# FISHCODE / MCS

# REPORT OF A REGIONAL WORKSHOP ON FISHERIES MONITORING, CONTROL AND SURVEILLANCE

Kuala Lumpur and Kuala Terengganu, Malaysia 29 June - 3 July 1998

**Workshop Proceedings and Recommendations** 



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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# FISHCODE/MCS

FAO/Norway Programme of Assistance to Developing Countries for the Implementation of the Code of Conduct for Responsible Fisheries

SUB-PROGRAMME C: ASSISTANCE TO DEVELOPING COUNTRIES FOR UPGRADING THEIR CAPABILITIES IN MONITORING, CONTROL AND SURVEILLANCE

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The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the United Nations or the Food and Agriculture Organization of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

#### PREPARATION OF THIS DOCUMENT

This report was prepared during the course of the Regional Workshop on Fisheries Monitoring, Control and Surveillance, held in Kuala Lumpur and Kuala Terengganu, Malaysia, 29 June - 3 July 1998.

This report and the two supplements includes the work of several authors who worked as resource persons during the Workshop. The report's recommendations were developed through working groups during the Workshop. Subsequently, the Workshop, in plenary session, reviewed and endorsed the recommendations, on the understanding that the secretariat would consolidate them to avoid duplication.

# TABLE OF CONTENTS

GI A		Page
	nmon acronyms and non-SI units used	VII
Map of the area	covered by the Workshop	viii
OPENING OF	THE WORKSHOP	1
PROGRAMME	OF WORK AND OBJECTIVES	1
SUMMARY O	F PRESENTATIONS	2
Overview of iss	ues of concern to fisheries MCS in the region	2
Marine Fisherie	s of South and Southeast Asia: review of the resources and the need	
į	for MCS	2
Legal aspects of	f cooperation in MCS	4
MCS: The New	Zealand Experience	5
Fisheries and M		6
Administrative J	procedures and requirements for licensing	7
Fisheries and M	ICS in Namibia	8
Fisheries and M	CS in the Philippines	13
	or the licensing of vessels (national and foreign)	14
	edures at sea and on land	15
MCS and artisar		16
	ployment opportunities for displaced fishers	17
Fisheries and M		17
Inmarsat presen		18
	nunications presentation	18
	ating to vessel monitoring systems	18
Fisheries and M		19
Fisheries and MCS in Bangladesh		21
Marine Parks in		22
	CS in Indonesia	22
Formation of W		23
	engganu: Mock boarding and visit to marine park	23
Workshop recor	nmendations	24
CLOSING OF	THE WORKSHOP	27
Appendix A	PROGRAMME AND TIMETABLE	29
* *	LIST OF PARTICIPANTS	31
	WELCOMING ADDRESSES	37
	LIST OF DOCUMENTS	45
Appendix E	REPORTS OF THE WORKING GROUPS	49

The Country Reports and Country Case Studies presented during the meeting have been prepared as a supplementary volume (GCP/INT/648/NOR Field Report C-1/Supp.1):

P. Martosubroto. Marine fisheries of south and southeast Asia: a review of the resources and the need for monitoring control and surveillance

Teo Siong Wan. MCS of fisheries in Malaysia.

- P. Flewwelling. Integrated coastal resources management, livelihood development and MCS A Philippine example.
- P. Flewwelling. MCS in the Forum Fisheries Agency.

# Country Reports

Country report – Bangladesh

Country report – Cambodia

Country report – India

Country report – Indonesia

Country report – Myanmar

Country report – The Philippines

Country report – Sri Lanka

Country report – Thailand

Country report – Viet Nam

P.E. Bergh & S. Davies. An overview of Namibian fisheries, focusing on MCS.

Technical papers presented during the meeting have been prepared as a supplementary volume (GCP/INT/648/NOR Field Report C-1/Supp.2):

- G.V. Everett. Issues of concern to fisheries monitoring, control and surveillance in the region.
- P. Cacaud. Legal issues relating to vessel monitoring systems.
- C. Leria. Marine parks and reserves.
- G.B. Parkes. Information systems, options and uses.
- G.B. Parkes. Inspection procedures and the use of observers.
- P. Flewwelling. Points to remember for armed boardings.
- G.B. Parkes and C. Mees. Fisheries MCS a multipurpose questionnaire.
- MRAG Ltd. Requirements and procedures for national and foreign fishing vessels seeking authorization to fish in an EEZ
- C. Mees. MCS of domestic artisanal fisheries.
- A. Van Houtte. Legal aspects of regional cooperation in MCS.
- G.B. Parkes. The payment of fees for access to fisheries in EEZs.

#### GLOSSARY OF COMMON ACRONYMS AND NON-SI UNITS USED

APFICAsia-Pacific Fisheries Commission

ASEANAssociation of Southeast-Asian Nations

BOBP Bay of Bengal Programme

CBFMcommunity-based fisheries management

DWFNdistant-water fishing nation

EEZexclusive economic zone

FARMCFisheries and Aquatic Resources Management Council

FFASouth Pacific Fisheries Forum Agency

GDPgross domestic product

GNP gross national product

GPS global [satellite] positioning system

GT gross tonnage

ITQsIndividual Transferable Quotas

LOA length overall

MARPOLInternational Convention for the Prevention of Pollution from Ships

MCSmonitoring, control and surveillance

MSYmaximum sustainable yield

QMSQuota Management System

SEAFDECSoutheast Asian Fisheries Development Centre

SEAPOLSouth-East Asian Programme in Ocean Law Policy and Management

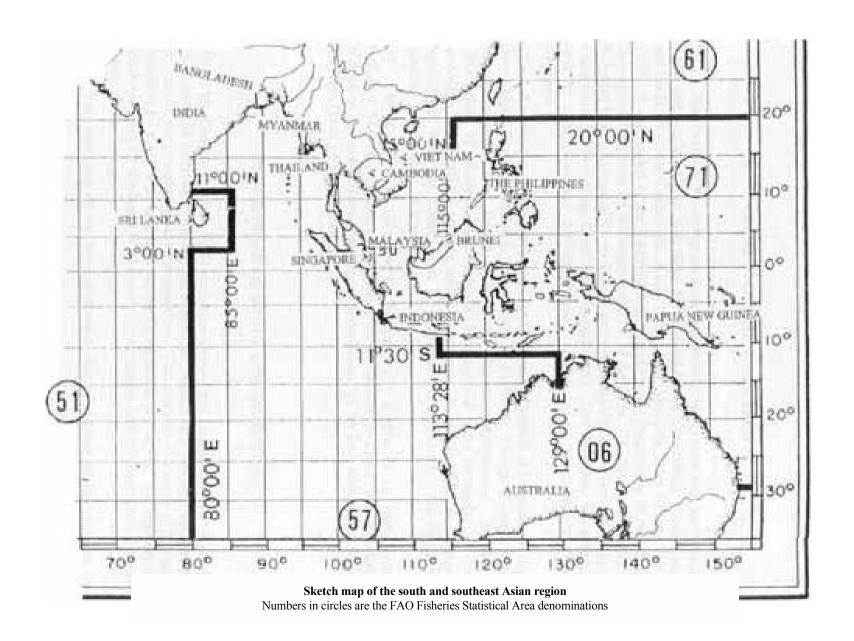
TACtotal allowable catch

UNCLOS1982 United Nations Convention on the Law of the Sea

VMSvessel monitoring system

Unless otherwise specified, only SI units are used, except for:

hp horsepower  $(1 \text{ hp} \approx 746 \text{ Watt})$ n mi nautical mile (1 n mi = 1 852 metre)



#### **OPENING OF THE WORKSHOP**

- The Regional Workshop on Fisheries Monitoring Control and Surveillance in South and Southeast Asia took place at the Hotel Grand Continental, Kuala Lumpur, and the Hotel Grand Continental, Kuala Terengganu, Malaysia, from 29 June to 3 July 1998. It was funded by the FAO/Norway Inter-Regional Programme of Assistance to Developing Countries for the Implementation of the Code of Conduct for Responsible Fisheries (Subprogramme C: Assistance to Developing Countries for Upgrading their Capabilities in Monitoring, Control and Surveillance). The Workshop was attended by over 50 participants and resource persons. A full list of participants is given as Appendix B.
- A welcoming address was given by the Director General of Fisheries, Malaysia, Dato' Mohd Mazlan Bin Jusoh. On behalf of FAO, Mr Phillips Young, Resident Representative of the United Nations Development Programme, thanked the Government of Malaysia for the warm welcome and good arrangements for the workshop. The official opening address was given by the Honourable Minister of Agriculture, Malaysia, Datuk Amar Dr Sulaiman bin Hj. Daud. The texts of the speeches are provided in Appendix C.
- 3 Mr Kevin W.P. Hiew, of the Marine Parks Section of the Department of Fisheries, Malaysia, chaired the Workshop for the sessions in Kuala Lumpur, while the Workshop sessions in Kuala Terengganu were chaired by Mr Raja Mohammad Noordin bin Raja Omar of SEAFDEC.

#### PROGRAMME OF WORK AND OBJECTIVES

- 4 Mr George Everett, FAO Fisheries Department, introduced the Workshop, which covered fisheries in the Bay of Bengal and South China Sea, and explained the structure of the proceedings and the objectives. This was part of a series of Workshops organized by FAO with funding from the Government of Norway, the most recent of which had been for the South West Indian Ocean region, held in Mauritius in December 1996.
- 5 The objectives of the Workshop were similar to those of the previous one, namely to:
- (i)review the status of national, regional and foreign fleet activity in the exclusive economic zones (EEZs) of the region, including the identification of problems and constraints associated with such fishing by both licensed and unlicensed vessels:
- (ii)consider areas where States might strengthen existing monitoring, control and surveillance (MCS) systems, including identification of constraints to MCS cooperation; and

- (iii) propose recommendations for strategies that might be adopted to improve MCS capacities nationally, sub-regionally and regionally.
- 6 It was stressed that the Workshop was not intended to result in definitive conclusions regarding the future of MCS in South and Southeast Asia, but was designed primarily as a forum for discussion between key individuals involved in MCS from the various countries of the region.
- The Programme and Timetable are provided in Appendix A. The Workshop took the format of presentations during plenary sessions, and working group discussions on specific topics. Participants made brief presentations on their respective national experiences in the formulation and implementation of MCS systems, and sought to identify national and sub-regional problems encountered. Summaries of all presentations are provided here. The country reports and country case studies presented at the workshop appear in full in Supplement 1, and the technical papers as Supplement 2 to this report.

#### **SUMMARY OF PRESENTATIONS**

#### Monday, 29 June

#### Overview of issues of concern to fisheries MCS in the region

8 G.V. Everett presented an *Overview of issues of concern to fisheries MCS in South and Southeast Asia*. It provided an explanation of the definition of the three components of MCS and emphasized the role of MCS as a vital part of the management process, leading to the implementation of various types of management measures for the control of fisheries. The paper provided a brief overview of the status of MCS in the countries of the region, setting the scene for the more detailed presentations to be given by the national participants.

# Marine Fisheries of South and Southeast Asia: review of the resources and the need for MCS

- 9 P. Martosubroto, FAO Fisheries Department, presented a review paper summarizing the resources and the need for MCS in South and Southeast Asia.
- Marine fisheries in South and Southeast Asian countries had shown rapid development since the 1970s. In 1996, the total landings of the region amounted to  $11.7 \, \text{million} \, t$  an increase of 19.4% over the 1990 level (9.8 million t). The region was characterized by the large number of fishermen, which reached 7.3 million in 1996, excluding those involved in the post-harvest sector. Total export value from the fisheries in the region reached \$US 8 900 million in 1995.
- The marine fisheries of the region were concentrated in two main areas, namely the Bay of Bengal and the South China Sea. Total landings of the countries bordering the Bay

of Bengal reached 4.1 million t in 1996, while that of the South China Sea reached 7.6 million t. The extensive area of continental shelf in the South China Sea, coupled with the large number of countries bordering the area, as compared to the Bay of Bengal, contributed to the difference in landings.

- Harvesting of marine resources in the region was characterized by multi-species and multi-gear fisheries and a large number of fishermen. A large proportion of the total landings came from the small pelagic miscellaneous fish groups. Landings of these groups had shown an increasing trend, while catches of demersals had shown either stagnation or were declining for certain species. Shrimp and demersal fish had experienced heavy fishing pressure, particularly from trawling, which for many coastal areas had resulted in declining catches, for example, the landing of shrimp in the Bay of Bengal and of catfish (*Arius* spp.) in the South China Sea.
- Management measures had been in put in place to address the problems of overexploitation. The most common measure was a zoning scheme with allocation of fishing opportunities by size of vessel and types of gear. Closed seasons had also been introduced by some countries for the management of small pelagic fisheries.
- MCS was an integral and important component of management. Fisheries management institutions in the region were either relatively young or absent. The implementation of MCS was therefore in its infancy. Many countries continued to rely on the support of the Navy, Coast Guard or Marine Police to deal with MCS activities. Malaysia had developed the most advanced MCS unit of the countries in the region.
- 15 Through Executive Order No. 240/1995, the Philippines had established their Fisheries and Aquatic Resources Management Council (FARMC) to support the development of a community-based fisheries management (CBFM) system. Under such a system, the responsibility for MCS would reside with the community, which could reduce the cost to the Government.
- Major challenges for fisheries management in the South and Southeast Asia region had arisen from the rapid development of fisheries, the complex nature of those fisheries, the large number of fishermen and the relatively young management institutions. The FAO *Code of Conduct for Responsible Fisheries* provided guidelines for the development of fisheries management systems in the region, and the development of effective MCS was a priority. Recent advances in information technology through electronic communication should eventually reduce the cost of MCS. In the absence of good fisheries management, the financial loss of the fishery sector would be substantial.

#### Legal aspects of cooperation in MCS

- Ms Annick Van Houtte, FAO Legal Department, dealt with *Legal aspects of regional cooperation in MCS matters*. After a brief introduction to the concept of MCS, on reasons for and constraints in regional collaboration in MCS, *inter alia* in the Southeast Asian region, the presentation covered the following points: the relevant international legal instruments which could constitute a legitimate basis for developing regional collaboration in MCS; the legal aspects of cooperation in MCS; and cooperation in the conservation and management of high seas fish stocks, in particular straddling fish stocks and highly migratory species. Aspects of regional collaboration in MCS, in particular in legal issues, were then illustrated by two case studies: the South Pacific Fisheries Forum Agency (FFA) and the Sub-regional Fisheries Commission (West Africa).
- The 1982 United Nations Convention on the Law of the Sea (UNCLOS 1982), the FAO Code of Conduct for Responsible Fisheries, the FAO Compliance Agreement and the 1995 UN Fish Stocks Agreement could be used as a basis for developing regional cooperation in MCS with a view to conserving and managing the living resources, both within waters under national jurisdiction and on the high seas. However, an essential first step towards closer cooperation in MCS consisted of identifying a coordinating forum, with well-defined objectives and a clear work plan. Within the Asian region there were a number of international and regional organizations and agencies currently involved in promoting technical cooperation in fisheries development and marine affairs, and one could argue that a framework for cooperation existed. The agencies included the Association of Southeast-Asian Nations (ASEAN), the Asia-Pacific Fisheries Commission (APFIC) and its subsidiary bodies, created under Article XIV of the FAO Constitution, and the Southeast Asian Fisheries Development Centre (SEAFDEC). Among the regional programmes, there was the South-East Asian Programme in Ocean Law Policy and Management (SEAPOL), which happened to cover legal matters related to UNCLOS 1982.
- Regional and sub-regional fishery organizations were expected to play a more active role in the conservation and management of straddling fish stocks and highly migratory species, especially under the 1995 UN Fish Stocks Agreement. Likewise, the FAO Compliance Agreement required "parties to cooperate as appropriate in the implementation of" the Agreement. Amongst the matters of cooperation referred to and of particular relevance to MCS were exchange of information, including evidentiary material, relating to activities of fishing vessels among the parties and FAO, and cooperation between the port State Party to the Agreement, and the flag State, where a vessel was voluntarily in a port and was believed to have undermined the effectiveness of international conservation and management measures.
- To meet the challenge of protecting fisheries resources at a regional or sub-regional level, FAO had always strongly supported cooperation towards ongoing and progressive harmonization of fisheries laws and regulations, and this process was now well advanced in a number of regions (Eastern Caribbean, South Pacific, West Africa). This harmonization process focused in particular on those rules regulating access to fisheries resources, the reporting of data, the powers of the enforcement officers and inspectors, and the scale of offences and related fines and penalties. Cooperation in MCS and more specifically in

the above areas – could be illustrated by what was currently happening in the South Pacific and in West Africa. In both regions, MCS was part of the overall process of fisheries management, but at a very different scale.

- The South Pacific provided an excellent example of the benefits of regional cooperation in MCS. It significantly enhanced the effectiveness of individual MCS programmes at a relatively low cost, and it increased the level of compliance with national fisheries laws and regulations because of the adoption of coordinated policies towards MCS. The Regional Register and the development of a regional observer programme contributed to gaining detailed information on vessels, vessel owners, operators and masters, as well as important scientific data. In contrast, the activities of the Sub-regional Fisheries Commission (West Africa) showed that many basic and modest goals could be achieved through more straightforward, less politically-sensitive, initiatives such as the establishment of a regional vessel register, the adoption of harmonized fisheries laws and regulations, and the establishment of a regional coordinating mechanism for the exchange of information.
- 22 In conclusion, it was reiterated that MCS was a key component in fisheries management and it deserved a common policy at regional or sub-regional level. A critical requirement for effective regional MCS was a strong political commitment to regional cooperation in MCS and to making it work. Meanwhile, harmonization of laws and regulations could constitute easily a first modest step for action towards regional collaboration in MCS

#### MCS: The New Zealand Experience

- B. Shallard, formerly of the New Zealand Ministry of Fisheries, gave a presentation on the experience of MCS in New Zealand. This focused primarily on the control of New Zealand fisheries through the implementation of a Quota Management System (QMS) using Individual Transferable Quotas (ITQs). This approach to management was based on the philosophy of the Government being the trustee and manager of the resources, but that those generating benefit from harvesting those resources should pay for their management. The ITQ represented a tradable and/or leasable portion of the total allowable catch (TAC), which conferred on its owner the right to harvest, but no guarantee of catch.
- 24 The QMS was considered to conserve depleted stocks through:
- imposing a direct limit on the output from the fishery;
- encouraging the fishermen to "farm" the resource, rather than "hunting";
- reducing the "race for fish"; and
- instilling attitudes of self-compliance in industry participants.
- 25 It was also considered to encourage efficient economic behaviour by the industry and the coastal State by:
- reducing costs to fishermen;
- allowing fishermen to adjust their level of activity;

• encouraging inefficient operators to exit; and

- providing a means of assessing fishery value and, *de facto*, a virtual asset for raising capital for fishing ventures.
- Government expenditure on MCS had shifted away from the surveillance component and concentrated more on monitoring. The potential for conflicts between deepwater and smaller inshore vessels was reduced by segregation into zones (inside and outside 12 nautical miles). Penalties for quota offences were high and could include forfeiture of quota, vessel, or catch, or any combination. Also, fines of up to NZ\$ 1 million might be imposed.
- The results of the New Zealand experience were considered to be generally very good. Previously stressed fisheries were showing signs of recovery, including the rock lobster fishery, which now showed good growth. New Zealand's fishing industry had prospered and now shared responsibility for fishery management in cooperation with the Government. The indigenous Maori people had also benefitted and were involved in fishing both at a local traditional level and in the commercial industry. The success had lead the New Zealand Government to refine its fisheries legislation to bring other commercial species under the QMS, whilst ceasing to intervene directly in individual fishing operations.

#### Fisheries and MCS in Malaysia

- Mr Teo Siong Wan, Head MCS Section, Department of Fisheries, Malaysia, provided a background description of the fisheries in Malaysia, and a brief description of the manner in which MCS was conducted by the various organizational units of the Department of Fisheries. A number of staff, with patrol vessels, were based along the coast in order to enforce the fishery regulations, in particular those concerned with fishing zones.
- 29 He concluded by recognizing the benefits that could derive from regional collaboration in MCS. These included greater cost efficiency and increased compliance with fisheries management and conservation rules.
- The presentation concluded with a demonstration of the various aspects of Malaysian MCS, including the various types of fisheries licences and permits, the logbook programme, the collection of data, the surveillance framework, the vessel monitoring system (VMS), etc., which provided the participants with a concrete understanding of the importance of and framework for MCS in Malaysia.

#### **Information systems for MCS**

31 G. Parkes, MRAG Americas Inc., gave a brief presentation outlining the importance of information support and management for MCS. The importance of information support for MCS had been emphasized in several FAO guidance texts, including the Code of Conduct for Responsible Fisheries and the Precautionary Approach. Conservation and management measures which aimed to avoid or reverse the consequences

of overexploitation and overcapacity should be based on the best scientific evidence available, which in turn required complete, accurate, reliable and timely fisheries data.

- The collection and exchange of data and information was often a prime motivator in the forming of regional management organizations, particularly where migratory, straddling and transboundary stocks occurred.
- A diagrammatic presentation of the data and information flows in fisheries demonstrated the linkages between commercial fisheries monitoring, resource assessment, implementation of controls and surveillance, and enforcement. The importance of verification of information through cross referencing and comparing data from several different sources was emphasized. The ultimate goals of the surveillance and compliance operation should be the removal of illegal vessels, the maintenance of a deterrent against illegal activity and the protection of the fishery for legitimate fishers.
- The implementation of an information system for fisheries required a number of key components, including a cost-effective data collection programme and a viable computer and communications system for the storage, analysis and presentation of data.

# Administrative procedures and requirements for licensing

- 35 C. Mees, MRAG Ltd., presented the paper *Requirements and procedures for national and foreign fishing vessels seeking authorization to fish in an EEZ*, which provided a template for the development of guidance documentation. The contents of such documentation were described, explaining the administrative procedures needed to comply with a coastal state's licensing requirements. Sample formats for various application forms and licences were also presented.
- Following an introductory section outlining the background information, management policy, legislation and requirements for access (e.g., types of licence) to the fishery, administrative procedures were described. It was stressed that before fishing licences were issued, applicants should complete fishing vessel registration formalities, although registration and licence application could be done simultaneously. Detailed information on vessel characteristics, legal personalities and fishing operations, together with a photograph of the vessel, were usually required to register a vessel. Such information did not usually change significantly and was thus required only once. Registration did not guarantee a licence, so usually only an administrative fee would be charged. Having completed registration formalities, licence application and issue could be very fast (e.g., same day by fax for vessels on the high seas wishing to enter a fishing zone) if an efficient mechanism for the transfer of licence fees were in place. Licences should be required not only for fishing vessels, but also transshipment and other support vessels that might, for example, engage in fish-searching activities, thus enhancing the efficiency of a fleet. During licence application, the agent, owner, or charterer would be responsible for notifying the authorities of any changes to the vessel or its operations since registration.
- 37 Guidance documentation should describe the fisheries law and regulations, including other relevant legal instruments (e.g., maritime and environmental laws) with which the holders of any licence must comply. Means of marking and identifying licensed

vessels were required and it was suggested that the standard adopted by the 18th Session of the FAO Committee on Fisheries should be implemented. Terms and conditions of licensing should also be described in this section of the document, outlining *inter alia* the requirements for compliance, reporting and facilitating inspection and observer programmes. A section expanding on the requirements for completion of formalities before, during and after fishing operations, and on reporting requirements, (satellite, radio, logbooks) was then described. It was indicated that it might be appropriate to develop two versions of guidance administration for ease of use: one for owners or agents (complete documentation required) and another for on board fishing vessels (licence registration and application documentation not necessarily needed).

The details of a section in the guidance documentation relating to the use of ports and harbours were outlined. This should describe the designated ports and port regulations, and requirements for customs, immigration, quarantine and transshipment. Finally any additional relevant information specific to the local fishery should be described. This could include contact persons and details, any mechanisms for the transfer of licences, a chart indicating the coordinates of the EEZ and restricted areas, and so forth.

#### Fisheries and MCS in Namibia

39 P.E. Bergh, Project Manager, Namibia, presented the paper *An overview of Namibian fisheries, focusing on Monitoring Control and Surveillance operations in a developing country*, based on recent experiences in Namibia.

# General description of Namibia and its fisheries

- 40 Namibia was situated on the west coast of Africa, between South Africa and Angola. The country had six times the area of United Kingdom, but with a population of only 1.7 million, with a coastline of 1 700 nautical miles.
- 41 Following independence in 1989 and the establishment of the EEZ in 1990, Namibia had developed a fisheries administration and a thriving commercial capture fisheries industry that had grown rapidly, while becoming increasingly more Namibian:
- •The fishing industry was based on the high productivity of the Benguela Current system, one of the four eastern boundary upwelling current systems in the world.
- Fisheries contributed about 7% to the countries gross domestic product (GDP).
- •The fishing industry employed an estimated 12 800 people.
- •In 1996, 309 vessels were licensed to fish in the Namibian EEZ, with 76% of these carrying the Namibian flag.
- •All fish were landed in Namibia through two ports.
- •The export value of the fish was estimated in 1996 to be \$US 300 million.
- •The outlook for Namibian fisheries was promising, with environmental conditions returning to an apparently more normal state, and further expansion occurring in the deep-sea and other fisheries.

- The Ministry of Fisheries and Marine Resources had adopted two broad categories of management and control measures:
  - 1.**Input controls** These related to fishing effort and gear, and to the permissible time and place that fishing might take place, mainly by the limitation of total fishing effort and seasons; and
  - 2. **Output controls** These related to set limits and regulations on the amount of fish that could be caught, and on the size and other characteristics of the fish that could be landed. The main control was by the establishment of TAC and quota allocations.

### Monitoring, Control and Surveillance

- The management of Namibian fisheries required an integrated approach to MCS, involving the deployment of fishery officers to air, sea and land patrols; observer coverage on fishing vessels; and remote electronic monitoring. Monitoring and protection activities were designed to ensure compliance with the legislation, policies and programmes related to the conservation and protection of Namibia's marine resources.
- The Ministry of Fisheries and Marine Resources operated two patrol vessels on the coast to patrol closed and boundary areas, and to conduct inspections at sea to ensure compliance with all of the regulations designed to ensure well managed fisheries. Random inspections were undertaken at sea.
- As a part of the Ministry of Fisheries and Marine Resources' conservation and protection efforts, the Ministry deployed contracted observers on all vessels fishing in Namibian waters. These observers gathered scientific information on the catches, and provided on-site monitoring of compliance with fisheries regulations. They were able to report infractions such as dumping or discarding, fishing in closed areas, instances of offshore pollution, misreporting of catch, retention of prohibited catch or use of illegal gear.
- 46 Captains were required to complete logsheets on a daily basis and the observers checked that information. This provided important information on catch and effort, which complemented the observers' scientific data. The researchers also ran regular survey cruises to assess biomass.
- 47 Aircraft were used to monitor, locate and track fishing fleets and detect violations such as fishing in closed areas. The aerial presence also served as a visible deterrent to illegal fishing and allowed more effective deployment of patrol vessels.
- Fisheries inspectors provided another means of verifying the amount and type of fish landed. Inspectors monitored the offloading of fishing vessels as they brought their catch ashore at either of the two ports. This provided accurate landing information, required for calculation of levies and quota control, scientific evaluation of fish stocks and fisheries management. This effort was complemented by random vessel inspections carried out by Fisheries Inspectors from the patrol vessels.
- 49 Remote electronic monitoring of fishing vessels, using satellite tracking, was still at the pilot stage. Currently, five Namibian fishing vessels were voluntarily carrying satellite-

tracking devices. If the pilot project proved successful, the use of satellite transponders might be extended to a larger number of Namibian offshore and mid-shore fishing vessels.

#### **Training**

- The government early in its development of an MCS capacity identified training as the key factor in building up local knowledge and experience. The short-term MCS goal of reduced illegal fisheries was quickly reached; a greater challenge remained in terms of human resource development.
- The patrol vessels (initially three, but now two) were at first manned by Norwegian and Danish officers and crew, but a successful training programme provided a Namibian crew within the first year. However, as officers required a more long-term perspective, a cadet programme was established, aiming for internationally recognized maritime certificates as well as specialized training for fisheries patrol vessel tasks. The first intake of cadets was in February 1992, and the latest intake was in February 1997. The total number of cadets was currently 48, with 14 officers having completed their training.
- The inspectors and observers employed in the early 1990s were confused by the expectations they met from the industry, due to low levels of education and little or no practical experience. It was clear that an education programme was needed to reach the goals of the Ministry. The documentation for such training was finalized in May 1995 and first implemented in July 1995. To date, three courses had been run, combining 6 months theoretical and 3 months in-service training. The course contained legal subjects as well as biological and maritime.
- The observers, numbering around 230, had traditionally worked as *the eyes and ears* of the Ministry at sea. Their duties revolved around monitoring the compliance of fishing vessels with fisheries law. In 1996, the Ministry expanded the brief of observers to meet the information needs of stock assessment, by training and equipping them to monitor and collect biological information on the fish catches. The programme that evolved became known as the Commercial Sampling Programme.

# Experiences related to building up a MCS organisation

- Hardware, in the sense of vessels, aircraft and other equipment, is often a crucial factor in the cost effectiveness of any operation. The level of control needed, knowledge, experience and running costs should be given serious considerations in the planning phase.
- Lessons learnt the hard way include:
- •A desire for advanced technology can later become an obstacle due to underestimated training needs and capability of human resources.
- •High investment costs and underestimated running costs can lead to low MCS efficiency as efforts are made to stay within allocated budgets.
- •Second-hand items purchased without exact specifications based on in-depth analyses of actual needs resulted in the purchase of equipment unsuitable for the task and consequent poor MCS efficiency.

- Human resources could never be replaced by good documentation or manuals, and it was also necessary to assess whether a well trained, better paid and smaller work force would result in higher productivity than a less competent, larger workforce. This had to be considered in the light of:
- •knowledge levels,
- •recruitment procedures,
- •probability of corruption,
- •training capacity,
- •professional attitude of the organization, and the
- •political and social requirements of the country.
- 57 These factors were often underestimated and obtaining a balanced evaluation could be difficult. As for hardware, it could not be stressed enough how important a well conducted needs analysis including an integrated approach to hardware and human resources was to the development of any MCS project.
- Training provides the knowledge that is one of the main keys to success in any MCS operation. Basic knowledge would be needed immediately if the organization wanted to gain respect from stakeholders and to initiate a professional and functioning operation. Training had to be planned for and started as one of the first actions in developing any operation or organization.
- In order to plan for training, an analysis of needs and current levels of knowledge within the recruited staff would be required. The programme should include a well designed training plan for all levels of staff, and which ran throughout their career structure. It was recommended that modular vocational training be used for the lower-level jobs in the organization. It was also seen as important that appropriate criteria were applied to the qualifications demanded from instructors, so as to ensure that a certain level of quality was maintained in the teaching. The instructors should also be suitably trained and rewarded for their work. Education should be officially acknowledged, for example through permanent employment, higher rank, bonuses or higher salary. This was important for motivation and recruitment.

# Information Management

- Large amounts of varied information are generated in MCS activities. Some of this was required almost immediately for surveillance activities, while other information was needed less immediately, but as a contribution to a long time series. These different requirements for information made good information management vital. The definition of *good* was not an easy one: striving for accurate and timely information was important, but what information and in what format were also vital questions. It was far to easy to collect too much information, which then became a burden on administrative and database systems for compilation, verification and storage.
- 61 It had to be remembered that information systems easily became overambitious, and this was especially true when previous systems had been manual. Implementation and

the training of personnel to maintain the system often took longer than envisaged. In these cases a sensible approach would be to design and implement a phased introduction, with one or two elements of the system being implemented at any one time, and with total integration occurring later.

- 62 In order to minimize the need for possible changes expensive in both time and money it was good practice to analyse working routines and real information requirements in depth, and improve as appropriate, before any database was designed. Such an analysis would:
- •identify information needs through analyses of working practices and management requirements;
- eliminate unnecessary information categories;
- •avoid overambition in the design and implementation phases keep it simple; and
- provide an objective assessment of the totality of training needs.

# Other MCS platforms

- Governmental duplication of MCS tasks was common and often created some discussion as to where responsibilities should be allocated to maximize effects or to reduce costs. This could easily result in compromises were the fisheries surveillance to become lax. It was quite obvious that a diverse task requires a broad knowledge of the operations, with priority assigned to the primary elements.
- A navy was normally neither designed, educated nor particulary trained for fisheries MCS operations. The organization could be a valuable asset in matters of border violations by unlicensed vessels, but seldom efficient with catch or equipment controls.
- A coastguard service was far more oriented to fisheries protection tasks, and probably less advanced than a navy in terms of training and equipment. A coastguard was normally designed round the United Nations Law of the Seas Convention, with basic police tasks to perform, with emphasis on border violations, fisheries, Search and Rescue Operations, customs and immigration tasks.

#### **Conclusion**

- It was of vital importance to invest time and resources in analysing the actual needs of the organization in terms of hardware, human resources and training. A lot of money had been wasted in the past as a result of poor decisions based on weak planning. The effort of developing a clear definition of purposes and needs was therefore a valuable investment for the future.
- Training facilitated the efficient use of resources, whereas lack of training resulted in unprofessional behaviour, costly maintenance, poor decision making and lack of respect from the industry. Training was therefore a natural and key part of the development of the MCS organization.
- It was sensible to initially create a basic and simple organization if local experience was limited, and to begin with only one segment of the industry so as to gain needed experience before expanding the programme in a phased manner. Larger responsibilities

could be assumed when the organization was confident and ready to meet greater challenges.

#### Fisheries and MCS in the Philippines

- Ms S.V.R. Arcamo, BFAR, the Philippines, presented a country report on the Philippines. The Philippines had an extensive EEZ and territorial sea, covering 220 million ha. The archipelago had a total coastline of 17 460 km. The country faced a wide range of problems in relation to the management of its marine resources, including environmental problems such as degradation of the marine habitat (75% of the coral was degraded and 33% of the seagrass areas were damaged); overfishing and illegal and destructive fishing practices; socio-economic problems such as poverty and a lack of alternative livelihoods for displaced fishers; and legal and institutional problems, such as inappropriate or inconsistent laws and policies, overlapping jurisdictions and weak law enforcement.
- An MCS system had been designed based on the following assumptions:
- •there existed appropriate inter-agency political will and commitment to conserve and protect the Philippine waters and their resources;
- •fishing was a privilege and not a right, but sustenance fishers had preferential access to the fisheries within conservation limits; and
- •fisheries and habitat conservation were essential components of rational fisheries management and therefore should be viewed in a holistic context.
- 71 Implementation of the MCS system included a coordinating mechanism, an infrastructure component (monitoring and surveillance facilities) and a support component (database management system, licensing and reporting systems, etc.).
- 72 The MCS system had been endorsed by the President in July 1995, but implementation was advancing slowly due to limited resources. Currently, activities were concentrated in inshore areas. Offshore surveillance required the cooperation of the Department of National Defence (DND).

# Tuesday 30 June

# Arrangements for the licensing of vessels (national and foreign)

G. Parkes presented a paper on *The payment of fees for access to fisheries in exclusive economic zones*, which discussed the issues to be considered when setting access fees for the licensing of national and foreign vessels authorized to fish in the EEZ of a coastal State. Agreements under which foreign vessels were granted access to an EEZ frequently included individual vessel licences, for which fees were payable. Licence fees for foreign vessels were frequently seen as a means of generating revenue for the coastal

State, which might be used in part to finance the fishery management programme. Management of domestic fisheries was frequently less restrictive than for foreign vessels, and might or might not involve a licensing system. Where present, domestic licence fees were generally much lower than for foreign vessels, and were often expected to achieve no more than to cover the cost of administration of the licensing scheme.

- The paper discussed the background to the principle of foreign access to EEZs under the terms of UNCLOS, focusing particularly on the principle of the *surplus allowable catch*. It was considered essential that the value of the fishery was correctly assessed and that the revenues from fees were utilized in the development of an effective fishery management regime.
- The basis for setting the level of licence fees for access by foreign vessels varied from State to State, but, as suggested by the FAO Code of Conduct "where appropriate, and when possible" a basic minimum target should be to try to cover the incremental cost to the coastal State's fishery management authority of effectively monitoring and controlling the fishing activity resulting from the agreement.
- Two basic mechanisms for calculating the licence fee were considered: catch based and effort based. Fishers generally prefer fees to be based directly on the level of catch actually achieved, but this has several disadvantages for the coastal State. It imposes a substantial monitoring burden and creates a strong incentive to misreport the catch. Also the variability of catches tends to result in an irregular revenue stream for the coastal State. Fees based on the level of effort reduce or remove the incentive to misreport the catch. The revenue stream for the coastal State becomes more regular, making the financing of a long-term MCS programme more feasible. Fees based on the level of fishing effort might be charged as a flat rate per vessel, or vary according to vessel characteristics, such as size (e.g., Gross Registered Tonnage), engine power, processing capacity, or some combination.
- The prospect of lower licence fees and access to fisheries closed to foreign fishers was a powerful incentive to commercial fishing companies to set up operations in the coastal State. This might be achieved through the creation of joint ventures or other commercial arrangements, to meet the eligibility criteria of the coastal State, which must be strictly enforced.

# Inspection procedures at sea and on land

P. Flewwelling introduced the topic of boarding and inspection procedures. The mandate for inspection of fishing vessels in the EEZ was under the provisions of UNCLOS. There was a need for inspections to be carried out both on land and at sea. Land-based inspections concentrate on inspection of vessel cargo and comparisons with declared catches in the logbook or product report. Inspections at sea were required to check the circumstances under which the catch was taken. Different approaches might be required for boardings to investigate and boardings to apprehend. However, a boarding to investigate could evolve into a boarding to apprehend, depending on what is found. Safety of the boarding party should always be a paramount concern.

- A detailed presentation on surveillance and inspection procedures was given by G. Parkes. The objective of a surveillance operation was to implement the provisions of the fisheries law and deter activities which were in contravention of that law. This was achieved through three main activities: the inspection of licensed vessels to verify compliance with the terms and conditions of licensing; the collection of evidence from vessels suspected of operating in contravention of the fisheries law; and the apprehension and escort of such vessels.
- The facilities required for surveillance and inspection at sea and on land were discussed, followed by the need for a clear mandate for carrying out inspections under national legislation, with the establishment of strict rules of procedure. To support the surveillance effort, there was a need for timely availability of information on vessel locations; licensed vessel identification; licence status, terms and conditions; and vessel cargo and reports of fish on board.
- Guidelines for the collection of evidence both prior to and during a boarding at sea were discussed, including the need to develop a list of indicators of fishing activity appropriate to each type of fishing operation. This should form part of a comprehensive training programme for fisheries inspectors, which was a vital part of the process. In addition, a detailed inspection manual should be prepared with input from the Fishery Management Authority, the Licensing Authority, Coastguard, Attorney General's office, Police, and Maritime Industry Safety Authority, as required. Standard contents of the manual should include:
- •Directory of vessels (descriptions and photographs)
- •Fisheries legislation and guidance documentation
- •Licensing procedures
- •Tactics for fisheries patrol
- Boarding procedures
- Safety procedures
- •Pre-prepared and translated questions, statements and warnings
- •Inspection procedures (at sea and in port)
- •Species identification (whole fish and product)
- •Collection of evidence
- •Procedure for caution and interview of suspects
- •Preparation and presentation of evidence
- Three video films on inspection procedures were presented: one from the UK on the inspection of demersal longline vessels in the CCAMLR Area (Southern Ocean), one from the Australian Navy, showing the arrest of an unlicensed vessel in the 200-mile Australian Fishing Zone, and one from Namibia on the training of on-board fishery observers.

#### MCS and artisanal fisheries

C. Mees presented the paper on *The monitoring control and surveillance of domestic artisanal fisheries*. The approaches to management relevant for different forms of access rights were outlined, and it was stressed that whatever the approach adopted, it was essential that there existed a clearly defined government policy for fisheries management and development. The particular characteristics of artisanal fisheries were described as being socially and technically complex, yet human and financial resources committed to their management were frequently limited. These characteristics had implications for designing MCS systems for artisanal fisheries. It was proposed that a pro-active, precautionary approach was required, applying the principles of co-management through adaptive research to provide feedback to fishing communities regarding the benefits of management.

- Co-management was described as an alternative institutional mechanism for implementing management controls, whereby the authority and responsibility for these actions was shared between government and the fishing community. Both access rights and the authority of communities to manage must be recognized in legislation. Amongst others, it was indicated that successful co-management required clearly defined boundaries over which simple management measures could be applied by a cohesive group of active community participants. Whilst the management controls would be the same as those for centralized management approaches, surveillance and enforcement should be shared by the community and encapsulated within existing community policing arrangements, increasing the potential for success. A key role of government was to provide appropriate advice, and thus education, communication and extension programmes were all highlighted as key elements in the success of any community-based management system.
- Both traditional and contemporary models existed which might be studied to provide the basis for the development of new community-based management systems. A traditional example, based on customary marine tenure in Melanesia, was described and the biological (conservation) and social outcomes of management controls were examined. Despite the limited transferability of these models due to their cultural basis, useful elements for co-management could be described. Contemporary models relating to fish stocking in Bangladesh and Laos were discussed, and that of the community management of river reserves for capture fisheries in Indonesia. In each case, feedback mechanisms were important, highlighting the need to develop alternative and simple monitoring systems implemented at the community level.

# Alternative employment opportunities for displaced fishers

- MCS at the community level depended upon executive government commitment to conservation and protection of the marine resources and required a holistic approach to be successful. The MCS component however, especially at the rural, coastal level had several other, linked, factors which would affect the success of any fisheries and MCS activities.
- One of the keys was the social and economic status of the citizens, who had to look at their survival before they could "buy into" any such conservation scheme. The Puerto Princesa initiative in the Philippines first looked at the housing situation of the poor and started to address that concern, then it moved to mobilize the citizens to Clean Plan (*Oplan*

Linus) to get the people to take pride in the fact that the city should be clean. This mobilization strategy was continued to the Feast of the Forest for re-forestation, and, with the citizens thus motivated, there then came the MCS initiative of Bay Watch (Bantay Dagat) and Forest Watch (Bantay Gubat), supported by an appropriate comprehensive fisheries legislation.

- Coupled with these initiative and parallel in time were livelihood initiatives to provide a semblance of security of employment for the poor. The strategy here, which proved successful, was to use a linkage between the City Development Plan, the Cooperatives of the Poor (for raw materials and for workers to train for more responsible positions later), and the private sector (for the technology, management and wider marketing network). Hence the eventual raising of the economic position of the people, and in the case of *Carica*, this effort was focused not only on the poorer cooperatives, but also on those in the coastal area, to reduce pressures on their use of these resources, an alternative to mangrove cutting and fishing.
- This was an example of local government commitment and logical progressive management of MCS at the community level, with an appropriately holistic approach.

#### Fisheries and MCS in Thailand

- The marine fishery resources of Thailand comprised invertebrate, pelagic and demersal components. Fisheries contributed 2 to 3% of GNP and were expanding rapidly. The domestic fleet grew from 11 407 vessels in 1977 to 18 170 in 1991. There were now approximately 657 coastal landing sites, and total landings in 1994 amounted to 3 523 200 t, with an estimated value of \$US 2 120 million. Marine capture fisheries accounted for 79.5% of that production.
- Fisheries legislation was embodied in the Fisheries Act of 1947, which had been revised twice, in 1953 and 1985. The high priority areas for marine fisheries control were to patrol in closed areas and closed seasons, particularly for areas closed to trawls and pushnets, and search and rescue for fishermen.
- Ocastal fisheries management initiatives included artificial reefs, sea ranching, community-based management, seagrass plantations, and establishment of marine sanctuaries. Regulations included the prohibition of certain types of gears and fishing methods (e.g., destructive methods), and protection of endangered species.

# **Inmarsat presentation**

A representative from Inmarsat, Mr Manoj Mohindra, gave a presentation on the latest products and services available from the company for use in navigation, positioning, and reporting of information.

### **Absolute Communications presentation**

Mr Jeff Douglas of the New Zealand company Absolute Communications gave a presentation of their experiences with navigational and positioning aids.

#### Legal issues relating to vessel monitoring systems

- On behalf of Mr Philippe Cacaud, an international legal consultant, Ms Annick Van Houtte of FAO presented his paper on *Legal issues relating to vessel monitoring systems*, concentrating in particular on the legal issues, i.e., the legal problems arising from the implementation of VMS, on the one hand, and those issues that must be addressed by the legislator when drafting VMS regulations.
- Legal issues arising from the implementation of VMS could be grouped in four broad categories:
  - (i)confidentiality of VMS information,
  - (ii)copyright issues,
  - (iii)evidence, and
  - (iv)maritime boundaries.
- Typically, the principal fisheries legislation enabled the governmental agency responsible for fisheries management to collect information, including VMS data, which was relevant and necessary for the conservation and management of fisheries. The corollary being that the authorized agency was also required to ensure confidentiality of the information collected. Confidentiality of VMS data was a major issue for the fishing industry. It was not restricted to the non-disclosure of such information, but also involved other aspects relating to the access and use of VMS data. These aspects were mainly related to the question of the extent of protection which an administration (monitoring agency) was requested to provide when it received the information.
- Another central legal issue was whether the VMS database kept by the competent authority would be granted copyright protection. The granting of copyright was questionable since copyright implied the existence of intellectual creativity as a distinctive human intervention, as well as the concept of originality. With regard to evidentiary matters, the central issue was to determine whether VMS, by itself, provided evidence of a standard likely to satisfy most civil proceedings and criminal courts of an offence that involved fishing activity. At the current stage of development, VMS, which merely indicated probable activity of a vessel, failed to furnish evidence of a calibre sufficient to warrant, on its own, a conviction. However, in criminal prosecutions the standard of proof was higher than in civil proceedings (beyond reasonable doubt versus preponderance of the evidence). However, VMS information would not suffice, by itself, to determine whether or not the activity of a vessel needed to be further investigated. Uncertainty regarding boundaries of maritime zones might destroy a case, whether civil or criminal, and provoke tension between the countries involved. Caution would have to be exercised in the implementation of VMS projects in areas where maritime boundaries were contested between two or more countries or where a case involved a position fix in the immediate proximity of a maritime boundary.

- A few words were finally said on the elements that needed to be incorporated in VMS regulations. Experience with existing legislation had shown that it would be useful in any case to define precisely what constitutes a "vessel tracking unit," with a view to avoiding interpretation problems. The scope of the regulations (which vessels, what fishery, etc.) needed also to be determined on the basis of both the priorities set out in the fishery policy as well as the capability of the local administration to carry out its task. The most commonly used criteria were: the length of the vessels, nationality of the vessels, type of fisheries vessels were involved in, gears used, and area of operation. Other elements to be incorporated related to the designation of the authority responsible for the implementation of a VMS programme, the type of equipment and its performance standards (e.g., tamper resistance, positional accuracy, velocity of data transmission, reliability of operation in extreme weather or climatic conditions, capability to transmit adequate information, frequency of position reporting, polling, and format standards), the approval and registration process, the procedure to be applied in case of vessel tracking unit failure or malfunctioning, and last but not least the definition of offences and penalties.
- 100 To conclude, undoubtedly, for management purposes as well as for enforcement purposes, successful implementation of VMS programmes would depend, to a large extent, on national government's ability to devise an appropriate legal regime. Equally, the need for a sub-regional, regional or global approach to VMS was required in order to:
  - (1)harmonize VMS regulations;
  - (2)agree on standard communications systems for delivering data; and
  - (3)agree on uniform formats to facilitate the exchange of fisheries information between national monitoring agencies.

#### Fisheries and MCS in India

- 101 India was the sixth-biggest fish producer in the world, with annual fish production in the region of 4.9 million t, 55% of which was from the marine sector. Landed value was greater than \$US 2 000 million annually. Exports totalled 380 000 t, valued at nearly \$US 1 000 million.
- 102 Indian MCS problems included the vast size of the EEZ (2.02 million km²), the long coastline (8 040 km), multiple fleets, participation of foreign-flagged vessels and regional jurisdictional demarcations.
- 103 The estimated potential yield from the EEZ was 3.92 million t. Assessments indicated that exploitation of resources within the 50-m-depth contour was currently optimal. There was believed to be scope for increasing harvest of resources beyond the 50 m contour.
- 104 Central Government was primarily responsible for fisheries research, with the maritime State and Union Territory Governments taking responsibility for regular and systematic collection of data on the number of fishing units and landings. The domestic fishing fleet comprised 172 000 traditional craft, 35 000 mechanized boats and 180 deep-

sea shrimp trawlers, accounting for 61%, 38% and 1% respectively of the total domestic production of 2.7 million t.

- The first legislation for fisheries management was enacted in 1976, which extended maritime jurisdiction up to 200 nautical miles. The control of foreign vessels was based on the Maritime Zones of India Act of 1981, and the rules framed thereunder in 1982. The legal framework for MCS in coastal waters was based on Marine Fishing Regulation Acts enacted by several States or Union Territories.
- 106 Control of domestic vessels operating largely within the territorial waters was undertaken by coastal State and Union Territory Governments. Central Government was responsible for issuing licences to deep-sea vessels and to foreign-flag vessels. Licences carried restrictions on fishing methods, types of gear, area, depth and codend mesh size. Other regulatory measures included closed seasons and marine parks.
- Surveillance in coastal waters was undertaken by the coastal State or Union Territory Governments. The Central Government had also sponsored a scheme which met 100% of the capital costs of 30 patrol boats to be deployed in territorial waters. Surveillance beyond the territorial waters was undertaken by the Coastguard, under the Ministry of Defence of the Central Government.

#### Fisheries and MCS in Cambodia

- Fisheries, especially inland fisheries played an important role in the daily life of Cambodians and in ensuring food security. Fish constituted about 75% of the animal protein intake for people, in particular the rural poor. Total recorded production in 1997 was 110 444 t, of which 92% had come from capture fisheries. The two decades of civil war and internal unrest had been a major obstacle to implementation of proper fisheries management and conservation policies. Overexploitation and illegal fishing remained critical problems: it was believed that 100 000 to 120 000 t/year derived from unlicensed medium-scale and family fisheries units.
- 109 Constraints in MCS included a legal framework dating back to French colonial times, lack of resources (equipment, trained personnel, financial), discrepancies between control and surveillance systems among the provinces, and an open-access regime for fisheries.
- With a view to improving the MCS system, the Department of Fisheries was focusing on community-awareness-creating activities and fishers participation in the management and conservation of the fisheries resources, as well as improving collaboration among the potential partners in fisheries enforcement and surveillance. In parallel, strengthening of both the institutions and the extension services remained essential priorities.

# Fisheries and MCS in Bangladesh

Fisheries were of major importance in Bangladesh. Total annual fish production was about 1.3 million t, about 300 000 t of which was from the marine sector. About

12 million people were directly or indirectly dependent on fisheries, 1.2 million of whom earned their livelihood directly from fishing or fish production. Fish represented 60% of the animal protein supply and the contribution to GDP was about 5%.

- The total area falling under marine fisheries management was 263 761 km², which included the Territorial Sea, EEZ, estuarine area, and the Sundarban Reserved Forest coastal area. Management of coastal fisheries was particularly complicated due to the seasonal influence of freshwater outflow into the Bay of Bengal.
- At least 475 fish species and 25 shrimp species were exploited by a variety of fishing gears, including trawls (45 shrimp trawlers and 15 fish trawlers), estuarine set bag net (of particular concern due to high catches of juvenile fish and shrimp), pushnet (shrimp seed), bottom longline (jewfish), marine set bag net, trammel net, and gill net (accounting for more than half the total marine catch). Trawlers were banned from fishing within the 40-m-depth contour, in an effort to reduce conflicts between them and the other gears.
- The Marine Fisheries Ordinance and Rules, formulated in 1983 for the management and conservation of marine fishery resources, were the main legal framework for controlling fishing activities. The main regulatory features were control of fishing effort through limiting the number of fishing units, vessel licensing, mesh size regulation, and area and season restrictions to protect brood stock. There was provision in the legislation for setting up marine parks in Bangladesh, but none had yet been established.
- Bangladesh was taking a pragmatic and conservative approach to managing its fisheries, for example through the development of community-based approaches, which had not before been applied in the country. The industrial trawl fishery was functioning in compliance with MCS concepts, and the entire artisanal fleet was to come under a licensing system in the next five years. Nevertheless there were several major constraints to the practical application of MCS in Bangladesh, namely:
- •lack of accurate statistics on the activity of the artisanal sector, which contributed 96% of the total marine fish production;
- •lack of a scientific information system;
- •inadequate trained manpower, both in management and at an operational level;
- •lack of awareness of the need for MCS at the community level;
- •a large number of inaccessible places along the coastline; and
- •inadequate funds for MCS.

#### Wednesday 1 July 1998

#### Marine Parks in Malaysia

116 Mr K.W.P. Hiew, Department of Fisheries, Malaysia, gave a brief introduction to the marine parks programme in Malaysia. The Department of Fisheries took over responsibility for marine parks in Malaysia in 1983. By 1994, five parks had been established, protecting the waters up to 2 nautical miles offshore around a total of 38

coastal islands. These covered a variety of habitats, including coral reefs, mangrove, mud flats and seagrass beds.

- There were two main objectives of the marine parks. Firstly, they were used to conserve and protect the marine ecosystem and to ensure the sustainable use of fisheries in coastal waters. The coral reef environment was an important habitat for 40% of the fish caught in coastal waters. Secondly, they fulfilled an educational and recreational function, maintaining biodiversity and supporting eco-tourism.
- 118 Management of marine parks was under the guidance of the National Advisory Council for Marine Parks, which met twice each year. This body provided guidelines for implementation at the national level to coordinate development, and provided technical advice for State Governments.
- Activities prohibited in marine parks in Malaysia without the permission of the Department of Fisheries included water skiing, speed-boat racing and jet skis; fishing and killing of fish; destroying, removing or collecting corals, other marine life, sand or dead shells; littering; discharging pollutants; anchoring boats; and construction. There were a small number of enforcement officers from the Department of Fisheries. Promotion of awareness of the programme through education for schools and tourists was considered to be more important than surveillance.
- 120 Of the countries in the region represented at the workshop, Thailand, the Philippines and Indonesia had established marine parks, whilst Bangladesh and India were in the process of doing so.

#### Fisheries and MCS in Indonesia

- A general picture of the status of Indonesian fisheries in its vast sea area estimated at about 5.8 million km², major characteristics and constraints in ensuring sustainable development, was provided. Attempts had been made to develop and implement an appropriate licensing policy for foreign fishing in Indonesian waters. Foreign vessels were operating under joint venture agreements, and it was felt that Indonesia could improve this policy in order to maximize benefits from the licensing system. Illegal fishing by nationals and foreigners remained an important problem.
- There was a definite need to improve the current enforcement and surveillance framework. To this end, the interrelationship and coordination among the Directorate General of Fisheries, the National Board of Sea Security (*Bakorkamla*), the Coastal Base Society Awareness System (*Siswamas*) and the Resources Management Communication Forum (*FKPPS*) should be strengthened.
- 123 Current priorities included the upgrading of the fisheries management and enforcement capacity at provincial level, the setting up of a logbook programme, improvement of data processing capacities, as well as the use of modern technology, such as satellite remote sensing, for transmission of data on fishing operations.

124 In conclusion, the participant recognized that the implementation of an effective regional MCS programme could help in overcoming fisheries resource management problems.

#### **Formation of Working Groups**

125 In order to provide a forum for discussion of several key elements of MCS, four *ad hoc* working groups were formed:

Working Group 1: Operations

Working Group 2: Legal issues

Working Group 3: Economics and finance

Working Group 4: Institutional and cooperative arrangements

126 The membership of each group and their reports are given as Appendix E. The resulting recommendations of the Workshop are summarized in paragraphs [128] to [143], below.

# Thursday 2 July 1998

#### Field trip to Terengganu: Mock boarding and visit to marine park

127 After lunch on Wednesday 1 July, the Workshop moved to Kuala Terengganu. From there a field trip was organized to visit the marine park at Pulau Redang and to take part in a mock boarding operation undertaken by the Malaysian Department of Fisheries, under the supervision of Captain Wan Abdul Fatah bin Wan Omar.

# **Workshop recommendations**

128 The full reports of the Working Groups are given in Appendix E, with the main points summarized below.

# Working Group 1

- Working Group 1 looked at operations, excluding physical resources. The principal immediate MCS requirement was for training, particularly in:
  - (i) fisheries management and MCS for both fishers and fisheries staff, accenting the need and the benefits to the fishers;

(ii)MCS management (to include all components of MCS – licensing, data collection, boarding and inspection, legislation, observers – initially for scientific data collection, and then possibly compliance); and

- (iii) VMS and other advanced information technology communications networking.
- 130 It was also suggested that MCS specialist assistance, and possibly cross-regional assistance, could be helpful for such initiatives.
- A number of specific subjects were discussed and suggestions made for possible improvements. Topics included logbooks, vessel marking, vessel registry and licensing, observers, VMS as a tool for MCS, boarding and inspection, and training. The differing levels of need and capabilities among countries in the region were recognized, and some country-specific suggestions made for improvement.
- 132 It was emphasized that a key objective in regional cooperation should be to promote harmony in technology and methodology and use of similar conceptual approaches to MCS in the various countries.

# Working Group 2

- Working Group 2 considered various legal issues related to MCS, and in particular:
  - •aspects of community-based management and co-management;
  - •potential consequences arising from conflicts between central and local government;
  - •harmonization of laws and regulations at national and sub-regional or regional level;
  - •institutional and legal framework for marine parks and reserves; and
  - •difficulties relating to enforcement and surveillance aspects.
- 134 It recommended that countries facing problems in surveillance and enforcement between both central and local government(s), and between other government authorities and the marine resource users, seriously consider the implementation of community-based management structures or co-management structures.
- In furtherance of harmonization, the Working Group recommended:
  - (i)collecting national laws and regulations (including access agreements) governing foreign fishing in the sub-region or region; followed by
  - (ii)preparation of a comparative study, analysis and evaluation of these laws and regulations; and,
  - (iii)the identification and the making of proposals with regard to possible areas for harmonization.
- 136 The Working Group further strongly recommended the holding of a meeting of representatives of the countries of the sub-region in order to discuss the various components of the study and to lay down general guidelines for future harmonization.

They finally recommended that FAO investigate the possibility of funding these activities under the currently operational Norway Trust Fund Project.

- 137 In support of surveillance and enforcement capabilities, the Working Group recommended the development of essential tools like training and extension services in the countries in order to ensure that those officers responsible for enforcement and surveillance give full consideration to and, where possible, priority to fisheries matters.
- 138 The Working Group also recommended that fisheries agencies have at least one legal adviser or officer to ensure effective MCS, in particular for handling violations and in drafting legislation.

# Working Group 3

- The Working Group on Economics and Finance considered a number of key issues in relation to the economics and financing of implementing MCS for fisheries. At the outset it was agreed that two key issues, in the regional context, were the need for training and the implementation of a cost-effective information system. Training was required for all those involved in the MCS system, including government officers, researchers and fishers, to promote understanding, awareness and support for MCS activities. The information system should use resources efficiently through the collection and utilization of necessary data. The use of modern technology and the integrated use of existing facilities were seen as two ways of containing costs.
- MCS cost elements were tabulated, and prioritized, and followed up with a number of suggestions for promoting cost-efficiency in MCS implementation. The stakeholders were considered, and the various benefits involved. These were then interrelated and proposals made for optimizing outcomes.
- 141 The Working Group agreed that the principal source of funds for MCS should be from the coastal State government, but international assistance funds were important in the regional context. One possible channel for international support might be through FAO Asia-Pacific Fisheries Commission (APFIC). Governmental budgets could be reduced through partnerships with the private sector, for example in research.
- In view of the variation in revenue generation from fisheries covered by the MCS system, and the subsequent allocation of revenue by the exchequer, the Working Group recommended that a balance sheet of MCS revenue and expenditure be drawn up to examine allocation of funds. In some cases there was the potential to cover the entire cost of MCS from revenue generated by the system. However, in many cases the revenue was not allocated to MCS, but went towards financing other government spending. In the case of charging of fees for access, failure to adequately manage the resources to which access was being granted would tend to devalue the licences in the longer term, and hence reduce the potential for revenue generation. This might result from overfishing due to the failure to restrict illegal fishing, or degradation of the resource due to poor fishing practices. The allocation of financial resources generated from fisheries might also affect the extent to which international funding would be available for MCS.

**26** Report of Proceedings

### Working Group 4

143 The existing institutional linkages within each country and between countries were examined in relation to fisheries MCS. The Working Group on Institutional and Cooperative Arrangements aimed to identify common problem areas and areas of potential future collaboration and cooperation, and to explore the possible means of achieving this.

Illegal fishing was a common problem. For DWFN (distant-water fishing nations) fleets, the exchange of \_blacklists\_ was proposed, while problems of poaching by small-scale fishers should be dealt with bilaterally. The excessive fishing capacity compared to national marine resources could be reduced with time by requiring approval from Fisheries Departments for purchase of vessels or development of facilities. Concerted action was required to stem the use of illegal fishing practices. The potential role of APFIC in enhancing regional cooperation among fisheries departments was recognized, but it was emphasized that there was more likelihood of success from bottom-driven approaches, initially bilaterally and then expanding to multilateral activities. The example of the FFA was noted and the Working Group recommended that the governments of the region examine the possibilities of establishing such a body of regional harmonization for fisheries MCS, possibly as a sub-body of APFIC.

### **CLOSING OF THE WORKSHOP**

In closing the workshop, Mr G.V. Everett thanked all the participants and resource persons for their contribution to the successful outcome of the workshop and thanked Norway for their financial support for the project. He pledged to keep in touch and to follow up at the national level. He thanked the staff of Department of Fisheries Malaysia for organizing the proceedings and providing the secretariat, in particular Mr Teo Siong Wan, and Ms Yeo Moi Eim for organizing the exhibit on MCS in Malaysia, and Captain Wan Abdul Fatah bin Wan Omar for organizing the visit to Kuala Terenggenau and the mock boarding of a fishing vessel. The UK Department for International Development was thanked for providing funding for the attendance of C. Mees. Mr Everett also thanked the rapporteurs, Mr G. Parkes and Ms A. van Houtte, for their assistance in preparation of the report. Mr Everett said that he hoped participants could keep in touch and further work toward strengthening MCS at the sub-regional and national levels.

146 The workshop was declared officially closed by the session chairman, Raja Mohammad Noordin bin Raja Omar.

### Appendix A

FAO/Norway Government Cooperative Programme - GCP/INT/648/NOR

FAO/Norway Programme of Assistance to Developing Countries for the Implementation of the Code of Conduct for Responsible Fisheries

(Sub-programme C: Assistance to Developing Countries for Upgrading their Capabilities in Monitoring, Control and Surveillance)

Regional Workshop on Fisheries Monitoring, Control and Surveillance Kuala Lumpur and Kuala Terengganu, Malaysia 29 June - 3 July 1998

### PROGRAMME AND TIMETABLE

### Sunday, 28 June

Arrival of participants at Kuala Lumpur

### Monday, 29 June

08:00 09:15	Registration of participants Arrival of guests	
09:30	Arrival of the Honourable Minister of Agriculture, Malaysia	
09:35	Welcome speech by the Director General of Fisheries, Malaysia	
09:40Speech by the Resident Representative, UNDP, on behalf of the Director General		
	Food and Agriculture Organization of the United Nations	
09:45	Official Opening Speech by the Honourable Minister for Agriculture,	
Malaysia		
10:10	Tea	

10:30Press Conference, with the Honourable Minister of Agriculture, Malaysia 11:00Introduction, framework for the workshop, and administrative arrangements Marine fisheries of South and Southeast Asia: a review of the resources and the need for monitoring, control and surveillance (MCS)

Legal aspects of cooperation in MCS

Lunch

Fisheries MCS in Malaysia

Administrative procedures and requirements for licensing Setting access arrangements, and fees for the licensing of vessels (national and foreign) Films on observer programmes Country presentations

### Tuesday, 30 June

08:30Country presentations

**Establishment of Working Groups** 

Inspection procedures at sea and on land

Information systems for MCS

Community-based fisheries management, artisanal fisheries and MCS

Lunch

Marine parks and reserves Fisheries MCS in Namibia Monitoring systems Inmarsat presentation

### Wednesday, 1 July

08:30Country presentations

Working groups

Aspects of cooperation to improve MCS

Lunch

Country presentations

Optional visit to Department of Fisheries

Late afternoon/evening: transfer to Kuala Terengganu

### Thursday, 2 July

Field trip Work of a field office, issue of licenses, statistics

Chendering fishing harbour

Patrol at sea and demonstration of procedures for boarding and inspection, checking of

position, logbook, licence, catch, mesh size, etc.

Redang Island marine park

### Friday, 3 July

08:30Working group sessions, assessment of issues presented

Final discussion – future priorities General conclusions of workshop Formal closure of the Workshop

Late afternoon/evening or Saturday morning - Departure

Report of a Regional Workshop on Fisheries Monitoring, Control and Surveillance Kuala Lumpur and Kuala Terengganu, Malaysia, 29 June - 3 July 1998

### Appendix B

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### WELCOMING ADDRESSES

Y. Bhg. Dato' Mazlan bin Jusoh Director General of Fisheries, Malaysia

The Honourable Y.B Datuk Amar Sulaiman Hj. Daud, Minister of Agriculture, Malaysia

His Excellency, Mr Carsten Helgeby, Ambassador of Norway

The Honourable High Commissioner for Singapore

The Honourable Mr Phillips Young, UNDP Resident Representative

Datuk-Datuk, Honourable Guests, Ladies and Gentlemen,

Welcome to the opening ceremony of the Workshop on Monitoring, Control and Surveillance, or, in short, MCS, for the South and Southeast Asian countries.

Thank you for your precious time to be with us today. We are sure that your presence will add to the seriousness and the commitment of this workshop, as participants from the different countries in this region will exchange ideas and learn from each other to build and improve on their MCS capabilities.

We are very fortunate that an international body like FAO is concerned about the fate of millions of fishers, especially in developing countries, and as such has been very committed in trying to assist these countries to have effective fisheries management.

We also feel very fortunate that countries like Norway share the same concern and have provided the needed funds, part of which are being used for this workshop.

To both FAO and Norway, we would like to express our greatest gratitude, and we give the assurance that we will try our best to make this workshop a success and a meaningful one.

I would also like to take this opportunity to welcome the workshop participants to Malaysia. We hope that you will have an enjoyable and fruitful workshop.

### Y.B Datuk Amar, Your Excellency, Ladies and Gentlemen,

The concept of MCS, as an essential and integrated component of fisheries management, to ensure that management measures can be implemented successfully and expeditiously, has always been a prime concern of the Department of Fisheries, Malaysia.

Since the late 1970s, Malaysia has formulated and implemented various measures to ensure the proper management and conservation of fisheries resources, and at the same time to contain conflicts between fishers.

MONITORING of fishing effort and resource yields have been relentlessly carried out throughout the years.

The catch and effort data of the fishing industry have in fact been collected for the last 30 years. Resource surveys have been conducted since the 1970s and at the same time effective information systems were set up, to efficiently process and analyse the data collected and convert it into the information needed for MCS purposes.

CONTROL, through the regulatory conditions under which the exploitation of the resource may be conducted, are also carried out. The comprehensive licensing policy ensures that all fishing vessels are licensed. Zoning of fishing areas has been implemented to ensure that resources are rationally exploited in a responsible manner, and at the same time to prevent conflicts over the utilization of the fisheries resources.

Destructive gears are banned and activities of fishing vessels are tightly controlled through conditions imposed on licences. A sound legislative framework provides the necessary support to ensure that measures formulated can be implemented.

SURVEILLANCE, in contrast, is performed by the Department's patrol craft, with the main objective of prevention and also, as a last resort, to apprehend violators.

### Y.B Datuk Amar, Your Excellency, Ladies and Gentlemen,

With the adoption of the United Nations Convention on the Law of the Sea, and international concerns as reflected in the Code of Conduct for Responsible Fisheries, changes were made and the Department's MCS capabilities enhanced.

Data collection and data processing are greatly improved with the use of information technology. Information systems and technology are used not merely to capture and process data but also as a tool to assist MCS as a whole.

Surveillance is enhanced with bigger patrol vessels. New methods of surveillance are incorporated, like air surveillance and the use of *Vessel Tracking Management Systems* to cope with the vast EEZ waters.

At the same time, international laws were adopted and the main legislation, that is the Fisheries Act 1963, was repealed. The new Fisheries Act 1985 caters for the management, conservation and optimum utilization of the fisheries resources in the Malaysian fisheries waters, which includes the EEZ waters.

However, not forgetting environmental issues, conservation, rehabilitation of fisheries resources as well as concerns in environmental issues are also emphasized. The prospects and concepts of community-based fisheries management (CBFM) are also being looked into as a method of control. In this concept, fishers will be educated to realize that fisheries resource management will benefit themselves. Intelligent application of CBFM makes them part and parcel of the management process. It is hoped that this will help reduce management cost and at the same time improve effectiveness in fisheries management.

Nevertheless, with the constant challenges in fisheries management, there are yet many things to learn and do in MCS. Malaysia is willing to share our experiences in MCS and at the same time to learn from other countries, and, more important, to work together, especially with countries in this region.

We sincerely hope that this workshop will provide the perfect forum and platform where we as countries from this region can share our experiences, learn from each other and, more important, to work together.

Once again, I would like to welcome all participants to this workshop which is organized by FAO, hosted by Malaysia and funded by the Norwegian Government. We would like to thank all parties concerned and we are confident that, at the end of the day, all of us will benefit greatly. Thank you.

### Speech by the UNDP Resident Representative Mr Phillips Young

Honourable Minister
Distinguished Guests, Ladies and Gentlemen

It is a privilege for me to convey to you the greetings of the Director-General of the Food and Agriculture Organization of the United Nations (FAO), Mr Jacques Diouf, and the Assistant Director General of the Department of Fisheries, Mr Moritaka Hayashi, who convey to you their best wishes for a successful workshop, one which most appropriately is being held at the mid-point of the 1998 "International Year of the Oceans."

Let me also express our sincere thanks to the Federal Government of Malaysia for accepting to hold this workshop, and for the support and assistance of the Director-General and staff of the Department of Fisheries, that have made exceptional efforts to make the most detailed arrangements and ensure that the programme runs smoothly.

I would also like to express my thanks to the Government of Norway, for their support to the Government Cooperative Programme with FAO. Their particular interest in the Fishery Management and Law Advisory Programme has allowed interventions in many fields related to fisheries legislation, policy and planning, and fisheries management in general both at the national and regional level. Such funds have now been supplemented by further funds from Norway for assistance to developing nations for the implementation of the Code of Conduct for Responsible Fisheries, in fisheries management and in fisheries monitoring, control and surveillance. It was in October 1995 that the FAO Conference unanimously adopted the Code of Conduct for Responsible Fisheries, for adoption by States on a voluntary basis.

In the United Nations General Assembly, a number of resolutions have been approved, drawing attention to the need to avoid overexploitation of fish stocks; to the need to deter reflagging of fishing vessels (often to avoid compliance with fishery conservation and management measures); as well as the need to reduce the use of fishing gear which is detrimental to the long-term sustainability of stocks. In 1993, the FAO Conference adopted the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas. This was followed in 1995 by the adoption of the UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks (commonly known as the Fish Stocks Agreement). Many of the principles for sound management, discussed and approved in the course of the adoption of the UN Agreement, will serve as guidelines for governments and authorities to follow in their approach to fisheries in the future, not only with reference to fishing on the high seas, but also in the Exclusive Economic Zones under national jurisdiction.

This regional workshop is one of several that FAO has organized on this subject, in a number of countries and regions, as part of its activities to strengthen fishery management through effective fisheries monitoring, control and surveillance - MCS in short. Malaysia is known as having a well-organized approach to fisheries management and particular experience in MCS. It is therefore most appreciated that the Director General of the Department of Fisheries in Malaysia has invited FAO to organize the workshop here so as to allow a number of staff from nearby countries to come and examine procedures and experiences.

Welcoming Addresses

As well as learning practical applications of the procedures, the workshop has objectives to review the status of fisheries management, the processes of consultation and participation in decision making, and strategies that might be adopted to improve MCS capacities at the various levels of community, fishery, nation and region.

The fisheries encompassed by countries involved in this workshop give rise to high catches, in fact a substantial total of 12 million tons, which make a notable contribution to the economies and food security in the region.

There is a considerable diversity in activity, ranging from canoe fisheries, exploiting stocks close to shore, through to coastal trawlers exploiting high-value species such as shrimp, and extending to the complex investment involved in the oceanic tuna fisheries, that often take place on the high seas.

One should also not forget the increasing importance of marine environments and coral reefs to the expanding tourist industry, and the need for conservation measures to protect these sites, and the workshop programme devotes some time to this topic.

These activities pose a challenge for fishers, all those involved in the sector, and coastguard, defence and legal authorities, in addition to the staff of the fisheries departments, to work together to protect and manage resources in the most optimal way, and I am pleased to note the attendance of specialists from a number of disciplines here today.

I wish you a most successful workshop.

# Official Opening Speech The Honourable Minister of Agriculture, Malaysia Y.B. Datuk Amar Dr Sulaiman bin Hj. Daud

Your Excellency, Mr Carsten Helgeby, Ambassador of Norway Honourable High Commissioner for Singapore Honourable Mr Phillips Young, UNDP Resident Representative Dato' Mohd Mazlan Jusoh, Director-General of Fisheries, Malaysia

Datuk-Datuk, Honourable Guests, Ladies and Gentlemen,

A very good morning to you and a warm welcome to all, especially our foreign guests, who have come to attend this workshop on Monitoring, Control and Surveillance, or MCS. It is indeed a privilege for me to officiate at this workshop where critical matters on marine fisheries management will be discussed. I am sure the deliberations, recommendations and conclusions of this meeting will go a long way towards improving the management of marine fisheries in our respective countries.

### Ladies and Gentlemen,

The world has always depended on fish as a cheap source of protein. This is especially true in Asia, where rice and fish are the staple diet in most Asian communities. The increasing world population has dictated that there should be higher production of fish, although marine resources are not infinite. Hence, we have seen an expansion in the world's fishing fleet capacity, but not a dramatic increase in the world production. In fact, many areas have been overfished, while most have reached their maximum sustainable yield (MSY) level.

In a review of the State of World Fisheries undertaken in 1994 by FAO, it was shown that the annual growth rate of world landings had decreased significantly since 1950 and was approaching zero, indicating a plateauing of available resources close to the maximum. This is most evident when we examine coastal fisheries resources and the depleting catches from certain regions. The estimated potential production of world fisheries is around 82 million tonnes based on current practices and can realistically increase to 93 million tonnes with improved management of overfished stocks and exploitation of a few known resources in the Indian Ocean and Pacific Ocean. However, this appears to be the limit from marine capture fisheries, and any further increase in food fish production must come from aquaculture. The deep concern for food fish security was stated in the Kyoto Declaration and Plan of Action of the Kyoto Conference on the Sustainable Contribution of Fisheries to Food Security, held in Kyoto, Japan, in December 1995.

### Ladies and Gentlemen,

The world per caput consumption of fish is about 14 kg annually, and with an ever-increasing population, the need to increase production is a major management issue. The concept of sustainable development was highlighted at the Rio Summit of 1992 (the United Nations Conference on Environment and Development (UNCED) 1992), where a new awareness of the limitations of resources was realized. Chapter 17 of Agenda 21 emphasized the urgent need to

Appendix C Welcoming Addresses

preserve our marine environment, especially after many states had proclaimed their Exclusive Economic Zone (EEZ) under the 1982 United Nations Convention on the Law of the Sea (UNCLOS 1982). The declaration of an EEZ implies the right and sovereignty of coastal states to explore, exploit, manage, conserve and protect the fisheries and marine resources in this new area. This is not just a national problem, but can be a regional matter, and every effort must be made to manage the resources sustainably.

Bearing in mind the critical need for proper management of fisheries resources, there have been several initiatives by FAO to seek consensus on major management issues. Of these, the Code of Conduct for Responsible Fisheries and the Agreement for the Implementation of UNCLOS 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks are most important. The Code provides a very valuable guideline for fisheries management and it has been adopted by Malaysia to institute proper management so as to gain the fullest advantage from its EEZ.

### Ladies and Gentlemen,

42

This workshop on MCS for countries in South and Southeast Asia is most appropriate when we view the efforts being undertaken by these countries and regional organizations to implement the Code of Conduct for Responsible Fisheries. The Southeast Asian Fisheries Development Centre (SEAFDEC) has recently taken the initiative to work in close collaboration with FAO for the benefit of SEAFDEC Member Nations, while the Bay of Bengal Programme (BOBP) already has projects that concentrate on management of the fisheries and fishers in line with the Code. In Malaysia, the Department of Fisheries is developing a "Special Area Management Plan" for the Pulau Payar Marine Park, together with BOBP.

Malaysia is fortunate that, at the moment, fisheries is amongst the best managed natural resources in the country. This has not merely been by chance, but more by design and implementation of management measures on realizing the limitations of the resources. About 80% of the country's fish production come from the fully exploited inshore fisheries sector, where the majority of the fishers operate. We have consistently managed to produce about 900 000 tonnes annually from this sector over the last few years, indicating two things: firstly, we have reached the MSY for this sector and, secondly and more importantly, the management measures for sustainability are working well. In deep-sea fisheries, entrepreneurs are being actively encouraged to venture to the limits of our EEZ to exploit known resources, and especially off the waters of Sabah and Sarawak. In the near future we will also embark on fishing for tunas in the Indian Ocean as we have already applied for membership in the Indian Ocean Tuna Commission (IOTC).

### Ladies and Gentlemen,

I do not propose to discuss MCS in detail, as that is what you will do for the next few days. What I do know and understand from our own experience in fisheries management is that:

- 1. We need to monitor and understand the industry, the resource base and its characteristics, as well as the catch data, to help formulate basic policies for sustainability.
- 2.We need to control the conditions for exploitation so that there will be rational exploitation of the resources and an equal opportunity for the fishers to exploit these resources.

3.We need surveillance to ensure compliance with management measures instituted for long-term sustainability of the resource.

I believe Malaysia has done fairly well in these areas by continuously refining our management policies based on resource information, statistical data and especially feedback from the fishers themselves. We will be implementing the Vessel Tracking Management System (VTMS) as the latest tool for improving MCS of deep-sea fishing vessels. This new computer system using modern information technology (IT) and satellite technology will assist the managers and operators alike to determine the best resource areas as well as plan for more coordinated land-based preparation for landings and subsequent marketing of the harvest.

### Ladies and Gentlemen,

In our efforts to improve fisheries management, we must not lose sight of the fact that the majority of our fishers are traditional operators with limited appreciation of new and modern management techniques. There is a definite need for proper extension of management practices so that the fishers can understand the underlying principles of management decisions. Only then can such management policies be implemented successfully. A case in point would be the new fisheries management concept known as Community-Based Fisheries Management (CBFM) whereby the fishers will play an active role together with the authorities in the management of the resources. This will further reduce the needs for strict enforcement, as compliance will be for the benefit of the fishers themselves.

### Ladies and Gentlemen,

In your deliberations there will be differences of opinions as there is no hard and fast rule for a MCS programme suitable for all countries. However, through your active participation and true spirit of international cooperation, I believe this workshop will be successful in achieving its objectives. May I also wish you a pleasant and memorable stay in Malaysia, particularly on your field trip to Terengganu and especially to our beautiful marine park at Pulau Redang.

With great pleasure, I hereby declare this Regional Workshop on Fisheries Monitoring, Control and Surveillance in South and Southeast Asia officially open.

Thank you.

### LIST OF DOCUMENTS

### Documents prepared specifically for the Workshop

P. Martosubroto [Included in Supplement 1]

Fish resources.

P.E. Berg and S. Davies [Included in Supplement 1]

An overview of Namibian fisheries, focusing on MCS.

Teo Siong Wan [Included in Supplement 1]

The monitoring, control and surveillance of fisheries in Malaysia.

P. Flewwelling [Included in Supplement 1]

MCS in the Forum Fisheries Agency.

P. Flewwelling [Included in Supplement 1]

Integrated coastal resources management, livelihood development and MCS - A Philippine example.

Country Reports [Included in Supplement 1]

Country report – Bangladesh Country report – Cambodia Country report – India Country report – Indonesia

Country report - Myanmar Country report - The Philippines

Country report – Sri Lanka Country report – Thailand Country report – Viet Nam

G.V. Everett [Included in Supplement 2]

Issues of concern to fisheries monitoring, control and surveillance in the region.

P. Cacaud [Included in Supplement 2]

Legal issues relating to vessel monitoring systems.

C. Leria [Included in Supplement 2]

Marine parks and reserves.

G.B. Parkes [Included in Supplement 2]

*Inspection procedures and the use of observers.* 

G.B. Parkes [Included in Supplement 2]

Information systems, options and uses.

MRAG Ltd [Included in Supplement 2]

Requirements and procedures for national and foreign fishing vessels seeking authorization to fish in an EEZ

C. Mees

[Included in Supplement 2]

The monitoring, control and surveillance of domestic artisanal fisheries.

A. Van Houtte

[Included in Supplement 2]

Legal aspects of regional cooperation in MCS.

G.B. Parkes

[Included in Supplement 2]

The payment of fees for access to fisheries in exclusive economic zones.

P. Flewwelling

[Included in Supplement 2]

Points to remember for armed boardings.

### G.B. Parkes and C. Mees

Fisheries monitoring, control and surveillance - a multipurpose questionnaire.

### Technical documents distributed

FAO, 1995. Code of Conduct for Responsible Fisheries. Rome, FAO. 41 p.

Flewwelling, P., 1994. An introduction to monitoring, control and surveillance systems for capture fisheries. *FAO Fisheries Technical Paper*, No. 338. 217 p.

Troadec, P., 1983. Introduction to fisheries management: advantages, difficulties and mechanisms. *FAO Fisheries Technical Paper*, No. 224. 57 p.

### Documents available for consultation

- FAO, 1995. Precautionary approach to fisheries. *FAO Fisheries Technical Paper*, No. 350/1 (Proceedings) 52 p; No. 350/2 (Scientific papers) 210 p.
- Caddy, J.F. & R. Mahon, 1995. Reference points for fisheries management. *FAO Fisheries Technical Paper*, No. 347. 83 p.
- Pascoe, S., 1997. Bycatch management and the economics of discarding. *FAO Fisheries Technical Paper*, No. 370. 137 p.
- FAO, 1995. Agreement to promote compliance with international conservation and management measures by fishing vessels on the high seas.
- FAO, 1996. FAO Technical Guidelines for Responsible Fisheries. Nos 1-6.
- FAO, 1996. Coastal State Requirements for Foreign Fishing. *FAO Legislative Studies*, No. 57. 273 p.
- FAO, 1986. Regional compendium of fisheries legislation (Indian Ocean region). *FAO Legislative Studies*, Nos 42/1 & 42/2.
- Van Helvoort, G., 1986. Observer program operations manual. *FAO Fisheries Technical Paper*, No. 275. 207 p.
- Doulman, D.J., 1995. Structure and process of the 1993-1995 United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks. *FAO Fisheries Circular*, No. 898. Rome, FAO. 81 p.

FAO, 1997. Report of a Regional Workshop on Fisheries Monitoring, Control and Surveillance. Albion, Mauritius, 16-20 December 1996. FAO/Norway Government Cooperative Programme, project GCP/INT/606/NOR, Fisheries Management and Law Advisory Programme (FIMLAP), Field Report 97/37 (En). 232 p.

Hotta, M., 1996. Regional review of the fisheries and aquaculture situation and outlook in South and Southeast Asia. Report prepared for the Zengyoren Regional Conference on Insurance and Credit for Sustainable Fisheries Development in Asia. Tokyo, Japan, 11-15 November 1996. Report No. FAO-FIP – ZRC/96/Inf.3. 42 p.

FAO, 1996. APFIC and the sustainable development of Southeast Asian fisheries. Prepared by the Asia-Pacific Fishery Commission (APFIC), FAO Regional Office for Asia and the Pacific (RAP). *RAP Publication* 1996/11. 51 p.

BOBP [Bay of Bengal Programme for Fisheries Management], 1998. Emerging trends and prospects in fisheries management. *BOBP Newsletter*, March 1998. 16 p.

### Video films shown at the Workshop

- 1. South Georgia Inspection for CCAMLR.
- 2. Australian Court Arrest at sea and prosecution in court.
- 3. Malaysian parks and reserves.
- 4. MCS in Namibia.

### Appendix E

### REPORTS OF THE WORKING GROUPS

## Report of Working Group 1: Operations

### [E-[1]] Participants:

Mr Long Korn, Cambodia

Mr Taing Chenda, Cambodia

Dr Prabahakaran Paleri, India

Dr Suresh Vinayakrao Joshi, India

Mr S.M. Parlindungan Hutabarat, Indonesia

Capt. Wan Abdul Fatah bin Wan Omar, Malaysia

Mr Teo Siong Wan, Malaysia

Mr Andres R. Menguito, the Philippines

Mr W.H. Jayawardana, Sri Lanka

Mr L.G. Tilak Chandana, Sri Lanka

Ms Kumari Nambukara Vithana, Sri Lanka

Mr Sunil Sarath Perera, Sri Lanka

Mr Rewat Rithaporn, Thailand

Mr Wannakait Thubthimsang, Thailand

Mr Nguyen Quang Dang, Viet Nam

**Facilitators:** 

Capt. Per Erik Bergh

Mr Peter Flewwelling

- [E-[2]] This Working Group included representatives from eight countries: Cambodia; India; Indonesia; Malaysia; the Philippines; Sri Lanka; Thailand; and Viet Nam. A variety of subjects were discussed and a final list of country priorities (excluding equipment) was suggested by each country. In summary, the immediate future MCS requirements included training in:
  - (i)fisheries management and MCS for both fishers and fisheries staff, accenting the need and the benefits to the fishers;
  - (ii)MCS management (to include all components of MCS licensing, data collection, boarding and inspection, legislation, observers initially for scientific data collection, and then possibly compliance);
  - (iii)VMS and other advanced information technology communications networking; and

(iv)it was also suggested that MCS specialist assistance, and possibly cross-regional assistance, could be helpful for these initiatives.

[E-[3]] Specific subjects and findings of the discussions are noted below.

### Logbooks

[E-[4]] It was noted that logbooks were particularly important if the management strategy of the State utilizes quota controls; if another strategy is used, e.g., effort control, then logbooks, although useful for scientific data collection, have a reduced level of importance for MCS, although they can still serve to cross-verify other data.

[E–[5]] Rationale Logbooks provide information for operational management for quota controls and also scientific data for stock assessment verification. For MCS, they provide catch, effort and positioning information for cross-verification of other data, e.g., fuel consumption to determine steaming time and hence approximate area of operations.

[E-[6]] *Problems* Logbooks are often improperly completed due to intentional misreporting and also due to poor literacy among the fishers. Language of operations was also often a concern for fishers in operations outside their EEZs.

[E–[7]] Suggestions It was suggested that logbooks serve a purpose for MCS, especially for management strategies based on quotas, but they need to be legislated. Further, they should be phased-in from the deep sea fleets to the coastal fleets in conjunction with their inclusion in the regulations, with appropriate training provided for fishers and fisheries staff on the need for logs and their correct completion. Finally, it was suggested that, to achieve a standard and useful format, the State should determine the format for the logbooks and issue them.

### Vessel marking

[E–[8]] It was noted that there were several marking schemes in use in the countries, from a simple vessel registration system through the Harbour or Marine Authority, zonal systems, through to the very controlled system of the Malaysian MCS system. The latter included a zone marker, vessel plate marker (not removable), colour coding, a vessel identification number on the sides and top of the wheelhouse for ease of air surveillance identification, and was completed by a vessel passport-type licence for security.

[E-[9]] Suggestions It was suggested that vessel marking systems should comply with the FAO standards, especially for the larger vessels which fish offshore and in foreign waters. These standards need to be supported by legislation and they require inter-agency cooperation and agreement (Harbours, Maritime Authorities, Fisheries, etc.). Further, these markings can be further detailed as required by gear, vessel home port, size or authorized zones as appropriate, but it was clearly accepted that an appropriate and easily-viewed marking system was a key requirement for successful MCS operations.

### **Vessel Registry and Licensing**

[E-[10]] As for the vessel marking systems, a vessel licence is the key control mechanism for fishing activities for the vessel and hence essential for MCS activities. There were several systems presented, from central government and state issuance, central government and municipal issuance for commercial and municipal vessels, to licensing by agency in accordance with engine size, ownership, displacement, etc. The details of the contents of the licence varied, but generally included: vessel specifications, owner and captain specifications, crew particulars, gear specifications, zones for operations, total allowable catch (TAC) and/or effort controls, and processing capabilities where applicable.

[E-[11]] Problems Concerned experienced included security of the document and its potential replication; resistance of fishers to such a system; lack of sharing of information between agencies, states and countries; lack of inter-agency cooperation; and no clear definition of licensing and marking authority.

[E-[12]] Suggestions It was suggested that there was a real need for licensing, training of fishers as to the benefits of licensing for their operations and future fisheries sustainability, the advantages of sharing of information for regional, national and state MCS operations, and the requirement for the licensing of all vessels. It would be desirable for the modalities of national, state/provincial or municipal licensing regimes and authorities to be standardized wherever possible.

### Observers

[E-[13]] It was noted that none of the countries had observer programmes and a short briefing was provided by the facilitators, covering experiences with observer programmes. The benefit of observers was expressed as being for deterrence, data collection and compliance. In the first phase of observer programmes, interest focused on the collection of scientific data, with a second phase possibly being both scientific and for compliance.

[E-[14]] Problems The first concern expressed was the difficulty of securing appropriate security and safety for observers. Second, it was noted that there was little or no observer experience in the countries of the region and so specialist support would be required to assist in the implementation of this mechanism. The cost of observer programmes was discussed, with the conclusion that there were options to ensure that the observer programme was funded indirectly by the fishing vessels. It was recommended that there should **NOT** be direct payment of observers by the fishing masters, as this would compromise both the programme and the safety and ability of the observers to carry out their duties.

[E-[15]] Suggestions There would be a requirement for legislation for observers, their responsibilities and safety. It was recommended that coastal states always utilize a mechanism that ensures the observer programme is cost-recoverable from the fishing industry. It was further recommended that coastal states provide for observers in their legislation, to cover the potential implementation of a future programme. The countries suggested that they pilot test the advantages of an observer programme by implementing a first initiative for the collection of scientific data on a small scale, and later – as their confidence and control capability improved – move towards implementing the

compliance component of the programme. It was noted that an observer programme could also be utilized, with appropriate training and capability of personnel, as an employment initiative.

### VMS as a tool for MCS

[E-[16]] The discussions on this topic were relevant after the presentations during the workshop. It was noted that VMS was **NOT** a replacement for MCS activities, but only another tool to supplement existing operations and assist in making them more cost-effective. It was also noted that this was a tool that might only be applicable to countries with advanced MCS systems. As the ideas with respect to this subject were very varied, it was decided to address advantages and disadvantages of VMS for the information of countries, without making any recommendations, noting that some of the countries with a more advanced MCS system were better prepared than others for the implementation of such a tool.

Advantages	Disadvantages			
FOR INDUSTRY				
Fleet management and planning     Safety of vessels and crew     Monitoring own ships     Direct real-time communication for operations and post-harvest planning	Does not replace MCS activities     Confidentiality of information     Cost of implementing system (note: this can be addressed in several ways)     Acceptance by fishers			
FOR FISHERIES MANAGEMENT				
Support current surveillance activities     Provide vessel identification and position     Operational planning     Management decisions re quota and area closures     Tracking of vessel movements				

### **Boarding and inspection**

[E-[17]] It appeared that those States with sea-going vessels and trained crews could take the greatest advantage of this tool to verify and enforce legislation and regulations at sea. There was, however, a need to ascertain the level of fisheries knowledge and training in these countries in order to maximize their effectiveness for assistance in fisheries management. Many countries utilized other agencies, e.g., Coastguard, Navy or Police in this role, as secondary or primary tasking; consequently, additional training would be required for these agencies to ensure effectiveness.

[E–[18]] *Problems* Little inter-agency communications and training to maximize the effectiveness of these expensive infrastructures. Navy and Coastguard had other, primary, responsibilities; consequently fisheries activities were given a low priority unless there was a priority policy statement and directive at government level.

[E-[19]] Suggestion This area and mechanism was in need of serious consideration and action in all countries to enhance the effectiveness of MCS operations, but noting, however, the differing level of experience of countries, e.g., India, Malaysia and the Philippines were better prepared than most other countries. There was a need for increased inter-agency liaison between maritime agencies to bridge the communications gap and maximize effectiveness of this high-priced patrol equipment.

### **Training**

[E–[20]] It was apparent early in the discussions that all countries needed and wanted training in all aspects of MCS operations. Therefore the direction of the group was to focus on the various training required. It was noted that low-key training for domestic MCS could be greatly assisted by utilizing the combined expertise resident in the countries of the region, e.g., India – Coastguard; the Philippines – maritime training; Malaysia – MCS. There already existed a collective potential to enhance MCS operations through regional cooperation.

[E-[21]] Suggestions It was noted that due to the differing levels of MCS operations in the countries, with some countries at initial stages of MCS operations, there was a need for different training to address their respective requirements to enhance their MCS systems. A summary of all requirements, irrespective of country identification was collated as follows:

### [E–[22]] Training needs identified:

- •MCS management (all MCS activities)
- •Institutional strengthening in fisheries management, including MCS activities
- •Surveillance techniques, including planning
- •Enforcement, both onshore and at sea (boarding and inspection procedures)
- Observer programmes
- •Equipment operations and maintenance
- •General maritime training
- •VMS and information systems
- •Legislation in all aspects of MCS activities
- •General design and implementation of MCS systems

**Country profiles** 

[E–[23]] It was noted that, due to the differing levels of implementation of MCS systems, the priorities of each country should be addressed separately. A summary of these priorities follows:

All countries Vessel marking was a requirement common to all countries.

Bangladesh: Establish the whole MCS

Cambodia: MCS Management training for fisheries staff.

Fisheries inspection

India: VMS as a tool for management including legislation

Fisheries inspection

Information technology and networking

Indonesia: Fishers training in fisheries management and MCS, and the benefits

therefrom

Observer Programme MCS for fisheries staff

Information technology training and networking

Malaysia: VMS legislation

Observers for scientific data collection.

The Philippines: General fisheries management to address the needs of an increased

agency responsibility as a line agency at all levels of government. This would require full training in all aspects of MCS activities and operations.

Sri Lanka: This was their first year of the new MCS Unit attached to the Ministry,

consequently their requirements were for initial MCS training and development of model communications strategy, including planning.

Thailand: MCS training of fisheries staff

Fisheries management training for fishers to gain their acceptance of the

principles and benefits to their future employment

VMS for high-seas fisheries

Legislation

Inter-agency coordination
Boarding and inspection

(Note: there was an interest and clear intent by the government to control their high-seas vessels in accordance with their responsibilities as the Flag

State.)

Viet Nam: Vessel registration and licensing

Assistance from a specialist for inspection and surveillance

[E–[24]] It was suggested that, in order to strengthen MCS in the region, a further meeting would be in order to discuss technical matters, including:

- •types of fishing vessels
- •fishing grounds maps
- •types of fishing gear
- •capacity levels of fishers in terms of technology and literacy
- •fish migration maps

[E–[25]] These materials could be distributed to bordering countries of the region in advance of the meeting for analysis and to better focus the regional discussions.

[E-[26]] The objectives were to promote harmony and use of the same "language" in terms of MCS technology and techniques in the region, and assist in enhancing MCS system development in each country.

### Report of Working Group 2: Legal issues

[E–[27]] The members of the Working Group were:

Mr Md Nasir Uddin Ahmed, Bangladesh; Chairman

Ms Noradidah Ahmad, Malaysia; Rapporteur

Mr Gulamsarwar Jan Mohammad, Malaysia; Rapporteur

Mr Samarendra Nath Choudhury, Bangladesh;

Ms Tan Geik Hong, Malaysia; Rapporteur

Mr Rodolfo T. Paz, Jr., Philippines

Ms Poungthong Onoora, Thailand

Mr Nguyen Van Chiem, Viet Nam

Mr Nguyen Van Hung, Viet Nam

Facilitator:

Ms Annick Van Houtte, FAO, Rome

### **Discussions and recommendations**

[E-[28]] The Working Group considered various legal issues related to MCS, and in particular:

- •aspects of community-based management and co-management;
- •potential consequences arising from conflicts between central and local government;
- •harmonization of laws and regulations at national and sub-regional or regional level;
- •institutional and legal framework for marine parks and reserves; and

•difficulties relating to enforcement and surveillance aspects.

### Community-based management, co-management and conflicts between central and local government

[E-[29]] The Working Group participants noted that in some cases, namely in the Philippines, community-based management and co-management frameworks had contributed towards:

- (i)resolving conflicts between the various fishermen groups and agencies in the fisheries sector, including central and local authorities, as well as between the authorities and the private sector;
- (ii)effective implementation of fisheries management and conservation; and
- (iii)enhancing compliance with fisheries management and conservation measures.

[E–[30]] The Working Group therefore **recommended** that countries facing problems in surveillance and enforcement between both central and local government(s), and between other government authorities and the marine resource users, seriously consider the implementation of community-based management structures or co-management structures. There was a definite necessity to have a balance between the needs of the Government and those concerned with the impact and implementation of management and conservation measures, with a view to ensuring sustainable development of the fisheries resources.

### Harmonization of laws and regulations

[E–[31]] The Working Group emphasised that in cases where a bay, estuary or other water body was bordered by several local authorities having regulatory powers in fisheries matters (e.g., municipalities in the Philippines), it was important to ensure proper communication, with transparency in the decision-making processes, among all relevant local authorities, and to harmonize the fisheries regulations adopted by those authorities. It was also noted in this regard that with respect to natural resource management and conservation, it was essential to involve all the interested parties – both public and private sectors – in the conservation and management process.

[E–[32]] Likewise, the Working Group considered aspects of harmonization of fisheries laws and regulations among the countries of a sub-region or region, and recognized the benefits which could result from the harmonization of fisheries management and conservation measures. Reference was made to aspects of access rules to foreign fishing, the related terms and conditions, including fees, penalties and sanctions; to the marking of the foreign fishing vessels; etc. With a view to support this process of harmonization, the Group **recommended** that the following activities be undertaken:

(i)the collection of national laws and regulations (including access agreements) governing foreign fishing in the sub-region or region; followed by

- (ii)preparation of a comparative study, analysis and evaluation of these laws and regulations; and,
- (iii)the identification and the making of proposals with regard to possible areas for harmonization.

[E–[33]] The Working Group participants further **strongly recommended** the holding of a meeting of representatives of the countries of the sub-region in order to discuss the various components of the study and to lay down general guidelines for future harmonization. They finally **recommended** that FAO investigate the possibility of funding the aforesaid activities under the current operational Norway Trust Fund Project.

### Institutional and legal framework for marine parks and reserves

[E-[34]] Participants considered the need for having a fisheries law dealing with the protection of the aquatic environment and aquatic life, and, in particular, marine protected areas (e.g., reserves and parks). Experiences in the Philippines, Thailand and Viet Nam had shown that more than one agency (e.g., the forestry department and the fisheries department) was involved in the creation and management of marine protected areas. It was also noted that, in many countries, relevant agencies often had overlapping functions and conflicting mandates. For this reason, the participants felt it was essential to identify and compare the functions and mandates of the various competent agencies, as well as to find ways and means to enhance coordination among them. This could include the holding of meetings (formal and informal) between the competent agencies in order to ensure sharing and dissemination of information on activities undertaken, problems faced and to allow discussion of ways and means for improving the situation. Interestingly, in the Philippines, the private sector was involved in the coordination process because it was felt that the private sector (the resource users) were most often faced with – and thus best informed of – the institutional problems.

### Useful tools for surveillance and enforcement

[E–[35]] Discussions covered aids to enforcement and surveillance. The Working Group was of the opinion that it should be fully recognized that training, seminars and manuals – coupled with appropriate extension services targeted at those involved in enforcement and surveillance activities – were crucial tools towards ensuring the effective enforcement and surveillance of fishing activities.

[E–[36]] Further, the Working Group recognized that enforcement and surveillance systems should be considered in terms of level of compliance with fisheries management and conservation rules. In this regard, it was noted that fisheries management authorities in some countries differed from the enforcement and surveillance authorities. Therefore, the Group **recommended** the development of crucial and useful tools like training and extension services in the countries in order to ensure that those officers responsible for enforcement and surveillance give full consideration to and, where possible, priority to fisheries matters.

Appendix E

[E–[37]] In this context, the participants also noted the differences among the countries' legal frameworks concerning prosecution procedures. The Group therefore recommended the holding of a meeting, at regional level, bring together legal advisors in fisheries matters and persons involved in prosecution proceedings. The objectives of such meeting would be:

- (i)to exchange information and share experiences among the participants on the legal and institutional framework for prosecution, and
- (ii)to learn more about and to identify means for improving the legal and institutional framework, in particular, legal procedures for prosecution.

[E–[38]] They finally **recommended** that FAO investigates the possibility of funding the aforesaid activities under the currently operational Norway Trust Fund Project.

### Other matters

56

[E–[39]] Apart from Bangladesh, all countries represented in the Working Group provided for the existence of (a) legal adviser(s) or officer(s) within the authority (Ministry, Department, etc.) responsible for fisheries. The participants recognized that the presence of legal adviser(s) or officer(s) was very important for ensuring an effective MCS system, in particular for better handling of the offences and drafting of the fisheries laws and regulations. The Group therefore **recommended** that fisheries agencies have at least one legal adviser or officer.

### Conclusion

[E–[40]] MCS systems had been found effective for the management and conservation of fisheries resources. To get the maximum benefit from the marine waters in a sustainable manner, MCS systems should be properly implemented. For this purpose, rules might need to be drafted or appropriate amendments made to devise an adequate legal and institutional framework for MCS.

### Report of Working Group 3: Economics and Finance

### [E-[41]] Participants:

Dr Kamaruzaman Hj. Salim, Malaysia (Chairman)

Mr Rakhal Chandra K. Banik, Bangladesh

Mr Dipak Kanti Chowdhury, Bangladesh

Mr Yulianto, Indonesia

Mr U. Khint Aung, Myanmar

Mr Cesar C. Galera, the Philippines

Mr Nao Thuok, Cambodia

Mr U Khin Maung Oo, Myanmar

Ms Lim Chai Fong, Malaysia

Facilitator:

Dr Graeme Parkes, MRAG Americas, FAO consultant (Rapporteur)

[E–[42]] The Working Group considered a number of key issues in relation to the economics and financing of implementing MCS for fisheries. At the start of the discussions it was agreed that two of the most important of these issues, in the context of the countries in the region of South and Southeast Asia, were the need for training and the implementation of a cost-effective information system. Training was required for all those involved in the MCS system, including government officers, researchers and fishers, to promote understanding, awareness and support for MCS activities. The information system should use resources efficiently through the collection and utilization of necessary data. The use of modern technology and the integrated use of existing facilities were seen as two ways of containing costs.

[E–[43]] In order to investigate economics and finance in more detail, the working group proceeded to identify the main elements of the costs and benefits associated with MCS. It was agreed at the outset that it was important to ensure that investments in facilities and implementation for MCS were economically viable for the Governments involved. Investment in MCS was mainly a financial consideration. However, benefits might be of various types, including economic and social. To promote cost effectiveness, the two main objectives were considered to be minimization of costs and maximization of benefits. It was recognized that there would be areas where there would be conflicts and that achievement of both of these objectives might not be possible in every case. Nevertheless the working group decided that it would be useful to draw up lists of recommended approaches for achieving them.

Appendix E

**Objective 1: Minimization of Costs** 

### Cost elements

**58** 

[E–[44]] A table of MCS cost elements was drawn up (see table below). In an attempt to prioritize these cost elements in some way, the perceived level of requirement (low/medium/high) for implementing these elements in the South and Southeast Asia region was indicated.

COST ELEMENT	PERCEIVED REQUIREMENT (low/medium/high)			
	Industrial offshore fisheries	Artisanal inshore fisheries		
1. Facilities				
National information system	High	High		
International information system	Medium/High	Medium		
Satellite tracking system	High	High		
Sea patrol vessel	High	High		
Patrol aircraft	High	Medium		
Shore-based infrastructure	Medium	High		
Environmental and fisheries research	Medium	Medium		
Training in fisheries and fisheries-related industries	High	High		
2. Human Resources				
Training and development	High	High		
Data collection	High	High		
Regional cooperation and collaboration	High	High		
3. Institutional set-up				
Government direct management (i.e., Fisheries	High	High		
Department)	-	-		
Government support institutions (legal, licensing, police,	High	High		
etc.)				
NGOs	Medium	Medium		
Fishermen's organizations	Medium	Medium		

### Recommended strategies

[E–[45]] Following the prioritization exercise, the Working Group considered ways in which costs could be minimized to promote cost-effective implementation of MCS. The following approaches were recommended:

[E-[46]] •Encouragement of stakeholder participation in the MCS system, through the staged devolution of management authority and control from the central government. Various approaches to institutional devolution were considered, ranging from passing responsibility of certain elements of the control system to provincial governments, to full community-based management. It was

recognized that the degree of devolution of control would vary between fisheries. For example, five stages of the MCS role retained by central government were suggested in the progression from pure authoritative control by government to pure community-based management, namely: instructive, consultative, cooperative, advisory and informative (reference?). Other issues discussed in this context were: the need for the creation of incentives for stakeholder participation; the creation of partnerships with the private sector; and the requirements for infrastructure and facilities for implementation.

- [E–[47]] •Reallocation to alternative employment of the workforce displaced from the fishing industry due to reduction in fishing capacity in overexploited fisheries.
- [E-[48]] •Reduction of manpower and the efficient use of institutional resources through the utilization of modern technology. The use of computers and modern database technology for data analysis was thought to be a priority in this regard.
- [E-[49]] •Increase in the level of coordination and cooperation between government agencies involved in MCS, including the fisheries department, law enforcement, data collection and environmental agencies.
- [E-[50]] •Increase in support to NGOs or other functional groups.
- [E-[51]] •Strengthening consistency in the design and implementation of legislation. The need for updating legislation and for effective enforcement was also discussed briefly, but the topic was left for discussion by the working group on legal aspects of MCS.

### **Objective 2: The Maximization of Benefits**

[E-[52]] In order to consider the benefits of an MCS system, the working group first considered the major stakeholders involved, identifying the following stakeholders and potential beneficiaries:

- Government
- •Fishermen
- •Fish processors
- •Fish and fish products traders and exporters
- •The environment and living organisms
- •Tourists and the tourist industry

### **Types of Benefit**

[E-[53]] The Working Group agreed that the benefits to be derived from MCS were not only economic. Other benefits needed to be considered when examining the cost effectiveness of an MCS system. The working group classified the principal types of

benefit to be derived from investment in MCS in the South and Southeast Asia region as follows:

- [E–[54]] •Social and cultural, through increased employment, resolution of conflicts, improvement in standard of living, promotion of traditional lifestyles and encouragement of eco-tourism.
- [E-[55]] •Economic, from the contribution to GDP, generation of foreign currency earnings (e.g., by sale of licences) and the development of fishing-related industries.
- [E–[56]] •Environmental, through improvements in the marine ecosystem and control of pollution.
- [E–[57]] •Safety and security against calamities, such as floods, cyclones or tidal surges.
- [E–[58]] •**Promotion of food security** through the increased supply of protein.

### **Recommended strategies**

[E–[59]] The working group made the following recommendations for ways in which the maximization of the types of benefits identified in the section above could be achieved.

### [E–[60]] Social benefits

- •The promotion of equity in access rights.
- •The creation of new fishing opportunities (e.g., deep sea) for the population of the coastal State.
- •The creation of new processing facilities (e.g., for fish meal).
- The promotion of alternative livelihoods to reduce overcapacity.
- •The establishment of marine parks to promote eco-tourism.

### [E-[61]] Economic benefits

- •Promotion of regional cooperation for transboundary stocks.
- •Setting licence fees linked to profitability of the fishing operation, being higher for industrial fisheries, and supported by the national legislation.
- •Improvement in the quality and diversification of fish and fish products.
- •Higher penalties for illegal fishing, resulting in increased compliance and revenue from fines.
- •Promotion of transparency in the MCS system.
- •Either the exclusion of foreign fishers or the charging of higher access fees and the encouragement of joint ventures.

### [E–[62]] Environmental benefits

- •Effective enforcement of regulations on gear restrictions to avoid or minimize by-catch (e.g., turtle-excluder devices in shrimp trawls)
- •Establishment of sanctuaries, such as marine parks, in sensitive areas to improve the potential and sustainability of fish stocks.
- •Involve the community in the stewardship of the environment, to control pollution (e.g., from polluted river outflows) and promote awareness of environmental issues.

### [E–[63]] Safety and security benefits

- •Utilize MCS facilities and capabilities to develop an early warning network for environmental disasters such as tidal surges, cyclones and floods. This would involve elements of hardware, such as environmental monitoring equipment, and also use of the network of communications and contacts with the fishing community.
- •Utilize MCS facilities for search and rescue.
- •Periodically survey fishing vessels to check seaworthiness.

### [E–[64]] Food security benefits

- •Improve processing technology to reduce post-harvest losses.
- •Improve processing methods and conditions to meet international standards and thus enhance export potential.
- •Promote the implementation of conservation and management measures (e.g., seasonal closures of spawning grounds) to ensure sustainable harvesting and long-term viability of the fish catch.

### **Financing MCS**

[E–[65]] The Working Group agreed that the principal source of funds for MCS should be from the coastal State government. However, in the context of countries in the South and Southeast Asia region, the availability of funds from international sources were also very important. One possible avenue might be the provision of financial assistance through the FAO Asia Pacific Fisheries Commission (APFIC), based in Bangkok. One means of reducing the governmental budget would be the development of partnerships with the private sector, for example in research.

[E–[66]] There was some discussion of potential for generation of revenue from the fisheries covered by the MCS system, through the charging of fees for access and the imposition of fines for illegal activities, and the allocation of revenue by the government exchequer. In some cases there was the potential to cover the entire cost of MCS from

revenue generated by the system. However, in many cases the revenue was not allocated to MCS, but went towards financing other government spending. The Working Group **recommended** that a balance sheet of MCS revenue and expenditure should be developed to examine allocation of funds. In the case of charging of fees for access, failure to adequately manage the resources to which access was being granted would tend to devalue the licences in the longer term, and hence reduce the potential for revenue generation. This might result from overfishing due to the failure to restrict illegal fishing, or degradation of the resource due to poor fishing practices. The allocation of financial resources generated from fisheries might also affect the extent to which international funding would be available for MCS.

### Report of Working Group 4: Institutional and cooperative arrangements

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### Introduction

[E–[68]] In relation to fisheries MCS, the existing institutional linkages within each country and between countries were examined. Existing regional bodies with some existing or potential MCS functionality were also examined. The Working Group aimed to identify common problem areas and areas of potential future collaboration and cooperation, and to explore the possible means of achieving this.

### **Existing national MCS institutions**

[E-[69]] Throughout the South and Southeast Asian region a number of alternative institutional arrangements existed in relation to MCS. Nationally, these ranged from the development of a coordinating body for MCS with defined terms of reference and *modus operandi*, to individual agencies operating without clear coordination. An example of the former was the Maritime Enforcement Coordinating Centre of Malaysia, which was a body established through the National Security Division and National Maritime Council of the Prime Minister's Office to streamline and prioritize requests by one agency to another for action, e.g., from fisheries to the Navy for surveillance and enforcement. The institutions involved in the various countries tended to include Fisheries, Environment, Navy, Air

**64** Appendix E

Reports of the Working Groups

Force, Marine Police, Customs and the legislature. Commonly it was the Ministry of Defence that was the primary institution dealing with surveillance and enforcement through its various services.

[E–[70]] The example of the Philippines was worth highlighting in relation to alternative institutional arrangements, for its promotion of Community-Based Fisheries Management. There was a national coordinating body for MCS, with supporting technical committees and working groups, but implementation for nearshore MCS has been devolved to local governments within the country. A number of elected Mayors were responsible for fisheries MCS, which was jointly implemented by mandated law enforcement agencies and the Fisheries Department. Hence there was a requirement for training and communications to explain the importance and means of sustainable exploitation.

[E–[71]] Agencies responsible for MCS, and particularly surveillance and enforcement, tended to differ according to whether it was in territorial waters or in the waters to the boundaries of the EEZ. Often, the Fisheries Department had responsibility for the former whilst the Navy or a Coastguard under the Ministry of Defence had a role in enforcement against infractions by fleets of Distant Water Fishing Nations (DWFNs). The aim of this arrangement was to maximize the use of available resources and save costs. The degree to which fisheries officers were involved in surveillance varied throughout the countries of the region, particularly for the offshore sector of the EEZ. Generally, Departments of Fisheries provided training to the Navy or Coastguard for the collection of evidence and other matters related to fisheries MCS, but a fisheries officer might not necessarily be on board when a surveillance patrol was undertaken. Following an arrest, the Department of Fisheries would pursue the prosecution.

### Common problems identified requiring further action

[E–[72]] Illegal fishing by DWFN fleets was reported as a common problem faced by all countries in the region. The working group proposed the exchange of information on culprits – i.e., "blacklists."

[E-[73]] The social problem of illegal fishing by small-scale vessels from neighbouring countries was highlighted for the South Asia region. Bilateral arrangements were considered adequate to deal with these.

[E-[74]] Overcapitalization was commonly reported to be a problem. In the case of Thailand, it was reported that a large fleet had developed prior to the declaration of the various EEZs and the current number of vessels was greater than the carrying capacity of Thai waters. It was suggested that Fisheries Departments should have a direct say in the construction of new fishing vessels to avoid overcapitalization. It was commonly reported that this was not the case, although in Malaysia, for example, approval from the Department of Fisheries was required before vessels over a certain size could be constructed.

[E-[75]] Approval of Fisheries Departments was commonly not required for construction of fisheries facilities (e.g., canneries, fish meal plants, etc.), although they

might be informed, e.g. by the Department of Industry. It was suggested that it should always be the case that the authorization of the Fisheries Department be sought.

[E-[76]] The spread of harmful fishing practices throughout the region was of concern, and it was considered appropriate to create a forum for discussing the experiences of dealing with this.

### **Regional Cooperation**

[E-[77]] Regional cooperation was considered to be important in a number of ways, including:

- •Joint management approaches to transboundary stocks the harmonization of management measures.
- •Exchange of information (e.g., blacklists; vessels passing on innocent passage into a third country; etc.).
- •Establishing procedures and budgetary compensation for the repatriation of fishermen.
- •Discussing the potential for joint development areas.
- •Discussing historical fishing rights across the boundaries of EEZs.
- •Investigate the potential for joint fishery patrols in border areas, particularly those not currently defined as maritime boundaries (e.g., between Indonesia and the Philippines; and between Malaysia, Indonesia and Thailand).
- •Cooperative research and joint resources surveys, e.g., for shared stocks.
- •Discussing border issues related to fisheries MCS.
- •Enabling the sharing of expertise, capabilities and infrastructure in certain areas by different countries within the region. The development of a common training network would also be important in this context.

[E-[78]] Regional cooperation was currently based mainly on Maritime Security and occurred on a bilateral basis, with regular meetings with neighbouring countries. There was no regular forum for fisheries departments to meet to discuss issues relating specifically to MCS.

[E–[79]] Existing regional bodies were:

- •Southeast Asian Fisheries Development Centre, SEAFDEC
- •Indian Ocean Tuna Commission, IOTC
- •Asia Pacific Fisheries Commission, APFIC
- •Association of Southeast-Asian Nations (ASEAN) Regional Forum
- •South Asian Regional Cooperation, SARC
- •Asia Pacific Economic Cooperation, APEC
- •Indian Ocean Marine Affairs Committee, IOMAC

[E-[80]] The most suitable of the existing bodies for taking the discussion of regional cooperation on MCS further were considered to be APFIC for the whole region, and SEAFDEC and ASEAN for the Southeast Asia region. However, a view was expressed that bottom-driven initiatives were more likely to succeed and thus there was a need to strengthen existing bilateral arrangements and enhance them to become multilateral arrangements.

[E–[81]] MCS as a whole was under the authority of Fisheries Departments in each country, but arrangements for surveillance differed. Thus it would be important to recognize the existing institutional links between national agencies in different countries, which currently related principally to security. It was therefore proposed that within each country a first step would be to establish a National Coordinating Committee (NCC) for MCS. Bilateral contacts between countries should be coordinated through these NCCs for MCS. Additionally, it was appropriate to define the relevant organizations and contact positions in each country for the different aspects of MCS, and to circulate such lists to enable easy contact when required. Another possibility was to establish technical working groups to discuss particular issues of MCS if funding could be found to hold these on a regional basis, e.g., groups on monitoring and stock assessment, on enforcement of illegal foreign fishing, etc.

[E–[82]] To extend the potential to develop regional cooperation beyond bilateral arrangements, the example of the Forum Fisheries Agency (FFA) was examined to see how regional collaboration had been achieved in the Pacific and to see if this model could be applied to the South and Southeast Asian Region. This forum began with annual meetings of fisheries and surveillance heads. An FFA legal adviser was always present at these meetings. The FFA then coordinated the development of a number of treaties defining regional collaboration in MCS, and was now the coordinating body for MCS in the region. It provided training and coordinated cooperation in the deployment of expertise and facilities in the region. A similar approach could be appropriate but it would be necessary to restructure existing bodies (such as APFIC) or develop a sub-body with specific responsibility for fisheries management and MCS. The latter approach was considered more suitable, and it was considered appropriate that Governments in the region should examine the possibilities of establishing such a body of regional harmonization for fisheries MCS.