data collected in logbooks are verified against the data reported by observers on board the fishing as part of the vessel monitoring system (VMS) which is used to collect research data as well as data on certain fisheries.

Vietnam

38. In the presentation of the status of capture fishery data of Vietnam, the expert from Vietnam mentioned that the fishery statistics published by his country could not compare with the statistics of countries in the South China Sea area as far as comprehensiveness and reliability are concerned. Every province has its own collection system, but the data obtained are insufficient. The system of monitoring, control and surveillance (MCS) for fisheries has been adopted in Vietnam but this too has not attained the desired level of performance.

39. Among the many constraints encountered in the data collection in Vietnam are the negative attitude of some fishery managers towards improving the collection system; the conduct of census only when needed by planners; the unreliability of data provided in logbooks; and the conduct of sampling surveys solely for the purpose of economic planning and not for stock assessment.

40. In an effort to establish, in the shortest time possible, a system for fishery data collection reflecting the real status of fisheries in the country, Vietnam sought the assistance of the Danish International Development Agency (DANIDA) in the implementation of the project on the Assessment of the Living Marine Resources in Vietnam (ALMRV) for a nationwide fishery data collection system.

41. The ALMRV deals with surveys and other activities concerned with living marine resources. These include the distribution, migration, biology, propagation, stock assessment, catch potential, and conservation of the marine resources. ALMRV also collects information on gear, effort and the fishing grounds. Its main sources of data are the skippers and middlemen, as well as provincial fishery departments which control the fishing vessel registries. The project initially focuses on the key fishery provinces of Vietnam but intends to cover the whole country in the next five years.

42. After a thorough assessment of the national data collection systems in Vietnam, it was the consensus that the weakness of statistics in the region are most greatly manifested in the areas of collection, packaging and interpretation of the data.

43. Specifically, the collection of statistics in the region is still weak at the bottom because of the lack of adequately trained enumerators. Statistics is also weak at the top because of the absence of a proper interpretation of the fishery data attributed to the inadequacy of expertise in data interpretation and the lack of appreciation for the need to interpret data. To some extent this could be also due to the inappropriate means of data presentation. Lastly, statistics are generally weak because existing laws and regulations do not have the clout to enforce statistical requirements and standards.

Sub-regional and Regional Organizations

44. The data collection systems adopted by sub-regional and regional organizations represented at the meeting were also discussed. The discussion focused on how these systems could help in the improvement of the data collection systems in countries in the region.

Mekong River Commission (MRC)

45. The expert from the Mekong River Commission (MRC) presented in brief the thrusts of MRC and impressed upon the Experts the significance of inland capture fishery resources of the Mekong River basin. An appropriate data collection system is being developed with the aim of improving the management of the resources in this most productive aquatic ecosystem in the region. However, it is recognized that an over-all resource assessment of the Mekong River basin may be difficult to undertake at present because of the difficulty of obtaining reliable data for the inland capture fisheries in the basin.

Southeast Asian Fisheries Development Center (SEAFDEC)

46. The expert from the Southeast Asian Fisheries Development Center (SEAFDEC) presented in brief the organizational structure, functions, and thrusts of SEAFDEC, including its role in promoting the improvement of fishery statistical collection and reporting in the region. This effort was carried out by SEAFDEC

through a series of workshops on fishery statistics aimed at unifying the statistical standards of collection, compilation and processing of fishery data. One of the major outputs of the earlier workshops was the Fishery Statistical Bulletin of the South China Sea Area published annually by SEAFDEC since 1978. In addition, the SEAFDEC Department in Malaysia also collects statistics on tuna fisheries in Southeast Asia.

Secretariat of the Pacific Community (SPC)

47. The expert from the Oceanic Fisheries Programme (OFP) of the Secretariat of the Pacific Community (SPC) explained that SPC primarily provides advice to their member countries on three areas, namely, tuna fisheries statistics, tuna biology/ecology and stock assessment and modelling. For tuna fisheries statistics, SPC has developed databases for its member countries, and provides information to the tuna research and assessment sections. At this stage, SPC has concentrated on the collection of regional fishery statistics for the tuna fishery. However, a major project to be undertaken by the Coastal Fisheries Programme (CFP) of the SPC, will endeavour to improve the collection of fishery statistics for the coastal resources, both at regional and national level.

FAO

48. FAO for its part has promoted the implementation of various instruments concerning the collection and exchange of fisheries data. These instruments include the 1995 UN Fish Stocks Agreement, the FAO Compliance Agreement, and the FAO Code of Conduct for Responsible Fisheries. Although these instruments do not dictate nor obligate countries on how to collect data, there is a general duty for countries to collect data on their fishing vessels' operations and to share these with agencies or countries concerned with respect to shared stocks. Because of that obligation for countries to share available data, there is the need for such data to be exchanged in internationally-agreed manner, using standard formats and codes.

49. Thus, the role of FAO is to assist and facilitate the development of statistical systems guided by these instruments, in order that data collected are acceptable at the international level thus maintaining the compatibility and comparability of such data. The Coordinating Working Party on Fishery Statistics (CWP) has agreed that a formulation for assigning responsibility for reporting data is needed. This would eliminate misreporting or double counting of data in confusing cases such as joint-fishing ventures or access agreements through the formulation of the definition of the nationality of catch data. The responsibility for reporting fishing activities and catch data lies firmly with the flag states.

APPLICABILITY OF THE FAO GUIDELINES FOR ROUTINE CAPTURE FISHERY DATA COLLECTION

50. The experts discussed the applicability of the FAO Guidelines for Routine Capture Fishery Data Collection in relation to their respective national efforts towards improving the collection of capture fishery data. The Guidelines are intended to serve as an aid for the designing and implementing routine data collection programmes and not as a manual of methods and procedures.

51. The Guidelines contain a wish list which provides a structural approach in understanding **why** data are collected, **what** data need to be collected, and **how** data are collected, managed and reported. The Guidelines needed to be developed to be management-friendly and structured in such a way that managers at all levels can use them directly as guide in developing their data collection programmes.

52. Specifically, the Guidelines aim to assist governments and fisheries management authorities to undertake routine data collection and processing necessary for the effective monitoring and management of capture fisheries and in particular for implementing the relevant articles of the FAO Code of Conduct for Responsible Fisheries; provide a summary of links between typical policy and management questions and data necessary to provide the answers; and provide a guide for organizing an effective and sustainable data collection programme.

53. After having considered the Guidelines, the Experts agreed that the implementation of the Guidelines be promoted as this can be very useful to their respective efforts in improving data collection.

54. The Expert from Australia considered the Guidelines as a very ambitious document, the objectives of which may be difficult to achieve considering the resources available in the region. Recognizing the need to collect data not only from direct fisheries but also on environmental aspects as well, he encouraged countries to take advantage of the Guidelines in order that data collected are comparable not only within countries but also among countries in the region. He suggested the promotion of cost-sharing in data collection through collaborative efforts within the countries, among countries and with international or regional organizations. In order for the Guidelines to be clearly understood especially at the top management level of each government, there should be a short summary of the Guidelines while keeping the original Guidelines as reference.

55. In the case of China where a data collection system is long established, the expert from China who considered the Guidelines as a useful document, requested that his country be given time to assess on how the Guidelines would fit into their existing system.

56. The expert from Indonesia considered the Guidelines as very important and useful and very applicable in his country's efforts to improve data collection. The Guidelines have various aspects and approaches that would be applicable to the various levels of management.

57. The expert from the Philippines looked at the Guidelines as a useful document because it could easily serve as basis for assessing the current data collection system adopted in his country. He suggested that since the title may not actually reflect the real contents and intentions of the Guidelines, this may be changed appropriately. The Guidelines could serve as valuable reference materials for a complete and comprehensive data collection system. It is, however, such a thick document for top-level management to peruse, thus, he suggested that a preface be developed which would introduce the Guidelines to all types of users. The preface could be an avenue for top level management to be aware of the usefulness of a complete and reliable data collection system.

58. The expert from Sri Lanka opined that the Guidelines are useful especially in organizing data collection system in accordance with international and national needs. The Guidelines can also help improve the data collection system in his country.

59. The expert from USA considered the Guidelines very comprehensive, noting that it could serve as a textbook or a dictionary. He agreed that middle management would be easy to deal with it but efforts should be made in order that the Guidelines get to the top level management, especially for budgetary allocation purposes.

60. The expert from Vietnam stated that the Guidelines are comprehensive and useful. However, he also agreed that the title may be revised to reflect the real contents of the Guidelines. He suggested that a strong rationale be included in the Guidelines to deliver the message on the importance of the Guidelines especially to top level management. He also suggested that some explanation on technical terms be included to make the Guidelines easily understood by all types of users.

61. The expert from MRC who agreed that the present title be revised, offered a new version of the title as Guidelines for Discussion on the Re-assessment of Routine Collection of Capture Fishery Data, in view of the fact that the Guidelines is structured for re-assessing the already existing data collection system in the countries. He added that national initiatives be conducted to discuss the Guidelines not only among statisticians but also among managers, planners, and other officers. He suggested as an output of such initiatives, countries could develop and implement systems at national levels based on the Guidelines and report the progress of such implementation to the regional level.

62. SEAFDEC for its part, can take the Guidelines as one of the important inputs in the compilation of data for its Fishery Statistical Bulletin for the South China Sea Area. The Guidelines will be considered as a useful guide for the appropriate activities being carried out by the SEAFDEC Departments in Thailand and Malaysia. SEAFDEC would look at its capabilities in implementing the Guidelines where and when appropriate, and the extent of its applicability within SEAFDEC's existing systems.

63. The expert from SPC commented that the Guidelines would be a useful document. However, since national systems have already evolved in many countries and which should not be scrapped, he suggested that the Guidelines may be considered as a tool in validating and expanding the scope of such existing systems of data collection.

64. Generally, most countries in the region can make use of the Guidelines by comparing it with what they already have in their existing national systems. The countries can organize pilot projects as case studies, based on the applicability of the Guidelines, and present the result of such implementation in regional forum. In this regard, APFIC was requested to convene such regional initiative where countries can feedback the application of the Guidelines.

65. The Secretary of APFIC agreed to the suggestion that the Guidelines would need a strong preface in order to be easily understood by top-level management. In addition, he suggested that countries should compare their existing systems with the

recommended systems in the Guidelines in order to attain compatibility of data collection in the region.

66. After the discussion, it was noted that the Guidelines can serve as a general approach in improving the data collection system in the region, although such approach may not be easily accessible to top level management. Considering that there is a highly increasing need for reliable data, the Technical Secretary of the *Ad hoc* Working Group agreed that some improvements could be made in the next version of the Guidelines to include the possible revision of the title, the inclusion of a strong preface and rationale, and the development of an executive summary, if only to promote the accessibility of the Guidelines in the most cost-effective way. A flyer should also be prepared to promote the document.

OPTIMIZING SUSTAINABLE DATA COLLECTION WITH LIMITED RESOURCES

67. The Technical Secretary of the *Ad hoc* Working Group encouraged the Working Group to avail of the tools developed by FAO for sustainable and cost-effective data collection, citing as an example sample survey systems as explained in the Guidelines and the software package ARTFISH/ARTSER developed by FAO which is applicable for designing sample surveys for small-scale fisheries. The software has already been converted into Windows version making it user-friendly.

68. Countries in the region have continued to search for statistical data collection system that would allow obtaining information even for a small number of units. Vietnam, for example, is implementing its ALMRV project which is a detailed sampling survey on fish landings including some biological aspects.

69. Citing how sample surveys are used in their areas of work, the expert from the Mekong River Commission (MRC) indicated that sample survey has been very useful as it is a sensitive approach in collecting data from inland waters such as the Mekong River. But it could be difficult and expensive to conduct a comprehensive sampling survey in other small-scale inland water systems such as rivers, swamps, and rice fields. An alternative system such as modeling for small areas should therefore be developed to collect the needed data such as socio-economics and other biological aspects.

70. Household fish consumption is an important indicator in inland capture fisheries. In the case of the Mekong River, the data are obtained not through direct collection of the consumption data but through a special system of gathering information from the fishermen or their children or any members of the family who go out to fish. The system adopted by MRC has resulted in more accurate data and a more comprehensive collection of data up to the species level has been recorded. MRC also collects data on the ecosystem of the Mekong River while the Asian Institute of Technology (AIT) conducts surveys on catches from rice fields.

71. A case study on the collection of data on small-scale fisheries in the Andaman Sea area which includes Phang-Nga Bay, using sampling survey of villages, was also reported by the expert of the FAO Regional Office. Catch-effort and income data from three main fishing gear such as the trammel net for shrimps, mackerel gill net, and crab gill net, were collected from logbooks of fishermen. From the study, the total catch for

target species, average income generated by each gear, and the income of the fishermen in the whole Andaman Sea area were generated.

72. In this connection, it was noted that sample survey data collection can be much more reliable if the sampling design takes into consideration such factors as seasonal changes, religious beliefs, cultural practices, among others. In addition, metadata (data about the data) such as seasonality, weather conditions, change in respondents should be included in the final report as this would greatly affect the accuracy of the data.

73. In the case of China, sample surveys have been used to collect data on income of fishermen or on some other socio-economic variables. However, under China's system of complete enumeration and bottom-up transfer of data from the grassroots level to the central government, problems related to the possibility of inaccuracies of data could arise. It was therefore suggested that a system be developed that would validate and confirm the accuracy of the data under similar circumstances.

74. In the United States, sampling survey has been used to impute data on total harvest, where the design of the survey takes into consideration the kind of data to be collected. Here, enumerators have been trained to properly collect data, taking note of the importance of validating the data before these are entered into the whole statistical system for analysis and interpretation.

75. Constant monitoring and validating of data from sample surveys are therefore very important. The possibility of adding confidence limits in the census reports to make it more accurate however, could not be applied for censuses because confidence limits are derived from sampling errors, and censuses are not subject to sampling errors.

76. In the Philippines, sample surveys are used for the collection of data from municipal and commercial fisheries. Problems were however encountered in establishing the sample survey, such as the construction of a good sample frame and appropriate sampling design, and establishing procedures for the review and validation of the whole sampling procedures. The accuracy of the sample from municipal fisheries could not be relied upon because of the difficulty in coming up with a list of municipal fishing vessels for the whole country. In such circumstance, a sampling methodology which is flexible and efficient should be developed.

77. As a user of the compiled data, SEAFDEC could optimize the usefulness of the data if these are collected using a good sample frame, and a census could be a good basis for the definition of such valid sample frame. Surveys should therefore be reliable and well-designed and based on up-to-date frame. Implementation of the surveys should be improved as this has been the main source of the inaccuracies.

78. After the discussion, it was suggested that basic courses on designing surveys be developed for the countries in the region and training of personnel involved in designing the surveys and socio-economic analysis be conducted. In addition, survey statisticians should be involved from the design phase to the implementation of the survey until the monitoring and analysis of the data collected.

REGIONAL PRIORITIES FOR IMPLEMENTATION BY MEMBER COUNTRIES

79. The *Ad hoc* Working Group identified priorities for implementation of the Guidelines in the region. These priorities were based on emerging issues related to capture fishery data collection as well as on the expectations of the types of data to be collected. The priorities which shall be for possible implementation by countries in the region as well as regional organizations, include the following:

- i. Raising awareness at the highest levels of the necessity to continuously review data needs and provide adequate means to collect reliable data through cost-effective means. This could be implemented by regional organizations such as APFIC and specifically through the promotion and implementation of the Guidelines;
- ii. Improving data collection systems at both national and regional levels. This could include methodology reviews, identification of priorities for data needs, specifying the reliability of data, establishing accountability for data collection, and awareness building on the necessity for reliable data. Countries should ensure that data collection systems are compatible with those adopted at the sub-regional and regional levels;
- iii. Strengthening knowledge on the current state of resources and fisheries as well as in socio-economics and environmental aspects;
- iv. Promoting regional cooperation in data exchange and harmonization of concepts, methodologies, classifications, and codes. This also includes data exchange and the setting up of standard methodologies at the regional level; and
- v. Promoting human resource development for statisticians as well as fishery experts and analysts, in order to strengthen the national capabilities in data collection and information analysis. Such training may be conducted by regional organizations having the capabilities.

PROMOTION OF COMMON APPROACHES FOR SUSTAINABLE DATA COLLECTION

80. The Working Group identified common approaches that could be promoted for sustainable data collection systems. These approaches ensure the capabilities of the countries in the region to collect reliable data. The strategy could include the initial focus on national efforts first then followed by regional interest. Inputs from FAO and APFIC will be useful in order for the countries to effectively carry out these approaches.

- i. Terminology should be unified by using common definitions, concepts, terms, classifications, and codes.

Classification of species, fishing gear, fishing vessels for statistical purposes should as much as possible make use of the standard classifications and codes

developed by FAO. This will make data collection comparable for the countries in the region.

Harmonization of methodology includes software development for use by countries in the region. Methods of analytical interpretation of data and modeling as in the case of inland fishery areas, should also be harmonized where possible.

- ii. Database development and data exchange. This concept can be very well carried out by sub-regional and regional organizations which have the capabilities. Exchange of data among the databases already developed should be promoted, where appropriate.
- iii. Socio-economic and environmental research. Monitoring the different types of fishing activity and types of gear used, the status of fish trade, characteristics of fish supply and demand as well as information relating to the contribution by the fishing industry to the national economy.

Collection of data on the changes in fishing communities and the exploited stocks, and how these changes affected the ecosystem are necessary to determine the interaction between fisheries and the environment. In addition, impacts of the changes in the environment on fisheries should be monitored especially in coastal areas and flood-plain driven inland systems/fisheries.

- iv. MCS and VMS. These systems can provide means of improving the reliability of fishing activity and other data through cost-effective collection means.

FUTURE ACTIVITIES

81. To ensure the continuity of the implementation of the Guidelines, a mechanism should be developed to follow-up the *Ad hoc* Working Group's recommendations.

82. Countries should undertake pilot case studies on the applicability of the Guidelines at the national levels.

83. APFIC should consider convening a follow-up consultation to review the results of the national pilot case studies. To further this effort, APFIC was asked to provide technical assistance to Member Countries on a cost-sharing basis.

84. Considering the importance of small-scale fisheries in the region, it was proposed that an *Ad hoc* Working Group be convened to review the methods of non-routine data collection for small-scale fisheries and propose alternative approach for management of inland fishery systems.

CONCLUSION AND RECOMMENDATIONS

85. The *Ad hoc* Working Group of Experts (WG) adopted the following recommendations on the applicability of the Guidelines in relation to the improvement of the collection of capture fishery data in the region.
- (1) The WG reviewed the Guidelines for the Routine Collection of Capture Fishery Data and commended the structured approach and framework which it provides for improved data collection through the evaluation of data needs and the implementation of cost-effective collection programmes. It recognized that this could contribute effectively to implementation of the Code of Conduct for Responsible Fisheries. The WG recommended that the document be distributed widely to members of APFIC, MRC, SEAFDEC and SPC and other regional fishery organizations in the Asia-Pacific region and that FAO produce a flyer promoting the Guidelines and explaining their purpose and importance to policy makers. It was further recommended that, for the next version of the Guidelines, consideration be given to including a policy makers' summary and refining the title.
 - (2) Given the increasing demand for reliable capture fishery data in response to concerns about the contribution of fisheries to food security, resource sustainability, impacts of fisheries on the ecosystem, and the need for caution when data are poor, the WG recommended that APFIC actively promote awareness at the highest national levels of the necessity to continuously review data needs and to provide adequate means to collect reliable data.
 - (3) The WG recommended that APFIC and other regional and sub-regional fishery organizations in the Asia-Pacific region actively promote implementation of the Guidelines in countries of the region through the conduct of workshops or training programmes at the regional or national level.
 - (4) The WG recommended that ongoing inter-agency communication and coordination and cross-sectoral briefing within countries be promoted to ensure that the multifaceted approach of the Guidelines is promoted through making the best use of all data collection, dissemination and analysis schemes for fisheries-related data. This could be accomplished through a national coordinating mechanism involving statisticians, scientists, fishery experts, fishery managers and policy makers.
 - (5) The WG recommended that countries apply the procedures in the Guidelines for particular fisheries and report this as case studies to APFIC. These case studies could be reviewed in a regional workshop on the implementation of the Guidelines.
 - (6) Considering the high cost of collecting capture fishery data and the prevalence of reductions in funding allocated by countries to statistical programmes, the WG recommended that countries ensure that adequate means are provided to collect reliable data through sustainable and cost effective programmes, irrespective of whether funds are provided from national sources or from partial

or complete cost recovery, bearing in mind that failing to collect data can have a higher cost.

- (7) The WG recommended that all programmes concerned with capture fishery data collection should contain mechanisms for timely validation of data, for specifying explicit data quality criteria and for assigning accountability for all steps of the process.
- (8) The WG reiterated the advice of the former APFIC Joint Working Party on Fishery Statistics (Bangkok, Thailand, 19-23 August 1997) that there is an urgent need to improve species details in statistics collected for capture fisheries, particularly for the commercially important species. The WG further recommended that sub-sampling be employed to describe the main components of mixed-species landings, at least to the level of family or genus. To facilitate this, regional and sub-regional fishery organizations and countries are encouraged to prepare local species identification guides for enumerators so that at least the main species can be identified, and the remainder described as some taxonomic groupings.
- (9) The WG recognized the valuable role that sample surveys can play in the collection of fishery statistics, particularly when funding is a constraint. In order to ensure that any sampling scheme remains appropriate, the WG recommended that the sampling design be continually monitored for its statistical validity and that list frame updating be undertaken when necessary.
- (10) The WG recommended that FAO make available standard international classifications and codes in a form readily accessible to countries and that APFIC undertake a review of the classifications and codes to advise on any necessary modifications in order to meet regional needs.
- (11) In order to ensure international comparability and consistency in fishery statistics and to facilitate efficient international exchange of fishery data, it is highly desirable that common terminologies, concepts, definitions, classifications and codes be harmonized in the region. The WG recommended that countries in the region adopt as far as possible standard international classifications and codes and that these be utilized in any international data exchange arrangements.
- (12) The WG took note of the responsibilities of flag states in monitoring fishing activity and catches of its vessels as stated in the UN Fish Stocks Agreement, the FAO Compliance Agreement, and the FAO Code of Conduct for Responsible Fisheries. It also took note of the refined formulation for assigning nationality to catch data which was agreed by the Eighteenth Session of the Coordinating Working Party on Fishery Statistics (Luxembourg, 6-9 July 1999). The WG recommended that countries address these responsibilities by ensuring that reliable fishery data are collected from all national vessels irrespective of where the vessels are fishing and that, where necessary, such data are provided to regional fishery bodies or arrangements.

- (13) The WG recommended that APFIC convene a workshop on alternative approaches to non-routine data collection for small-scale marine and inland fisheries, including socio-economic and environmental aspects.
- (14) Recognizing the importance that feedback information derived from scrutiny and analysis of data can play in improving data quality, the WG recommended that national authorities disseminate fishery data as widely as possible in easily accessible form and encourage their analysis through collaborative work among statisticians and fishery experts in academic or other research institutions. This might be encouraged by giving recognition to fishery statisticians in statistical publications, research papers and other publications.

**TERMS OF REFERENCE OF THE *AD HOC* WORKING GROUP OF
EXPERTS IN CAPTURE FISHERY DATA COLLECTION***

The functions of the *Ad hoc* Working Group shall be:

- 1) To consider the implications for national and regional fishery statistical programmes in the Asia-Pacific region of the FAO Guidelines on Routine Capture Fishery Data Collection;
- 2) To provide advice on priorities for implementation by member countries in order to improve the quality of such statistics;
- 3) To consider how sample-survey data collection methodologies can be utilized to optimize data collection with limited financial and human resources;
- 4) To organize a consultation/workshop to promote common approaches and sustainable data collection systems in the region; and
- 5) To report and advise APFIC on the status and the needs for further strengthening of fishery statistical programmes in the region.

• *As approved by the Commission at its Twenty-sixth Session (Appendix E(b) of the Report of the Twenty-sixth Session of APFIC, Beijing, People's Republic of China, 24-30 September 1998, p. 32).*

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AGENDA

1. Opening of the Session
2. Adoption of the Agenda and business arrangements
3. National needs and international obligations for fishery data
4. Review of potential applicability of the FAO Guidelines on Routine Capture Fishery Data Collection in APFIC countries
5. Optimizing sustainable data collection with limited resources: Making the most of sample surveys
6. Regional priorities for implementation by member countries
7. Promotion of common approaches and sustainable data collection systems
8. Future activities
9. Conclusion and Recommendations

LIST OF DOCUMENTS

APFIC/WGCFDC/99/1	Provisional Agenda and Timetable
2	Guidelines for the Routine Collection of Capture Fishery Data
3	International Obligations for Reporting Fishery Data
APFIC/WGCFDC/99/CR 1	Country Report – China
CR 2	Country Report – Indonesia
CR 3	Country Report – Malaysia
CR 4	Country Report – Philippines
CR 5	Country Report – Sri Lanka
CR 6	Country Report – Thailand
CR 7	Country Report – Vietnam

Information Documents

APFIC/WGCFDC/99/Inf. 1	List of Documents
Inf. 2	List of Participants
Inf. 3	Status of Fishery Statistics in Asia