Intergovernmental Oceanographic Commission

Workshop Report No. 118

IOC-UNEP-IMO-NOAA-SEA GRANT Fourth Caribbean Marine Debris Workshop

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1. OPENING

The IOC-UNEP-IMO-NOAA-SEA GRANT Fourth Caribbean Marine Debris Workshop was opened by Dr Manolo Sánchez Pérez, Under-Secretary of State for Natural Resources of the Secretariat of State and Agriculture of the Dominican Republic. He expressed his satisfaction on behalf of the Government of Santo Domingo in hosting this workshop and wished the participants a successful meeting and a pleasant stay in La Romana, Dominican Republic, He stressed the need to continue our current regional efforts initiated at prior marine debris workshops and offered continuing support from Santo Domingo in the implementation of future policies from which the whole Wider Caribbean Region (WCR) can benefit.

Mr Stefan Andersson, IOC Consultant and also the Technical Secretary for the Session, welcomed the participants on behalf of the Secretary of IOC and emphasized that, while the meeting was meant to be aimed at "educating the educators," everyone must take an active part in resolution of marine debris issues. He explained that a task for workshop participants would be further revision of the IOCARIBE Marine Debris Action Plan for the Caribbean (IOC Technical Series No. 41), which describes current and prospective action items being pursued by governments, industry & NGO's. He emphasized too that the action plan revisions are needed to implement the primary actions and to create a coordinating mechanism among governments, international organizations, NGO's and others in seeking solutions to the problems of marine debris in the Caribbean; and eventually the elimination of these materials from the marine environment.

Mr Alex Wypyszinski from the New Jersey Sea Grant College Programme welcomed the participants and explained that from the beginning we have been aware that the key to dealing with marine debris problems is education. However, effective educational programmes in the WCR must recognize the range of linguistic, geographic, economic, political and cultural differences among the nations of the WCR, Consideration must also be made of the different tools which are available to educators, many of which are effective only in sub-regions.

The Workshop was attended by representatives from the scientific community, national environmental authorities, the cruise industry, NGO's and UN agencies. A list of participants is included in Annex II.

2. ADMINISTRATIVE ARRANGEMENTS

The Technical Secretary reviewed the documentation and local arrangements for the Workshop,

The Agenda, as adopted by the Workshop, is attached in Annex I.

3. ELECTION OF CHAIRMAN FOR THE SESSION

Dr Alex Wypyszinski from the New Jersey Sea Grant College Programme, USA was elected as Chairman of the meeting, Several moderators were also elected to chair discussion of the different agenda items of the session.

4. OPENING KEYNOTE ADDRESS

Dr Laverne Ragster, Director of the Eastern Caribbean Center of the University of the Virgin Islands presented the Keynote Address for the Workshop on "Educating the Educators".

The complete text of Dr Ragster's Keynote Address is included in Annex III.

5. INDUSTRY INITIATIVES

Mr Mat Dillon introduced this agenda item by giving an overview of the industry initiatives carried out by the Cruise Line Industry, and its involvement with the MARPOL Treaty.

Mr Dillon opened the panel discussion on Industry Initiatives by directing the focus away from traditional school environment education to the wide range of existing organizations and entities which also inform and educate identifiable groups or audiences. A cruise ship is such an entity, with a captive audience of passengers and crew.

Mr Dillon introduced Ms Michelle Paige, Executive Director of the Florida-Caribbean Cruise Association (FCCA), who described what the cruise industry is doing to eliminate marine debris, both in terms of operational practices and in terms of crew training and passenger education,

Ms Paige outlined the magnitude of the cruise industry impacts on the Caribbean. The FCCA is an association of 14 cruise lines operating as many as 60 ships in the Caribbean. Over 2 million passengers cruise the Caribbean annually, making over 9 million port calls. A typical cruise ship carries 2000 passengers and 700 crew - each person generating 3.5 pounds of garbage per day - for a total of nearly 5 tons daily. This impressive amount of garbage usually represents less than 1%. of the waste generated by the destination states, and in no case more than about 3%.

During her presentation, Ms Paige played two videos utilized as passenger information/education programmes by two of the FCCA member cruise lines. The videos showed how each line processes garbage on board, and describes what is expected of each passenger so that no plastics are discharged overboard, and that other garbage is properly handled in accordance with current international regulations. In response to questions from the audience, Ms Paige said the videos are used both for crew training and passenger education/information. They are included as part of the welcome aboard information package on the cabin television, Tapes are available in several languages for use by the crew. She also said that while Travel Agencies are given much of the written material, the passengers are informed again when they come aboard,

While each FCCA member line has its own policies and procedures which vary according to ship and equipment on board, all of the lines have strict policies against illegal discharges, and thorough training and supervision to ensure these policies are followed, Three of the cruise lines, representing nearly 50% of the ships, have “zero discharge” policies, allowing nothing to be discharged at sea even though some discharges are permitted by law.

Ms Paige, then made a video presentation on the new approaches in waste management employed by the cruise line industry. She briefly explained that the methodology follows a scheme of (I) collection, (ii) processing, (iii) storage and (iv) disposal of the debris generated by passenger cruise liners, Garbage that is landed in a destination port is picked up by a government approved disposal company. Continuing joint effort between the industry and local government is needed to ensure proper ultimate disposal.

Mr Dillon then introduced Mr Neil Ross, representing the U.S. Marina Industry. Mr Ross compared the case of establishing the number of cruise ships passengers to the much more difficult task of determining the number of recreational boats and the number of days they operate in the WCR. No one could deny, however, that recreational boats and the related service industry of marinas and boatyards are an important economic industry for the region.

As it is difficult to establish the number of operational days, so it is difficult to establish the contribution of recreational boats to the marine debris problem. Mr Ross strongly disputed the statement of the US Coast Guard in IOC Technical Series No. 41 suggesting that 59% of marine debris in US waters is from recreational fishing and boating. He considers the amount to be much less. Nevertheless, even a small amount of debris from each of tens of thousands of boats becomes a significant amount; and when it occurs in isolated areas, it may represent 90%. of the marine debris problem in that area.

How does one capture the attention of all these individual boats and boaters? The marina is the point at which a recreational boat goes from land to sea and back to land. The key to educating boaters is by bringing the marina owners and operators on board as educators.

In the US there has been great success in motivating these marina owners and operators, At first there was the negative tactic of pointing out the environmental harm being done by the recreational boating industry. This was supported by laws, regulations and enforcement, Next came the realization that clean seas and clean marinas are good for boating and profitable to the industry. A fuel dock that also provides sewage pumpout very often sells more fuel. A marina which provides clean restrooms and facilities for garbage and waste disposal is more desirable to boaters and makes more profit. A marina which is able to recycle garbage reduces its garbage disposal costs.

While the recreational boating community was often wrongly perceived to be a major contributor to the marine debris problem, the shore communities often create obstacles by not allowing boaters to dispose of garbage or sewage ashore,

Mr Ross suggested that a recommendation of this workshop should be to focus educational efforts and attention on the marina owners and operators so that they in turn can educate the recreational boating public of the WCR. He again highlighted the fact that the incremental contribution of wastes from recreational boats can create a significant problem. The inclusion of a new Action Item in the IOCARIBE Marine Debris Action Plan for the Caribbean for recreational boaters was proposed. Comment from the floor supported Mr Ross' position that the contribution of recreational boating is minimal compared with' land based sources of marine debris.

6. PANEL DISCUSSION ON COMMUNITY INITIATIVES

This agenda item was introduced by Mr Ruperto Chaparro of the University of Puerto Rico Sea Grant College Programme. He began with a discussion of practical solid waste management practices in developing countries.

Marine recreation and coastal tourism support a large segment of most Caribbean economies; and each year the extent of their impact continues to increase. Throughout the Caribbean Islands, all tourism development has essentially occurred in coastal nearshore areas, where the beaches are the principal attraction. Beach-goer debris and litter carried out by wind, runoff and streams are present at almost all beaches in the Caribbean.

As in many other developing countries that are facing serious economic difficulties, waste management issues in the Caribbean are low priorities despite the implications for public health, environmental degradation and a sustainable economy. The solid waste problem in Caribbean countries and territories is especially difficult since most rural communities are in the coastal zone and open dumps send debris down outfalls and rivers and eventually into the ocean, Impacts of marine debris can be classified into two broad categories: biological and economic. Biologically, debris can be harmful to marine organisms. In economic terms it hurts coastal communities whose major source of revenue is coastal/nearshore tourism and marine recreation.

La Romana, Dominican Republic and Rincon, Puerto Rico, like many other coastal Caribbean communities, have focused tourism development on sun, sea, and outdoor recreation, However, inadequate collection and disposal options in these two coastal communities lead to dumping and uncontrolled landfills, with consequent serious economic and environmental repercussions. Mr Chaparro is presently working on a project (initiated as part of the IOCARIBE Action Plan) designed to develop local solutions that match local needs and possibilities in order to help these two Caribbean communities address the problems related to solid waste handling and disposal of upland sources of marine debris.

Mr Chaparro emphasized that solid waste is an environmental and economic threat to the development of the Caribbean because of its direct relation to over population, economic growth and a limitation of available space in which to install the needed facilities. Present waste management practices are insufficient to handle today's problems, yet further population growth is inevitable, Individual patterns of consumption remain a major roadblock to reducing solid waste in the Caribbean. Disposable products and packaging are at the root of the litter and waste management problems. At the same time that the use of disposable products and packaging is increasing, we are running out of places to put all the trash. Most of this garbage is currently disposed of in landfills, and most of the landfills will close in the next several years (in the case of Puerto Rico more than half of the landfills were closed due to the Resource Conservation and Recovery Act (RCRA) Subtitle D Landfill Regulations of USEPA). Few new landfills and incinerators are being built to replace these facilities due to public concerns about environmental, economic, property, and nuisance problems, For many communities in the Caribbean, this situation has already reached crisis proportions. For others, the crisis is every day closer and closer,

Problems associated with solid waste generation and management in the Caribbean will not disappear, and without action they are likely to become worse. To deal with this problem Caribbean countries need to develop an integral public policy and implement the use of functional technology in all sectors of our society (government, companies, institutions, communities and individuals). The ultimate goal of an effective education programme must be to change irresponsible behaviors through an increase in public knowledge. Increased attention to providing residents and visitors informative and enjoyable programmes in the use and protection of coastal resources help reduce the amount of solid waste in beaches.

Cooperation and interaction of various interest groups directed to a common goal of understanding and preserving their ecosystem in the key to a successful programme. There is a need for a political commitment at both municipal and insular levels. Indifference and apathy about solid waste and its environmental effects needs to be combated through education and heightened awareness of the hazards of land-based litter and marine debris. Educational programmes can be initiated by any interest and concerned operation; however, interfacing with government agencies and local research institutions will provide the most complete and beneficial results.

For the Liga Ecologica Puertorriquena (LEP), an environmental group from Rincon, the real answer to their solid waste problem is a small-scale recycling center. Recycling can help alleviate the solid waste disposal problem and at the same time help conserve scarce natural resources. One important step that the LEP adopted individually and collectively is to recycle more of their discards, Presently, Puerto Rico does little recycling, Instead, it spends millions of dollars each year to dump, burn, or bury refuse that contains millions of 'dollars of valuable resources. The LEP has confronted the solid waste problem of Rincon with a Community Based Recycling Programme.

Caribbean countries should understand that the viability of the reduction, reuse, separation and recycling of materials derived from solid waste (recycling) depends on a series of interrelated variables that include:

(i) the existence of a market for the products;
(ii) the investment of governmental economic resources;
(iii) changes in production processes and consumption patterns; and,
(iv) changes in the predominantly incorrect ideas concerning natural resources and the environment,

The development and implementation of a plan for reduction, reuse and recycling require that these variables are taken into consideration. These factors need to be considered in all Caribbean countries and territories in order to establish a successful project for the reduction, reuse and recycling of solid wastes. Furthermore, efforts and coordination of programmes by the private

sector and civic organizations need a political commitment from both insular and municipal governments.

Mr Javier Vélez-Arocho of the University of Puerto Rico Sea Grant College Programme then made a presentation entitled, "Achieving Water Quality in Western Puerto Rico Through Volunteer Citizen Action."

The University of Puerto Rico Sea Grant College Programme works throughout the coastal zone of Puerto Rico and in the U.S. Virgin Islands towards the conservation and wise development of our marine and coastal resources. Our work is based upon active collaboration among universities, industry, government agencies and coastal communities. Our Marine Advisory Service agents apply scientific research and extension strategies to the needs of marine resource users.

Since no one in Puerto Rico lives more than 18 miles from the coast, when we refer to coastal residents, we are talking about all the 3.8 million residents of Puerto Rico. The coastal zone of Puerto Rico plays a vital role in our lives, We depend on it for commerce and tourism, for food, for recreation and pleasure, for transportation, for defense and for our weather conditions.

The coastal zone in Puerto Rico is a most attractive place to establish residency by islanders and outsiders, but increasing numbers of people that come to the coastal zone are often not familiar with the delicate marine environment.

The Boqueron Bay was considered for decades as one of the most popular places among tourist and marine recreationists, because of its crystal clear waters and white sandy beaches. This ecosystem is part of the Boqueron Forest, a natural reserve that covers over 5,200 acres of mangroves, water and salt flats in the municipality of Cabo Rojo.

In the past this bay supported a substantial recreational and commercial fishery for yellow tail snapper, lane snapper and parrot fish. One main stream draining into the estuary provides the spawning ground for a large population of tarpon, The mangroves contain nearly 200 acres of oyster collection areas *(Crassostrea rhizoforae)* and clams flats *(Mercenaria).* Virtually the entire bay is a shellfish growing area.

However, since the late 1980's, the bay has suffered serious problems of water contamination. Discharges from three primary waste water treatment plants drain directly into the coastal waters, polluting them with heavy amounts of nutrients and pathogens.

A landfill established by the municipal government of Cabo Rojo in the forest's extreme north received thousands of tons of garbage for more than 20 years, polluting by lixiviation (creation of soluble constituents of a solid mixture by washing or percolation) through a stream that drains into the bay. The water quality in this area clearly violated the standard of the SB classification, which stipulates that water quality should be maintained at a level that allows direct harvesting of shellfish.

Despite the fact that the resources of the Boqueron Bay make a substantial contribution to the economy of the area and that nonpoint source pollution from inappropriate land use and unplanned development can have a tremendous negative impact on water quality, the municipality of Cabo Rojo does not have ordinances to address these problems.

The Mayagüez and Añasco Bays are at the center of the west coast of Puerto Rico. The shoreline of the two bays meet at Algarrobo Point, but offshore there is no physical separation of the bays.

The Añasco, Yaguez and Guanajibo rivers supply terrigenous sediments derived from igneous rock environments, Reefs on the shelf margin and patch reefs supply biogenic sediments.

The Puerto Rico Aqueduct and Sewer Authority and the Mayagüez Water Treatment Company operate two primary waste water treatment facilities. Both of them discharge directly into the bays over fifteen million (15,000,000) gallons of sewage daily. These two bodies of water are supposed to be classified as SC by the Environmental Quality Board (EQB), but the parameters clearly violate that standard.

Large amounts of nutrients, sediments, heavy metals, organic matter, toxics and pathogens are discharged into the waters by the tuna canneries, pharmaceutical, electronic and textile industries, and runoff from the city and adjacent low income communities.

Puerto Rico Sea Grant is presently initiating a volunteer project to address environmental problems in the areas described. Actions include:

(i) Working towards establishment of the volunteer groups in both areas (Cabo Rojo, and Mayagüez). Residents from the two main communities at the project sites are very interested in the development of this programme, as they realize that this action will help provide the solution to the problems;

(ii) Inclusion of many different groups as part of the venture; among them: commercial fishermen, environmental groups, religious groups, public school teachers and students, university students and local residents;

(iii) Creation of an advisory group which includes representatives of state, municipal and federal agencies, local residents and commercial fishermen;

(iv) A first meeting of the Advisory Group scheduled for 12 September 1995; with work starting at the end of the same month;

(v) A Workshop on QC/QA, for group leaders and volunteers scheduled to be conducted in late September in order to obtain the best information available during the programme; and,

(vi) Production of a publication containing information about point and non-point sources of contaminants, existing laws on water quality, their effects, and suggestions for conservation.

With the development of this programme we expect to increase the awareness among the coastal residents and visitors of the west coast about the conservation of the coastal water resources. We also expect a change in the behavior of the coastal residents towards their attitude of discarding trash and contaminants in coastal waters and public beaches.

7. MARINE DEBRIS AND TRADITIONAL EDUCATION IN THE CARIBBEAN

Dr Alida Ortiz of Humacao University College in Puerto Rico presented research done to assess the extent, quality, and needs of environmental education at the primary and secondary levels of education system in several Spanish speaking Caribbean countries (Dominican Republic, Puerto Rico, Venezuela, Cuba, Mexico and Aruba). The results of this research reveal that:

(i) Environmental education concerns are presented in the primary and secondary educational systems (K-12);

(ii) Cuba, Mexico, Venezuela and the Dominican Republic have high level direction for public policy, content and guidelines for teachers' preparation;

(iii) Marine and coastal resource issues are integrated in courses like biology, geology, and geography;

(iv) The marine and coastal issues are included only in schools close to the sea;

(v) Solid waste disposal is an environmental issue of concern for teachers, but activities are limited to clean-ups;

(vi) Teachers use a diversity of teaching strategies including nature walks, field trips and research projects;

(vii) Instructional materials are diverse; many are translations to Spanish with little or no adaptation to Caribbean culture and environment;

(viii) Teacher training is done through in-service seminars and workshops. Only Cuba, Venezuela and Dominican Republic have adequate courses for teacher education; and,

(ix) There is a need for evaluation of strategies to measure outcomes of environmental education activities.

The absence of marine and coastal environmental issues in the education system is evident. The needs in terms of contents and concepts seem to be similar throughout the countries, however there are many cultural features that demand different formats and approaches.

We recommend the identification of a core of marine and coastal resource issues common to the Caribbean region, allowing for the insertion of each country's singularities with respect to their relationship with the sea to be developed as a regional curriculum. It is also recommended that mechanisms for exchanging materials and experiences among teachers be promoted.

Ms Patricia Lamelas provided an overview of CEBSE (Centro para la Conservacion y Ecodesarrollo de la Bahia de Samana y su Entorno) and a history of the development and implementation of an environmental education programme for teachers and students in Samana. A series of workshops and activities were developed for teachers where environmental education was integrated into the mathematics, Spanish language, and social studies curricula and a cultural-ecological event. The workshops were developed with the professors, and environmental education techniques were introduced and specific activities presented that integrated environmental education into the curriculum.

Drawing contests, humpback whales and ecosystems (mangroves and corals) information were some of the sessions presented at the workshops. Efforts were made to increase student appreciation for nature resources of the region.

Among the few problems encountered in implementing this programme were political disputes between two groups of educators, and the low skill level of some of the teachers in handling environmental information. The lessons from the earlier activities of CEBSE in developing their environmental educational programme has strengthened their efforts to implement community environmental education efforts.

This part of the session was concluded with a series of questions focusing on the development of materials for the Caribbean in support of environmental education. The need to have individuals from within the community as part of the development team was also stressed.

The Center for Marine Conservation organized a sub-workshop in conjunction with the Fourth Wider Caribbean Marine Debris Workshop in order to present the Marine Debris Outreach and Education Strategy that was developed under Action Item 5, solicit recommendations and identify the next steps. The working group, chaired by Kathy O'Hara, reviewed the events which lead to the development of the strategy and Action Item 5. Findings from the strategy were then presented in terms of the project methodology and results.

In brief, more than 200 groups were surveyed for information on the types, sources and problems caused by debris; the audiences that should be targeted and the specific marine debris outreach projects which should be initiated.

Recognizing that the plan is an evolving document, the group generally recognized the value of the projects, The discussion then focused on specific ways to improve the plan and next steps to be taken.

In terms of modification of the overall project plan and in terms of its overall sustainability, in addition to establishing a monitoring programme so that progress can be measured, the group recommended that some method of networking among groups who are conducting marine debris outreach projects. Networking through the electronic media was strongly recommended, but the group recognized that other forms of networking would also need to be established for groups that do not have access to computers,

In terms of additional outreach projects, the group added a recommendation to establish a programme targeted at government agencies and organizations.

In terms of next steps, the group began to develop a list of regional organizations that should be approached to actually carry out the project, including non-governmental organizations such as educational, conservation, civic, and youth groups. The list created was by no means conclusive, and it was recommended by the moderator that those interested should be the focus although actual implementation should take effect on the subregional and local levels.

In conclusion, the moderator proposed that the document be taken from paper to reality through pilot projects in specific areas. In order to move into actually implementing Phase I of this strategy, the group recommended that if 3 to 4 pilot projects could be identified the general sites or areas could be:

(i) Puerto Rico (Sea Grant) /Dominican Republic (Groups in Samana)
(ii) Honduras/Mexico (CINVESTAV)
(iii) Colombia - through perhaps the Maritime Center and an experimental activity that could be set up through the UNESCO Caribbean Sea Project working with primary/secondary school children, families, and communities in the countries that are involved in this project.

8. GOVERNMENT INITIATIVES

Mr Stefan Andersson introduced this Agenda Item by giving information on IOC regional and global activities.

Mr Andersson underlined IOC's main objectives, stating that the principal goal which has guided the Commission in developing its strategy for the 1990s and beyond is stated in its Statutes. He said the purpose of the Commission is to promote marine scientific investigations and related ocean services, with a view to learning more about the nature and resources of the oceans and shall seek to collaborate with all international organizations concerned with the work of the Commission and especially closely with organizations of the United Nations system. To meet the challenges, the Commission focuses on four major themes:

(i) to develop, promote and facilitate international oceanographic research programmes to improve our understanding of critical global and regional ocean processes and their relationship to the sustainable development and the stewardship of ocean resources;

(ii) to ensure effective planning, establishment and coordination of an operational global ocean observing system to provide the information needed for oceanic and atmospheric forecasting, for ocean and coastal zone management by coastal nations and for global environmental change research;

(iii) to provide the international leadership for education and training programmes and technical assistance essential to systematic observations of the global ocean and its coastal zone and related research;

(iv) to ensure that ocean data and information obtained through research, observation and monitoring are efficiently handled and made widely available.

In the Marine Debris area, IOC/IOCARIBE has been the leading organizations in conducting monitoring of debris and also as a catalyzer of the scientific results into the present IOC-UNEP-IMO-World Bank Marine Debris/Waste Management Action Plan for the Caribbean.

The development of the Marine Debris Programme was highlighted and in order to continue this programme the experts were urged to work together with the IOC-UNEP-IMO representatives of each country.

Mr Andersson stressed that the application of environmentally sound integrated management practices in coastal and maritime activities will require coordination and the comparative advantages of UNEP in the field of environmental management and that of IOC with respect to management of ocean sciences and services, and also the IMO.

Mr Anders Aim, Project Coordinator, gave a brief background and description of the Wider Caribbean Initiative on Ship-generated Waste (WCISW).

In October 1990, the "Regional Workshop for the Wider Caribbean on Oil Spill Preparedness and Response and "Special Area" Status under Annex V of MARPOL 73/78" was held in Caracas, Venezuela. Based on the discussions, the countries in the region submitted a request to IMO's Marine Environmental Protection Committee in July 1991 to designate the Wider Caribbean as a Special Area under Annex V of MARPOL 73/78. The "Special Area" designation entered into force on 4 April 1993. It will, however, not become effective until the countries of the region notify the IMO that adequate port reception facilities are established. The Global Environment Facility (GEF) and the World Bank have approved a USD5.5 million grant to assist the developing countries of the WCR to provide the basis for ratification and implementation of the MARPOL 73/78 Convention. The project is conceived as the first phase of a longer term process of cleaning up and protecting the Wider Caribbean Sea. Assuming that the countries of the region decide to ratify and implement MARPOL 73/78, building on this project's output, a second phase programme could be agreed with international donor community support consisting of investments in port reception facilities, waste management infrastructure, and institutional training programmes with the goal of ending the discharge of all ship generated waste into the Caribbean Sea,

The International Maritime Organization (I MO) has been designated by the countries in the region to be the Executing Agency for the Project, For that purpose, a Project Coordinating Unit was established at UNDP in Trinidad and Tobago in September 1994. National Focal Points have been nominated in 20 of the 22 participating countries and multi-disciplinary national working groups have been established to identify national priorities and need for assistance in ratifying and implementing MARPOL 73/78. One Legal and one Technical Steering Committee have been established to guide the project and the First Legal Workshop will be held in Habana, Cuba, 6- 10 November 1995. The First Technical Workshop will tentatively be held in January 1996.

During the preparation phase of the project, three major inventories are being carried out:

(i) inventory of the legal framework to ratify and implement MARPOL 73/78;

(ii) inventory of maritime traffic and port facilities in most of the commercial ports and marinas in the WCISW countries in order to calculate the types and amounts of ship-generated waste in each port and identify the need for reception facilities; and,

(iii) inventory of existing shore-based waste management systems in major ports and evaluation of their capability to absorb ship-generated waste,

The initial findings of the inventories indicate serious gaps in national legislation to implement MARPOL 73/78. Although 9 of the 22 countries in the region have ratified the Convention, the necessary regulations have not been developed. However, countries in the region are concerned about protecting the marine environment and proposals for the ratification of MARPOL are being developed in Costa Rica, Guatemala, Honduras and Trinidad & Tobago.

On the technical side, several misconceptions regarding ship-generated waste are common. The WCISW project will provide realistic facts on the types and amounts of waste in each port and also propose the necessary waste reception facilities, The WCISW project is also working closely with the different shipping sectors to identify their need for reception facilities,

During the discussion the need for coordination with other ongoing activities was highlighted. As the WCISW Project is covering aspects of several Action Items in the IOC Action Plan for Marine Debris, the impact of WCISW project activities will be considerable,

The WCISW project will address technical, legal and public awareness issues. In order to eliminate discharge of waste into the sea, port reception facilities must be installed. These activities, however, must be backed up with intensive public awareness campaigns.

A representative from the Florida-Caribbean Cruise Line Association offered support to the WCISW project in providing relevant data on their waste management operations,

It was also noted that although the WCISW project is supporting the 22 Developing Countries in the WCR, several other countries and territories have intensive maritime traffic and also need to provide adequate reception facilities to effectuate the Special Area Status under Annex V of MARPOL. Several project outputs, such as manuals, model legislation etc. will be distributed to all countries in the region in order to support the regional approach. Also, non-WCiSW countries will be invited to participate as observers in major WCISW meetings and workshops,

Mr Ray Seebald, IMO Regional Representative, continued the discussion of governmental initiatives. The purpose of the presentation was to describe strategies, successes and lessons learned in environmental outreach programmes of the US Coast Guard, and in particular, US Coast Guard District 14, Honolulu HI. Specific attention was paid to Marine Debris efforts.

Coast Guard Headquarters, and specifically, Admiral Card, Chief of the Office of Marine Safety, set out a Business Plan that clearly defined our pollution prevention goals/outcomes and simultaneously empowered local personnel to establish programmes that would work in their area.

Local Coastal Guard representatives met and determined that adequate measures were being taken to detect, enforce and prevent marine based sources of garbage. Based on the latest Center for Marine Conservation Center Statistics for Hawaii, it was concluded that land-based wastes were contributing the greater share of the marine debris in Hawaiian waters,

An intensive effort was undertaken to identify every organization and public and private entity which was delivering education outreach programmes for Marine Debris. A process improvement team was formed, comprised of representatives from these organizations. A professional facilitator lead the group to identify the key environmental outreach areas the group felt needed attention. This group verified the previous Coast Guard hypothesis that marine based sources of Marine Debris constituted the principal area which needed attention in Hawaii Waters,

An extensive study of existing outreach materials was conducted, and a need for a 20 minute video reflecting the Hawaii culture, flora, fauna and concerns was identified. To obtain the desired behavioral changes (reduced incidents of individuals disposing of refuse in and around the beaches and upstream areas), educational consultants advised us to target 4th and 5th grade students. An extensive list of available materials was developed and cataloged. The need for teams of Coast Guard representatives to deliver the message was also identified as was the need to identify full time funding support for these individuals,

A national environmental educational outreach programme was created in 1994 that employed over 300 Coast Guard Reserve members from around the country. This campaign was part of the Civil Military Cooperation (CMC) Action Programme, in which reservists from all the services support critical public infrastructure needs in a number of critical areas. The Sea Partners programme was launched with a training session that brought together, in one place, all of the reservists in a train-the-trainer type workshop. Attendees learned from environmental and education experts not only about environmental issues and today's concerns but also creative and interactive ways to deliver the materials.

A video based on the local culture and environmental concerns will be completed in October 1995. The video was funded by both private and public sector funds donated to a non-profit organization. Local singing groups and actors donated their time and efforts. The material contained in the video is free for copying and re-distributed. Five hundred copies of the video will be produced based on the initial contract, The Hawaii Sea Partners personnel delivered their message of pollution prevention to over 18,000 individuals; nationally, Sea Partners teams taught over 300,000 individuals. In Hawaii special attention was given to the Marine Debris problem and audiences were targeted at the 4th and 5th grade level. The Sea Partners team received the State of Hawaii's Governors Committee on Ending Litter Appreciation Award for their efforts. This same committee made a major contribution to the completion of the local video.

Mr Seebald suggested that it is necessary to have clearly defined goals in mind; with time spent to visualize and describe final objectives. To ensure permanent changes in behaviors, 4-5th grade level students were targeted and instructors were extremely well received. The message must be developed, scrutinized, and constantly re-engineered by the local individuals who are delivering the materials. These individuals must be excited about the work, aware of local cultural considerations, and have a demonstrated ability to positively communicate with people in groups. The message must be molded to the target audience with a variety of delivery techniques that involves all of the parties concerned.

Mr David Smith from the Gulf of Mexico Programme (GMP) made a presentation on US Fish and Wildlife Service and Gulf of Mexico Programme outreach efforts. The Multi-agency Gulf of Mexico Prcgramme is headquartered at Stennis Space Center in Mississippi, and is a community of Federal and State Agencies working together to coordinate their overlapping authorities in development of cooperative programmes with the state and local governments and communities that share the Gulf of Mexico as a common resource,

GMP is a cooperative consensus building programme aimed at improving the environmental quality of the Gulf by addressing eight categories or types of problems:

(i) Habitat degradation
(ii) Nutrient enrichment
(iii) Coastal and shoreline erosion
(iv) Living aquatic resources
(v) Toxics and pesticides
(vi) Freshwater inflow
(vii) Public health
(viii) Marine Debris

The primary interest of the US Fish and Wildlife Service is in habitat; however, because of their inter-relatedness, the FWS is working with each of the other seven issues as well.

Caribbean islands can be seen as microcosms - one often can stand on a high point and see results of local land-use practices on an estuary below. To the contrary, landowners in the U.S. may have difficulty in imagining the impact of land-use practices in inland states such as Kansas or one of the other 31 States forming the Gulf of Mexico drainage basin.

Outreach education efforts for resource personnel around the Caribbean region includes training in surveys and management techniques at FWS stations in Puerto Rico as well as in country training in some cases. For example, a conservation education workshop supported by the GMP was co-sponsored in Martinique by the Caribbean Society of Ornithology in August 1994. Eighteen resource managers and educators from twelve Caribbean islands participated in the two and a half day workshop.

The FWS's Western Hemisphere Programme includes intensive resource management training programmes with habitat conservation, environmental education and the development of community based projects and grass-roots organizations among the objectives.

A WHP small grants programme targets local conservation initiatives to expand public awareness including, e.g., training courses in environmental education for teachers,

9. MEDIA ROLE IN MARINE DEBRIS: "GETTING MARINE DEBRIS IN THE NEWS"

Ms Kathy O'Hara, Director of the Pollution Prevention Programme of the Center for Marine Conservation (CMC) and moderator of the media session, introduced this agenda item by pointing out that the press and media are perhaps the most important and powerful tools for increasing public awareness of the marine debris issue. During CMC's 10 years of work in addressing the marine debris problem, the press has been one of their most important allies,

Ms Wendy Thompson, Assistant Manager at the Caribbean News Agency (CANA), then gave an overview of the Caribbean press and other information media. CANA liaises with media houses throughout the English-speaking Caribbean, providing print and radio services for news, current affairs and special public education projects. Ms Thompson began by addressing problems encountered in the reporting of environmental issues in general. She described the nature of journalism and the nature of environmental issues - often involving evolving or nonexistent scientific data, This makes it difficult for reporters to develop a definitive story, Another challenge in reporting environmental issues is that many of the substantive stories are not event related, but issue related. Hence the stories are not enticing to editors and will not sell papers. Sensationalism is the other side of the coin, Editors will look for the startling headline. Environmental issues are fundamentally individual and community responsibilities,

Yet there is a bit of environmental reporting in the Wider Caribbean at this time on such topics as golf courses, drinking water, solid waste disposal, pollution of harbors, pesticides, beach pollution and erosion, coral bleaching and the general threat to coral reefs, dwindling fishing resources due to over-fishing and pollution, cruise ship dumping, and recycling and "green" (environmentally compatible) business.

Issues are generally reported in individual countries by reporters who have personally taken an interest in environmental issues. However, a boost to the reporting of environmental issues in the English speaking Caribbean took place three years ago with the establishment of CERN, the Caribbean Environmental Reporters Network, which was born out of a workshop on environmental reporting held by the Caribbean Conservation Association (C CA) and the PANOS Institute. CERN has a Secretariat in Barbados housed at the CCA. CERN has two components: (i) the Greenwire which covers major events and; (ii) a three year training programme in environmental journalism through which regional seminars, workshops, and training courses are held for Caribbean journalists supported by the PANOS Institute and CARIMAC (the Caribbean Institute for Mass Communication) in Jamaica. CERN links journalists from Jamaica to Guyana.

In view of the Caribbean media environment, the ideal way to reach the Caribbean public with any kind of public communication campaign would be through a multi-media approach.

However, if one had to choose only one medium that had the best chance of reaching the most people across the English speaking Caribbean, that medium would be radio. TV is powerful and does have a place, but even in the more developed countries where there is more national TV programming available, people rely on radio, particularly during the day, for news and information. Radio sets outnumber TV sets three to one throughout most of the Caribbean.

In terms of getting marine debris issues into the Caribbean media, there are several possible approaches that can be used either singly or in combination:

(i) Work at the individual national levels sending press releases to individual newspapers and radio stations in all English speaking Caribbean nations, working with reporters involved in environmental reporting;

(ii) At the regional level, one can work with CERN helping to train Caribbean journalists in these issues through their workshops and seminars; and,

(iii) Work with CANA, which reaches all the major media houses of the English speaking Caribbean newspapers, radio and TV, working also with CERN to distribute their material. CANA also produces programmes for organizations interested in getting special messages to regional people. CANA has begun the process to reach Spanish speaking countries.

10. ELECTRONIC COMMUNICATIONS & ART IN EDUCATION

Ms Kay McGovern introduced this agenda item by describing The Gulfline II Electronic Bulletin Board System (BBS). The BBS system, sponsored by the Gulf of Mexico Programme, is a communications tool used by Gulf environmental specialists and educators at all grade levels. The system is a free resource for those who wish to use it.

Gulf line was brought online in 1988 and has continually improved; providing eight nodes (phone lines) with modem speeds up to 28,800 band, a larger file base and three sub-BBS's (for the States of Florida and Louisiana and the New WCR BBS). Gulf line has over 9,000 registered users and 8,800 Gulf Specialists listed in the special directory.

Users can connect to the BBS by dial-up using a toll free number in the U.S. -(800) 235-4662. This number can also be used in Hawaii, Puerto Rico and the US Virgin Islands. Where it is not an option, callers can access the BBS on the Internet. Users can Telnet or FTP to Fedworld, then use the gateway option to connect to Gulf line.

There are several kinds of users: citizens, business and industry, State and local government agencies, academic (all levels), private organizations and foundations, federal and state partners, and federal government agencies.

The system is inexpensive to use, easy to use, and accessible worldwide. The WCR component of the BBS was brought online August 18, 1995. The system is accessed by first connecting to Gulf line. Then by typing, WCR at the main menu, The system transfers you to Wider Caribbean information. This information can be read online by reading bulletins and messages. Meeting announcements, reports and planning documents can be read and downloaded to the user's computer. These documents will eventually be available in both English and Spanish.

An important feature of the WCR BBS is the GMP Search Database. Users can search for reference documents, other databases, specialists and graphic resources that are available throughout the Gulf Region. Plans are underway to update the Search Database with Wider Caribbean information such as public outreach material and data about Caribbean environmental specialists.

On 1 October 1995, Gulfline will be upgraded to a new system called “Gulf line World Wide”. The new system will eliminate the need to call another system (Fedworld) to connect to Gulf line when using the Internet. The new system will provide several different interfaces to cover the broad spectrum of communications software and web browsers that are currently used. In view of the Caribbean media environment, the ideal way to reach the Caribbean public with any kind of public communication campaign would be through a multi-media approach.

The system will support a Gulf line Home Page providing access the Gulf of Mexico GIN Project. Plans also include the ability to display English and Spanish menus and prompts.

Users wanting to contribute information to the WCR-BBS can do so in the following ways:

(i) Submit a disk with file in ASCII format;
(ii) Upload an ASCII file to the BBS;
(iii) Fax a document to the Gulf of Mexico Programme (601 -688-2709); or,
(iv) Mail a copy of the document to GMP.

11. PANEL DISCUSSION ON ACTION ITEMS OF THE IOC/IOCARIBE SOLID WASTE MANAGEMENT ACTION PLAN FOR THE WCR

The meeting was divided into the following working groups in order to review and propose new items of the Marine debris Action Plan for the Wider Caribbean: Recreational Industry Group, Communication Network Group, Education Working Group and Intercomparison Exercise Working Group.

The working groups stressed that the action plan is an important instrument for guiding International Organizations, Governmental agencies, and private sector organizations in allocating resources where they are most needed and in justifying future management strategies.

Already several action items have been carried out and others are being carried out; such as: Action 1 - Promotion of active participation of more countries and agencies in the activities of the Working Group; Action 2- Wider Caribbean Initiative for Ship-Generated Waste; Actions 5 and 6- related to outreach and education campaigns; Action 10- Wider Caribbean Coastal Clean UP; Action 12- Promotion of accession to the MARPOL Treaty and Ratification of Annex V; and, Action 15- The Fourth Marine Debris Workshop.

The changes and amendments to the Action Plan were made with the purpose of bringing these matters to the attention of IOC, UNEP, and IMO Member States for approval, and to allow participants to reference the revised plan when soliciting national and international funding agencies.

The complete text of the new action items are included in Annex IV.

12. OTHER MATTERS

Mr Anders Aim, GEF - Coordinator, prompted that the Wider Caribbean Initiative for Ship-generated waste includes part of a number of action item listed in the plan and welcomed increase cooperation,

Mr Alex Wypyszinski, NJ Sea Grant, was re-elected as the Chairman for the Wider Caribbean Marine Debris Working Group. Mr Julian Caruth, from St. Vincent and the Grenadines, was elected Vice-Chairman.

It was recommended that the next Wider Caribbean Marine Debris Workshop was to be convened within 18 Months.

13. ADOPTION OF THE RECOMMENDED ACTIONS

The recommended and revised action items listed under agenda item 11 were approved (Annex IV). In addition it was recommended that the next Marine Debris Workshop be convened within 18 Months and that the present steering committee should draft the objectives and agenda for the Fifth Caribbean Marine Debris Workshop.

The meeting adopted the draft Summary Report and charged the IOCARIBE Secretariat to include comments made by the participants
and make the necessary editorial work.

14. CLOSURE

Several delegates expressed their satisfaction with the meeting and thanked the Steering Committee for the Fourth Caribbean Marine Debris Workshop for the proper organization.

The Technical Secretary for the Session thanked the Hotel Casa de Campo and the Government of Santo Domingo and the Chairman and Co-Chairmen as well as the participants for the most excellent way everything had been organized and operated.

The Chairman closed the meeting at 18:00, 23 August 1995.

ANNEX I

AGENDA

1. OPENING
2. ADMINISTRATIVE ARRANGEMENTS
3. ELECTION OF CHAIRMAN FOR THE SESSION
4. OPENING KEY NOTE ADDRESS
5. INDUSTRY INITIATIVES
6. PANEL DISCUSSION ON COMMUNITY INITIATIVES
7. MARINE DEBRIS AND TRADITIONAL EDUCATION IN THE CARIBBEAN
8. GOVERNMENT INITIATIVES
9. MEDIA ROLE IN MARINE DEBRIS: “GETTING MARINE DEBRIS IN THE NEWS”
10. ELECTRONIC COMMUNICATIONS & ART IN EDUCATION
11. PANEL DISCUSSION ON ACTION ITEMS OF THE IOC/IOCARIBE SOLID WASTE MANAGEMENT ACTION PLAN FOR THE WIDER CARIBBEAN
12. OTHER MATTERS
13. ADOPTION OF THE SUMMARY REPORT
14. CLOSURE

ANNEX II

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ANNEX III

EDUCATING THE EDUCATORS

OPENING KEYNOTE ADDRESS

BY

DR LAVERNE RAGSTER
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Good morning to all the distinguished guests and members of the Wider Caribbean Marine Debris Workshop, Thank you for this opportunity to participate in the development of the Working Group. The action plan which guides this Working Group (Marine Debris: Solid Waste Management Action Plan for the Wider Caribbean) is concerned with addressing what has been identified as one of the major environmental issues of the region. As you know, regional studies and meetings have indicated that the countries and territories of the Caribbean have growing solid waste management problems that are negatively impacting the terrestrial and marine environment of the region. It has also been clear that the consequences of insufficient or inappropriate waste management include reducing our capacity to address socioeconomic needs and a decrease in the quality of life for people in the region. The physical connections of water and air and the economic connections of trade and transportation link the countries of the Caribbean and make waste management a regional problem with many national versions and contributions.

Therefore, a regional working group to address this issue makes sense. However, this approach will have the same challenges that all regional groups and programmes share, Apparently you have an idea of what you face, given the theme of this workshop - “educating the educators”,

The points I would like to make this morning speak to first, the challenge of undertaking environmental education and public awareness in this diverse part of the world, and second, to the added dimension of a regional perspective associated with many aspects of the Action Plan. The components of the Action Plan for Marine Debris/Waste Management seem to call for activities at the international/regional, national and local levels; the development of a communicated strategy and a number of partnerships between “educators” and selected NGOs, CBOs, regional organizations, technical institutes, governments (Departments from Planning to Education) and the media. However, the Action Plan’s components could also be interpreted as promoting development and distribution of written materials (on marine debris/waste management) by the educators and the convening of meetings to discuss the findings of research/monitoring on waste management issues. It really depends on what the Working Group decides to use as its criteria for effectiveness or success. If success for the Caribbean Marine Debris Working Group is a change (decrease) in the levels of marine pollution in the Caribbean and visible behavioral changes at the regional and national levels, the first set of strategies proposed are likely to be more effective, The second set of strategies are common approaches in the region and need little discussion. However, I will say that in this time of decreasing (international) funding to the region it would seem prudent to make all efforts as cost effective as possible.

The implementation of the three strategies proposed require educators to be prepared to step outside of their normal perspectives or boxes, The information, philosophy and recommendations on marine debris/waste management generated by the educators are going to have impact or be useful only if targets of this campaign can relate, understand and use them. It is this process of connecting with those being educated that requires openness and flexibility,

In July of this year, the Consortium of Caribbean Universities for Natural Resource Management (CCUNRM) conducted a 10-day workshop in Santiago (Dominican Republic) for 21 Caribbean university faculty who were teaching or advising graduate students in resource management-related areas. The 5-person facilitation team, was charged with guiding this multi-disciplinary group of faculty through course modules, case studies and interdisciplinary approaches concerning resource management that were developed for use in the Caribbean. The workshop was very demanding for a number of reasons - some of which relate to your theme. We were trying to "educate the educators" and the following characteristics of this group made this task challenging:

(i) Participants had a difficult time addressing issues outside of the context of their discipline;

(ii) Consensus-building skills were not strong;

(iii) The group was multi-cultural as well as multi-disciplinary, but most individuals were limited in both their cultural and discipline perspectives;

(iv) Participants (most of them) were unused to thinking outside of their normal roles as instructors who taught in a traditional manner; and

(v) The relationship between the process and the desire effect or outcome (relationship between how one teaches and what is learned) was not clear or accepted by many of the participants.

Therefore, workshop topics such as collaborative management and environmental economics forced members of the group to view resource management from different and in some cases almost unacceptable perspectives. For those persons who found this change of perspective untenable, the information presented is likely to not be useful. Note that substituting organization or philosophy for 'discipline' and replacing 'instructions' with the appropriate professions, allow the characteristics mentioned here to be applied to many "educators" in the region and elsewhere.

Many of you are familiar with change management and group dynamic skills and approaches. Therefore, you have more than likely seen this reminder. The idea as you may remember is to connect the 9 dots with four straight lines. The point, of course, is that in order to answer the puzzle you need to think "out of the box". Thinking outside of the box makes sense when groups have to work together to design approaches, materials and activities and they have different realities and cultures. We are all aware that culture blindness and a status quo mind set are obstacles to change or doing things differently. It is not uncommon to have good ideas and activities receive a poor reception from local groups or institutions because the group offering the idea insisted on functioning "the way they always have done things". Culture blindness includes the little things like not knowing when it is appropriate to call an acquaintance by his or her first name and the big things like developing written environmental awareness programmes for cultures that communicate mostly by old and modern oral mechanisms.

There are a number of examples of activities in the region where environmental issues and resource management concerns appear to be addressed in an effective manner:

(i) JEMS Progressive Community Organization in St. Vincent has been acknowledged for its cultural development programme designed to re-sensitize residents of villages associated with the Kinghill Forest Reserve. Communities are being mobilized to address their social and economic problems. The approaches chosen were adapted to the socio-cultural and economic conditions of the communities. The project is very much participatory and collaborative in its orientation.

(ii) The Soufriere Regional Development Foundation in St. Lucia is a strong community organization designed to promote sustainable use and management of the marine and coastal resources in the Soufriere region of the country, The Foundation collaborates with community and user groups (e.g. dive shops, charter boats, hotels, fisherfolk), the Caribbean Natural Resource Institute (CANARI) and the Department of Fisheries (Gov. of St. Lucia) in the planning and implementation of a multi-target, integrated programme. The development of activities and the agreement governing the management of the area have been conducted in a highly participatory manner. Communication strategies in the project are targeted to the different groups.

(iii) Collaborative activities between government departments and (local and international) NGOs in St Lucia, St. Vincent, Trinidad, Jamaica, and Puerto Rico have resulted in the protection of endangered species and important habitats and watersheds. In all cases the involvement of community groups, schools, or the general public were critical to the success of the initiatives.

Elements that can be found in all of the examples include:

(i) meaningful participation of the target group in the design and implementation of activities;

(ii) a clear understanding of how the environmental or resource use issue is relevant to the target group;

(iii) attempts to make linkages between changes in attitudes and behavior with gains for the target group, especially on a socioeconomic level;

(iv) partnerships that require working communication mechanisms, including structured opportunities for feedback and information exchange;

(v) some efforts towards improvement of the institutional capacity of groups; and an appropriate mechanism for letting others know of the activity.

The environmental education/public awareness initiatives in the region that appear to be most effective use communication strategies creatively and in a targeted manner. The UPR Sea Grant College Programme works with NGOs, community groups, the private sector and governments. Each group (client/partner) is addressed in a manner appropriate for effective communication in their particular circumstance. These strategies took time to customize and require monitoring. In the 1980s the RARE programme used symbols to center their communication strategy (parrots of St, Lucia and St. Vincent), The use of various types of music forms in the region (e.g. calypso) and other art forms (e.g. plays and dance) have also been incorporated into communication strategies. The main point is to find out from the people (groups) who are to be targeted how they like to receive information and what formats for information exchange are most comfortable. This appears to be one of the major errors made by many environmental campaigns in the region. For example, it has been noted that more than one occasion that more people might become involved in USVI environmental issues if the venue for the discussions were places like churches, bars, and schools (depending or the audience) instead of the legislature's buildings.

Also important to effectiveness of environmental education/awareness programmes in the region (and elsewhere) is the extent to which the link between the desired change in behavior and benefits to the person or group are presented in the programme. Most countries and territories have communities and governments who address the socioeconomic aspects of development activities separately from environmental aspects. Additionally, they have seldom been presented with acceptable ways of looking at development issues in an integrated manner. It is a definite challenge to get a community interested in marine debris/waste management issues from the perspective of the

impact on their livelihood, their health, or their ability to continue to engage in some activity they enjoy.

Partnerships between all types of stakeholders have proven to be one of the most effective and efficient ways of planning and implementing environmental education/public awareness initiatives. Here again it is important to know how the potential partner functions and what is important to them. Clear and open communication becomes a critical part of the arrangement. The various levels of institutional capacity associated with groups and institutions in the region make it important to target partners. There is much more experience in cooperation with partnerships between NGOs and governments than there was 10 years ago. Traditionally, there are increasing examples of NGOs, private sector and government initiatives, It should be noted that with regards to integrated development approaches and issues, most groups are still learning to work with each other.

Environmental education and research activities in the region over the last 10 years have produced a great deal of written information at the regional level, Programmes of the Caribbean Environment Programme (UNEP), the Caribbean Conservation Association (CCA) and CANARI have been large contributors through their partnerships tp governments and local groups. There has also been a great deal of local information produced by governments departments and NGOs (Point Pierre Wild Fowl Trust, IRF, etc). The challenge is to diversify the forms of presentation from the written form and to use the materials already present to the extent possible. The emphasis on NPS of pollution in recent years has also been addressed at the regional (UNEP) and national or NGO level.

One of the challenges for the Marine Debris Working Group is how to set up a programme that encourages by example. As you would expect we want to maximize the win-win situation for cooperation.

My recommendation to all educators in the area of environmental issues or resource management (including myself) is to take the time to understand the situation and people you want to have discover and use the information/approach of interest. Remember to ask them what they want to achieve and try to keep that as the goal of the initiative as you work with all of the partners that make sense. As always is one of those things that is easier said than done.

Good luck and best wishes for a productive workshop.

ANNEX IV

ACTION ITEMS APPROVED FOR THE IOC/IOCARIBE MARINE DEBRIS ACTION PLAN

Action 4a: **Design an effective and comprehensive Wider Caribbean an Marine Debris World Wide Web site (homepage).**

Background:

Emerging technology permits the low-cost communication of information throughout the Wider Caribbean and the world. An effective communications network should employ the latest technology to feed high quality supporting information to more widely available traditional modes of communication at the island, national and regional level. To date there has been ineffective use of shared information and available information has often been too narrowly focused. Improved communication technologies becoming available throughout the Region offer the possibilities of resolving the backbone of this communication problem using facilities available on the Internet.

Objective:

Provide an efficient and easily accessible communications network containing data in English and Spanish, and French for distribution to the broadest possible marine debris interest.

Action Items:

(i) Place information documenting the structure, membership, organization, and information resources of the Wider Caribbean Marine Debris initiative, as authorized by IOCARIBE on an Internet web server (i. e., an established "URL" on the World Wide Web, such as http://www.gulfline.worldwide.gov);

(ii) Provide search and indexing services to the information on the server;

(iii) Provide maintenance, updating, and publicity for the Wider Caribbean Marine Debris Programme web site through established Internet resources and protocols;

(iv) Establish operating procedures and data rights for all material on the web site;

(v) Provide e-mail response and referral support to queries to the Wider Caribbean Marine Debris web site;

(vi) Require all programme documents to be produced in a format compatible with posting on the Wider Caribbean Marine Debris web site.

Lead Implementing Organization:

IOCARIBE, Gulf of Mexico Programme, Eastern Caribbean Center, World Bank

Implementation Time Frame: 1995-1997

Cost of Action: US$20.000 per annum

Possible Funding: USEPA, World Bank, UNDP

Action 4b: **Create a Database on entities in the Region which clearly states their objectives and work, including Intergovernmental Organization, NGOs, industry, and all contact numbers, including Internet access.**

Background:

The best resources for resolving the marine debris problems of the Wider Caribbean will come from the collective experiences of local, national and regional institutions which have to face these problems on a daily basis. This action item is directed at building a preiiminary database of the active participants in Wider Caribbean Marine Debris programs and activities.

Objective:

To build, maintain and disseminate a list of organizations (private and public) with their contacts and programs related to marine debris activities in the Wider Caribbean.

Action Items:

(l) **Build a database of Wider Caribbean Marine Debris organizations and contacts within those organizations;**

(ii) **Post the database in searchable format on the Wider Caribbean Marine Debris web site on authorization by IOCARIBE; with a provision for addition, correction and downloading from the web site;**

(iii) **Distribute for information, correction and update in hard copy to all organizations and contacts listed:**

(iv) **Provide for periodic updating.**

Lead Implementing Organizations:

Center for Marine Conservation, Gulf line Web Site of the Gulf of Mexico Program, IOCARIBE.

Implementation Time Frame:

Initial posting:	**End 1995**
Initial updating:	**March 1996**
Periodic updating:	**October, annually**

Cost of Action:

Initial posting:	**US$5,000**
Initial updating:	**US$1,200**
Periodic updating:	**US$1,200**

Possible Funding: NOAA, USEPA, World Bank, UNESCO/IOC/IOCARIBE

Action 13: Marine Debris Area Wide Monitoring Project

Background:

Many of the proposed activities related to action items such as the Marine Debris Outreach Campaign and other Wider Caribbean activities such as the World Bank projects to build reception facilities should result in a measurable decrease in amounts of marine debris on the beaches in the area. To provide a basis for evaluating the effectiveness of these and other projects and to help guide future implementation efforts to reduce both at-sea and land-based sources of marine debris in the Caribbean region, there is a need for a regional marine debris monitoring network. A two-stage procedure is needed to properly design and implement a marine debris monitoring program. As the first step, a pilot project will be necessary to collect data on specific marine debris items that represent known sources as well as the more generic non-point source sources of debris. As seen in work by CEPPOL, the wider Caribbean area cannot be regarded as one homogeneous area. Therefore, specific subregions will be identified and information by sub-region generated, The information from this pilot will provide the necessary baseline information, specifically, mean levels and variability by debris type in the region, on which the second stage, a more focussed monitoring program (i. e., one with specified objectives about changes to be detected), can be based.

It has been seen from previous work on marine debris that sampling of debris by using the beach as the focal unit is the most practical survey methodology for debris, particularly when both ocean-based and land-based sources are considered. In addition, collecting all debris items on the beach is typically not practical and some items can be used as indicators of the amounts of debris from various point sources as well as considering non-point sources. A critical part of the pilot program will be to develop a list of items that should be impacted by the proposed activities in the region. This list should contain items that can be used throughout the wider Caribbean as well as including items that may be specific to a subregion.

Objective:

Conduct a pilot program to ensure the consistent identification of specific debris items throughout the wider Caribbean area and to provide preliminary assessments of variability of the items in the region.

Action Items:

(I) Identify potential researchers and program leader for the pilot program.

(ii) Have the program leader convene a Workshop of Regional Experts to discuss and modify a proposed Intercomparison framework for the pilot program. The Intercomparison framework will contain the a preliminary list of indicator items with identified sources where possible, will define subregions, set the following parameters: number of sites per subregion, explanatory variables that will help interpret the information, (i. e., distance to the nearest dump, onshore winds), length of sampling unit, frequency of sampling, and time frame for the pilot.

The workshop will also resolve survey logistical considerations such as choice of sampling sites, the responsibilities of each group, data reporting requirements, report preparation responsibilities, and other such considerations.

(iii) Collect data based on established protocol.

(iv) Compile data and produce a report on the pilot program.

Lead Implementing Organization:	**IOC/GIPME**
Implementation Time Frame:	**March 1996 - Regional Experts Workshop 1996-1997 - start pilot program**
Cost of Action:	**USD 75,000**
Possible Funding:	**IOC-UNEP-IMO-NOAA**

Action 15: **Develop a Wider Caribbean environmental education program for marina businesses and their 'recreational and sport fishing boats consistent with the national and regional environmental policies.**

Background:

Recreational boating is a major maritime industry which is an important part of the tourist economy and appeal in the Caribbean area. Boating and sportfishing have rapidly grown over the past decades, and are projected to continue growing well into the 21st Century. Such growth also results in increased amounts of debris and other pollution throughout the Caribbean and into otherwise clean, undeveloped coves and reef anchorages. Marina and boat repair facilities are also expanding on the shore, While each marina and each boat only contributes small amounts of pollution-incrementally, it adds up.

Recent environmental success in the US has shown that control of boat generated and marina pollution is relatively easy and low in cost. Environmental education programs have targeted marina managers as key points of change for recreational boating. Cleaner marinas do result in clear values to the business and cleaner boating experiences for the public, and cleaner environment.

Objective:

To encourage and support the marina industry in the Wider Caribbean to develop and implement clean marina strategies to minimize the amount of debris and other pollutants generated by marinas and recreational boats.

Action Items:

(i) **Identify the key environmental concerns about recreational boating and marina activities in the Wider Caribbean areas**

(ii) **Compile a master inventory of all marina facilities, boat population (capacity) and employment.**

(iii) **Compile relevant existing marina environmental education materials and program information.**

(iv) **Conduct a Wider Caribbean Workshop on Marina and Boating Environmental Education to develop an appropriate educational program plan.**

(v) **Implement the plan.**

Lead Implementing Organizations:

IMO, Marine Environmental Education Foundation (MEEF), Sea Grant

Implementation Timeframe: 1996-1998

Cost of Action: **USD 185,000**

Possible Funding: **World Bank, IMO, IOC, USEPA, Fish & Wildlife Service, NOAA, US Coast Guard, US FDA/PHS, private marinas, business and associations.**

Action 16: **Utilize the oral tradition in the region for communication in delivering marine debris information to the general public of the WCR.**

Background:

The traditional method of communication in the WCR is oral. Print materials therefore have inherent limitations. To effectively deliver a message to the general public or to a wide audience the use of other media, particularly broadcast media, is necessary. Education via entertainment has been proven to be effective.

Objective:

Employ traditional means of communication, including music and performing arts to deliver the marino debris message(s).

Action Items:

(i) **Identify key individuals and institutions for the performing arts in the WCR, including different languages;**

(ii) **Develop strategy, goals and timetable;**

(iii) **Elicit cooperation of entertainers and other artists;**

(iv) **Write scripts and screenplays;**

(v) **Develop pilot project in selected areas;**

(vi) **Evaluate.**

Lead Implementing Organization:

Eastern Caribbean Center, University of the Virgin Islands Center for the Arts.

implementing Timeframe: **1995-1997**

Cost of Action: **US$15,000**

Possible Funding: **Foundations**

IOC Workshop Reports

The Scientific Workshops of the Intergovernmental Oceanographic Commission are sometimes jointly sponsored with other intergovermental or non-governmental bodies. In most cases, IOC assumes responsibility for printing, and copies may be requested from:

Intergovernmental Oceanographic Commission - UNESCO
1, rue Miollis, 75732 Paris Cedex 15, France

No.	Title	Languages
1	CCOP-IOC, 1974, Metallogenesis, Hydrocarbons and Tectonic Patterns in Eastern Asia (Report of the IDOE Workshop on); Bangkok, Thailand, 24-29 September 1973 UNDP (CCOP), 138 pp.	E (out of stock)
2	CICAR Ichthyoplankton Workshop, Mexico City, 16-27 July 1974 (UNESCO Technical Paper in Marine Sciences, No. 20).	E (out of stock) S (out of stock)
3	Report of the IOC/GFCM/ICSEM International Workshop on Marine Pollution in the Mediterranean; Monte Carlo, 9-14 September 1974.	E, F E (out of stock)
4	Report of the Workshop on the Phenomenon known as 'El Niño'; Guayaquil, Ecuador, 4-12 December 1974.	E (out of stock) S (out of stock)
5	IDOE International Workshop on Marine Geology and Geophysics of the Caribbean Region and its Resources; Kingston, Jamaica, 17-22 February 1975.	E (out of stock) S
6	Report of the CCOP/SOPAC-IOC IDOE International Workshop on Geology, Mineral Resources and Geophysics of the South Pacific; Suva, Fiji, 1-6 September 1975.	E
7	Report of the Scientific Workshop to Initiate Planning for a Co-operative Investigation in the North and Central Western Indian Ocean, organized within the IDOE under the sponsorship of IOC/FAO (IOFC)/UNESCO/EAC; Nairobi, Kenya, 25 March-2 April 1976.	E, F, S, R
8	Joint IOC/FAO (IPFC)/UNEP International Workshop on Marine Pollution in East Asian Waters; Penang, 7-13 April 1976.	E (out of stock)
9	IOC/CMG/SCOR Second International Workshop on Marine Geoscience; Mauritius, 9-13 August 1976.	E, F, S, R
10	IOC/WMO Second Workshop on Marine Pollution (Petroleum) Monitoring; Monaco, 14-18 June 1976.	E, F E (out of stock) R
11	Report of the IOC/FAO/UNEP International Workshop on Marine Pollution in the Caribbean and Adjacent Regions; Port of Spain, Trinidad, 13-17 December 1976.	E, S (out of stock)
11 Suppl.	Collected contributions of invited lecturers and authors to the IOC/FAO/UNEP International Workshop on Marine Pollution in the Caribbean and Adjacent Regions; Port of Spain, Trinidad, 13-17 December 1976.	E (out of stock), S
12	Report of the IOCARIBE Interdisciplinary Workshop on Scientific Programmes in Support of Fisheries Projects; Fort-de-France, Martinique, 28 November-2 December 1977.	E, F, S
13	Report of the IOCARIBE Workshop on Environmental Geology of the Caribbean Coastal Area; Port of Spain, Trinidad, 16-18 January 1978.	E, S
14	IOC/FAO/WHO/UNEP International Workshop on Marine Pollution in the Gulf of Guinea and Adjacent Areas; Abidjan, Côte d'Ivoire, 2-9 May 1978.	E, F
15	CPPS/FAO/IOC/UNEP International Workshop on Marine Pollution in the South-East Pacific; Santiago de Chile, 6-10 November 1978.	E (out of stock)
16	Workshop on the Western Pacific, Tokyo, 19-20 February 1979.	E, F, R
17	Joint IOC/WMO Workshop on Oceanographic Products and the IGOSS Data Processing and Services System (IDPSS); Moscow, 9-11 April 1979.	E
17 Suppl.	Papers submitted to the Joint IOC/WMO Seminar on Oceanographic Products and the IGOSS Data Processing and Services System; Moscow, 2-6 April 1979.	E
18	IOC/UNESCO Workshop on Syllabus for Training Marine Technicians; Miami, 22-26 May 1978 (UNESCO reports in marine sciences, No. 4 published by the Division of Marine Sciences, UNESCO).	E (out of stock), F, S (out of stock), R
19	IOC Workshop on Marine Science Syllabus for Secondary Schools; Llantwit Major, Wales, U.K., 5-9 June 1978 (UNESCO reports in marine sciences, No. 5, published by the Division of Marine Sciences, UNESCO).	E (out of stock), E, S, R, Ar
20	Second CCOP-IOC Workshop on IDOE Studies of East Asia Tectonics and Resources; Bandung, Indonesia, 17-21 October 1978.	E
21	Second IDOE Symposium on Turbulence in the Ocean; Liège, Belgium, 7-18 May 1979.	E, F, S, R
22	Third IOC/WMO Workshop on Marine Pollution Monitoring; New Delhi, 11-15 February 1980.	E, F, S, R
23	WESTPAC Workshop on the Marine Geology and Geophysics of the North-West Pacific; Tokyo, 27-31 March 1980.	E, R
24	WESTPAC Workshop on Coastal Transport of Pollutants; Tokyo, 27-31 March 1980.	E (out of stock)
25	Workshop on the Intercalibration of Sampling Procedures of the IOC/ WMO UNEP Pilot Project on Monitoring Background Levels of Selected Pollutants in Open-Ocean Waters; Bermuda, 11-26 January 1980.	E (superseded by IOC Technical Series No. 22)
26	IOC Workshop on Coastal Area Management in the Caribbean Region; Mexico City, 24 September-5 October 1979.	E, S
27	CCOP/SOPAC-IOC Second International Workshop on Geology, Mineral Resources and Geophysics of the South Pacific; Nouméa, New Caledonia, 9-15 October 1980.	E
28	FAO/IOC Workshop on the effects of environmental variation on the survival of larval pelagic fishes. Lima, 20 April-5 May 1980.	E
29	WESTPAC Workshop on Marine Biological Methodology; Tokyo, 9-14 February 1981.	E
30	International Workshop on Marine Pollution in the South-West Atlantic; Montevideo, 10-14 November 1980.	E (out of stock) S
31	Third International Workshop on Marine Geoscience; Heidelberg, 19-24 July 1982.	E, F, S
32	UNU/IOC/UNESCO Workshop on International Co-operation in the Development of Marine Science and the Transfer of Technology in the context of the New Ocean Regime; Paris, 27 September-1 October 1982.	E, F, S
32 Suppl.	Papers submitted to the UNU/IOC/UNESCO Workshop on International Co-operation in the Development of Marine Science and the Transfer of Technology in the Context of the New Ocean Regime; Paris, 27 September-1 October 1982.	E
33	Workshop on the IREP Component of the IOC Programme on Ocean Science in Relation to Living Resources (OSLR); Halifax, 26-30 September 1963.	E
34	IOC Workshop on Regional Co-operation in Marine Science in the Central Eastern Atlantic (Western Africa); Tenerife, 12-17 December 1963.	E, F, S
35	CCOP/SOPAC-IOC-UNU Workshop on Basic Geo-scientific Marine Research Required for Assessment of Minerals and Hydrocarbons in the South Pacific; Suva, Fiji, 3-7 October 1983.	E
36	IOC/FAO Workshop on the Improved Uses of Research Vessels; Lisbon, 28 May-2 June 1984.	E
36 Suppl.	Papers submitted to the IOC/FAO Workshop on the Improved Uses of Research Vessels; Lisbon, 28 May-2 June 1984.	E
37	IOC/UNESCO Workshop on Regional Co-operation in Marine Science in the Central Indian Ocean and Adjacent Seas and Gulfs; Colombo, 8-13 July 1985.	E
38	IOC/ROPME/UNEP Symposium on Fate and Fluxes of Oil Pollutants in the Kuwait Action Plan Region; Basrah, Iraq, 8-12 January 1984.	E
39	CCOP (SOPAC)-IOC-IFREMER-ORSTOM Workshop on the Uses of Submersibles and Remotely Operated Vehicles in the South Pacific; Suva, Fiji, 24-29 September 1985.	E
40	IOC Workshop on the Technical Aspects of Tsunami Analysis, Prediction and Communications; Sidney, B.C., Canada, 29-31 July 1985.	E
40 Suppl.	First International Tsunami Workshop on Tsunami Analysis, Prediction and Communications, *Submitted Papers;* Sidney, B.C., Canada, 29 July - 1 August 1985.	E
41	First Workshop of Participants in the Joint FAO/IOC/WHO/IAEA/UNEP Project on Monitoring of Pollution in the Marine Environment of the West and Central African Region (WACAF/2); Dakar, Senegal, 28 October-1 November 1985.	E
43	IOC Workshop on the Results of MEDALPEX and Future Oceanographic Programmes in the Western Mediterranean; Venice, Italy, 23-25 October 1985.	E
44	IOC-FAO Workshop on Recruitment in Tropical Coastal Demersal Communities; Ciudad del Carmen, Campeche, Mexico, 21-25 April 1986.	E (out of stock) S
44 Suppl.	IOC-FAO Workshop on Recruitment in Tropical Coastal Demersal Communities, *Submitted Papers;* Ciudad del Carmen, Campeche, Mexico, 21-25 April 1986.	E
45	IOCARIBE Workshop on Physical Oceanography and Climate; Cartagena, Colombia, 19-22 August 1986.	E
46	Reunión de Trabajo para Desarrollo del Programa "Ciencia Oceánica en Relación a los Recursos No Vivos en la Región del Atlántico Sud-occidental"; Porto Alegre, Brazil, 7-11 de abril de 1986.	S
47	IOC Symposium on Marine Science in the Western Pacific: The Indo-Pacific Convergence; Townsville, 1-6 December 1966.	E
48	IOCARIBE Mini-Symposium for the Regional Development of the IOC-UN (OETB) Programme on 'Ocean Science in Relation to Non-Living Resources (OSNLR)'; Havana, Cuba, 4-7 December 1986.	E, S
49	AGU-IOC-WMO-CPPS Chapman Conference: An International Symposium on 'El Niño'; Guayaquil, Ecuador, 27-31 October 1986.	E
50	CCALR-IOC Scientific Seminar on Antarctic Ocean Variability and its Influence on Marine Living Resources, particularly Krill (organized in collaboration with SCAR and SCOR); Paris, France, 2-6 June 1987.	E
51	CCOP/SOPAC-IOC Workshop on Coastal Processes in the South Pacific Island Nations; Lae, Papua-New Guinea, 1-8 October 1987.	E

No.	Title	Languages
52	SCOR-IOC-UNESCO Symposium on Vertical Motion in the Equatorial Upper Ocean and its Effects upon Living Resources and the Atmosphere; Paris, 6-10 May 1985.	E
53	IOC Workshop on the Biological Effects of Pollutants; Oslo, 11-29 August 1986.	E
54	Workshop on Sea-Level Measurements in Hostile Conditions; Bidston, UK, 28-31 March 1988	E
55	IBCCA Workshop on Data Sources and Compilation, Boulder, Colorado, 18-19 July 1988.	E
56	IOC-FAO Workshop on Recruitment of Penaeid Prawns in the Indo-West Pacific Region (PREP); Cleveland, Australia, 24-30 July 1988.	E
57	IOC Workshop on International Co-operation in the Study of Red Tides and Ocean Blooms; Takamatsu, Japan, 16-17 November 1987.	E
58	*International Workshop on the* Technical Aspects of the Tsunami Warning System; Novosibirsk, USSR, 4-5 August 1989.	E
58 Suppl.	Second International Workshop on the Technical Aspects of Tsunami Warning Systems, Tsunami Analysis, Preparedness, Observation and Instrumentation. *Submitted Papers*; Novosibirsk, USSR, 4-5 August 1989.	E
59	IOC-UNEP Regional Workshop to Review Priorities for Marine Pollution Monitoring Research, Control and Abatement in the Wider Caribbean; San José, Costa Rica, 24-30 August 1989.	E, F, S
60	IOC Workshop to Define IOCARIBE-TRODERP proposals; Caracas, Venezuela, 12-16 September 1989.	E
61	Second IOC Workshop on the Biological Effects of Pollutants; Bermuda, 10 September-2 October 1988.	E
62	Second Workshop of Participants in the Joint FAO-IOC-WHO-IAEA-UNEP Project on Monitoring of Pollution in the Marine Environment of the West and Central African Region; Accra, Ghana, 13-17 June 1988.	E
63	IOC/WESTPAC Workshop on Co-operative Study of the Continental Shelf Circulation in the Western Pacific; Bangkok, Thailand, 31 October-3 November 1989.	E
64	Second IOC-FAO Workshop on Recruitment of Penaeid Prawns in the Indo-West Pacific Region (PREP); *Phuket, Thailand*, 25-31 September 1989.	E
65	Second IOC Workshop on Sardine/Anchovy Recruitment Project (SARP) int he Southwest Atlantic; Montevideo, Uruguay, 21-23 August 1989.	E
66	IOC *ad hoc* Expert Consultation on Sardine/Anchovy Recruitment Programme; La Jolla, California, USA, 1989.	E
67	Interdisciplinary Seminar on Research Problems in the IOCARIBE Region; Caracas, Venezuela, 28 November-1 December 1989.	E (out of stock)
68	International Workshop on Marine Acoustics; Beijing, China, 26-30 March 1990.	E
69	IOC-SCAR Workshop on Sea-Level Measurements in the Antarctica; Leningrad, USSR, 28-31 May 1990.	E
69 Suppl.	IOC-SCAR Workshop on Sea-Level Measurements in the Antarctica; *Submitted Papers*; Leningrad, USSR, 28-31 May 1990.	E
70	IOC-SAREC-UNEP-FAO-IAEA-WHO Workshop on Regional Aspects of Marine Pollution; Mauritius, 29 October - 9 November 1990.	E
71	IOC-FAO Workshop on the Identification of Penaeid Prawn Larvae and Postlarvae; Cleveland, Australia, 23-28 September 1990.	E
72	IOC/WESTPAC Scientific Steering Group Meeting on Co-Operative Study of the Continental Shelf Circulation in the Western Pacific; Kuala Lumpur; Malaysia, 9-11 October 1990.	E
73	Expert Consultation for the IOC Programme on Coastal Ocean Advanced Science and Technology Study; Liège, Belgium, 11-13 May 1991.	E
74	IOC-UNEP Review Meeting on Oceanographic Processes of Transport and Distribution of Pollutants in the Sea; Zagreb, Yugoslavia, 15-18 May 1989.	E
75	IOC-SCOR Workshop on Global Ocean Ecosystem Dynamics; Solomons, Maryland, USA, 29 April-2 May 1991.	E
76	IOC/WESTPAC Scientific Symposium on Marine Science and Management of Marine Areas of the Western Pacific; Penang, Malaysia, 2-6 December 1991.	E
77	IOC-SAREC-KMFRI Regional Workshop on Causes and Consequences of Sea-Level Changes on the Western Indian Ocean Coasts and Islands; Mombasa, Kenya, 24-28 June 1991.	E
78	IOC-CEC-ICES-WMO-ICSU Ocean Climate Data Workshop Goddard Space Flight Center; Greenbelt, Maryland, USA, 18-21 February 1992.	E
79	IOC/WESTPAC Workshop on River Inputs of Nutrients to the Marine Environment in the WESTPAC Region; Penang, Malaysia, 26-29 November 1991.	E
80	IOC-SCOR Workshop on Programme Development for Harmful Algae Blooms; Newport, USA, 2-3 November 1991.	E
81	Joint IAPSO-IOC Workshop on Sea Level Measurements and Quality Control; Paris, 12-13 October 1992.	E
82	BORDOMER 92: International Convention on Rational Use of Coastal Zones. A Preparatory Meeting for the Organization of an International Conference on Coastal Change; Bordeaux, France, 30 September-2 October 1992.	E
83	IOC Workshop on Donor Collaboration in the Development of Marine Scientific Research Capabilities in the Western Indian Ocean Region; Brussels, Belgium, 12-13 October 1992.	E
84	Workshop on Atlantic Ocean Climate Variability; Moscow, Russian Federation, 13-17 July 1992.	E
85	IOC Workshop on Coastal Oceanography in Relation to Integrated Coastal Zone Management; Kona, Hawaii, 1-5 June 1992.	E
86	International Workshop on the Black Sea; *Varna*, Bulgaria 30 September - 4 October 1991.	E
87	Taller de trabajo sobre efectos biológicos del fenómeno «El Niño» en ecosistemas costeros del Pacífico Sudeste; Santa Cruz, Galápagos, Ecuador, 5-14 de octubre de 1989.	S only (Summary in E, F, S)
88	IOC-CEC-ICSU-ICES Regional Workshop for Member States of Eastern and Northern Europe (GODAR Project); Obninsk, Russia, 17-20 May 1993.	E
89	IOC-ICSEM Workshop on Ocean Sciences in Non-Living Resources; Perpignan, France, 15-20 October 1990.	E
90	IOC Seminar on Integrated Coastal Management; New Orleans, USA. 17-18 July 1993.	E
91	Hydroblack'91 CTD Intercalibration Workshop; Woods Hole, USA. 1-10 December 1991.	E
92	Réunion de travail IOCEA-OSNLR sur le Projet « Budgets sédimentaires le long de la côte occidentale d'Afrique » Abidjan, Côte d'Ivoire, 26-28 juin 1991.	F
93	IOC-UNEP Workshop on Impacts of Sea-Level Rise due to Global Warming. Dhaka, Bangladesh, 16-19 November 1992.	E
94	BMTC-IOC-POLARMAR International Workshop on Training Requirements in the Field of Eutrophication in Semi-Enclosed Seas and Harmful Algal Blooms, Bremerhaven, Germany, 29 September - 3 October 1992.	E
95	SAREC-IOC Workshop on Donor Collaboration in the Development of Marine Scientific Research Capabilities in the Western Indian Ocean Region; Brussels, Belgium, 23-25 November 1993.	E
96	IOC-UNEP-WMO-SAREC Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their Impacts; Zanzibar, United Republic of Tanzania, 17-21 January 1994.	E
96 Suppl. 1	IOC-UNEP-WMO-SAREC Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their Impacts; *Submitted Papers* 1. Coastal Erosion; Zanzibar, United Republic of Tanzania 17-21 January 1994.	E
96 Suppl. 2	IOC-UNEP-WMO-SAREC Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their Impacts; *Submitted Papers* 2. Sea Level; Zanzibar, United Republic of Tanzania 17-21 January 1994.	E
97	IOC Workshop on Small Island Oceanography in Relation to Sustainable Economic Development and Coastal Area Management of Small Island Development States; Fort-de-France, Martinique, 8-10 November, 1993.	E
98	CoMSBlack '92A Physical and Chemical Intercalibration Workshop; Erdemli, Turkey, 15-29 January 1993.	E
99	IOC-SAREC Field Study Exercise on Nutrients in Tropical Marine Waters; Mombasa, Kenya, 5-15 April 1994.	E
100	IOC-SOA-NOAA Regional Workshop for Member States of the Western Pacific - GODAR-II (Global Oceanographic Data Archeology and Rescue Project); Tianjin, China, 8-11 March 1994.	E
101	IOC Regional Science Planning Workshop on Harmful Algal Blooms; Montevideo, Uruguay, 15-17 June 1994.	E
102	First IOC Workshop on Coastal Ocean Advanced Science and Technology Study (COASTS); Liège, Belgium, 5-9 May 1994.	E
103	IOC Workshop on GIS Applications in the Coastal Zone Management of Small Island Developing States; Barbados, 20-22 April 1994.	E
104	Workshop on Integrated Coastal Management; Dartmouth, Canada, 19-20 September 1994.	E
105	BORDOMER 95: Conference on Coastal Change; Bordeaux, France, 6-10 February 1995.	E
106	IOC/WESTPAC Workshop on the Paleographic Map; Bali, Indonesia, 20-21 October 1994.	E
107	IOC-ICSU-NIO-NOAA Regional Workshop for Member States of the Indian Ocean - GODAR-III; Dona Paula, Goa, India, 6-9 December 1994.	E
108	UNESCO-IHP-IOC-IAEA Workshop on Sea-Level Rise and the Multidisciplinary Studies of Environmental Processes in the Caspian Sea Region; Paris, 9-12 May 1995.	E
108 Suppl.	UNESCO-IHP-IOC-IAEA Workshop on Sea-Level Rise and the Multidisciplinary Studies of Environmental Processes in the Caspian Sea Region; *Submitted Papers*; Paris, 9-12 May 1995.	E
109	First IOC-UNEP CEPPOL Symposium; San José, Costa Rica, 14-15 April 1993.	E
110	IOC-ICSU-CEC Regional Workshop for Member States of the Mediterranean - GODAR-IV (Global Oceanographic Data Archeology and Rescue Project) Foundation for International Studies, University of Malta, Valletta, Malta, 25-28 April 1995.	E
111	Chapman Conference on the Circulation of the Intra-Americas Sea; La Parguera, Puerto Rico, 22-26 January 1995.	E

No.	Title	Languages
112	IOC-IAEA-UNEP Group of Exerts on Standars Materials (GESREM) Workshop; Miami,USA. 7-8 December 1993.	E
113	IOC Regional Workshop on Marine Debris and Waste Management in the Gulf of Guinea; Lagos Nigeria. 14-16 December 1994.	E
114	International Workshop on Integrated Coastal Zone Management (ICZM) Karachi, Pakistan; 10-14 October 1994	E
115	IOC/GLOSS-IAPSO Workshop on Sea Level Variability and Southern Ocean Dynamics; Bordeaux, France, 31 January 1995.	E
116	IOC/WESTPAC International Scientific Symposium on Sustainability of Marine Environment: Review of the WESTPAC Programme, with Particular Reference to ICAM Bali, Indonesia, 22-26 November 1996	E