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The Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden - PERSGA - is an intergovernmental organization dedicated to the conservation of the coastal and marine environment in the region. Its legal basis stems from the Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment known as the Jeddah Convention and signed in 1982. The PERSGA member countries include Djibouti, Egypt, Jordan, Saudi Arabia, Somalia, Sudan and Yemen. The headquarters are based in Jeddah, Saudi Arabia. The aim of the newsletter is to provide information on conservation and development activities taking place in the region together with articles on marine issues of general interest. The contents of the newsletter do not necessarily represent the position or views of PERSGA or the editorial board, nor do they imply the expression of any opinion on the part of PERSGA concerning the legal status of any country, territory, frontier or border.

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The editors encourage you to submit articles, reviews, and photographs for publication but cannot guarantee that they will be used.



There has been a general concern about the ability of PERSGA to continue with the same force that was gained during the implementation of the Strategic Action Programme (SAP) for the Red Sea and Gulf of Aden - which was funded by the Global Environment Facility with UNDP, the World Bank, and UNEP being the implementing agency – and which actually ended in 2005 to begin a post-SAP phase, i.e. from 2005 till now. PERSGA has demonstrated its ability to rely on its own resources, and experts in the Region to build on the good results achieved by the implementation of the SAP project. In contrast to all expectations, which had questioned PERSGA's ability to continue, there was a new start for initiatives and new partnerships, where it occupies now a prominent place among similar organizations. Such activities have come to highlight the role of PERSGA, and strengthen its confidence to build more partnerships with international organizations and donors. One of the important events, in this context, was the organization of the 9th International Meeting of the Regional Seas Programme by PERSGA in cooperation with UNEP where all the organizations and agencies of the Regional Seas, representing 144 countries, met in Jeddah and issued the Regional Seas Strategic Directions for the coming years.

During the period following the implementation of the SAP, PERSGA also made several important achievements such as the actual inauguration of the PERSGA/MEMAC in Hurghada in 2006, with various activities and programmes being carried out by the PERSGA/MEMAC following this event; and the signing of two important protocols Namely: the Protocol on Biodiversity and the Establishment of Regional Network of Marine Protected Areas, and the Protocol on the Protection of the Marine Environment from Land-Based Sources.

Under the framework of on-the-ground projects in Member States, PERSGA completed during the year 2007 the implementation of four projects focused on education for sustainable development in Jordan, installation of mooring buoys for boat anchorage at diving sites in Saudi Arabia, the support for the the implementation of the Coastal Zone Management Plan in the Sudan, and the assessment of the status of sea cucumber fisheries in Yemen. Yet with the beginning of 2008 PERSGA embarked on the implementation of seven other projects dealing with eco-tourism in Egypt, coral reef conservation in Farasan Islands, establishment of an on-line monitoring system in Jordan, environmental awareness in Djibouti, and the development of national systems for contingency planning and marine pollution control in Sudan, Yemen and Djibouti.

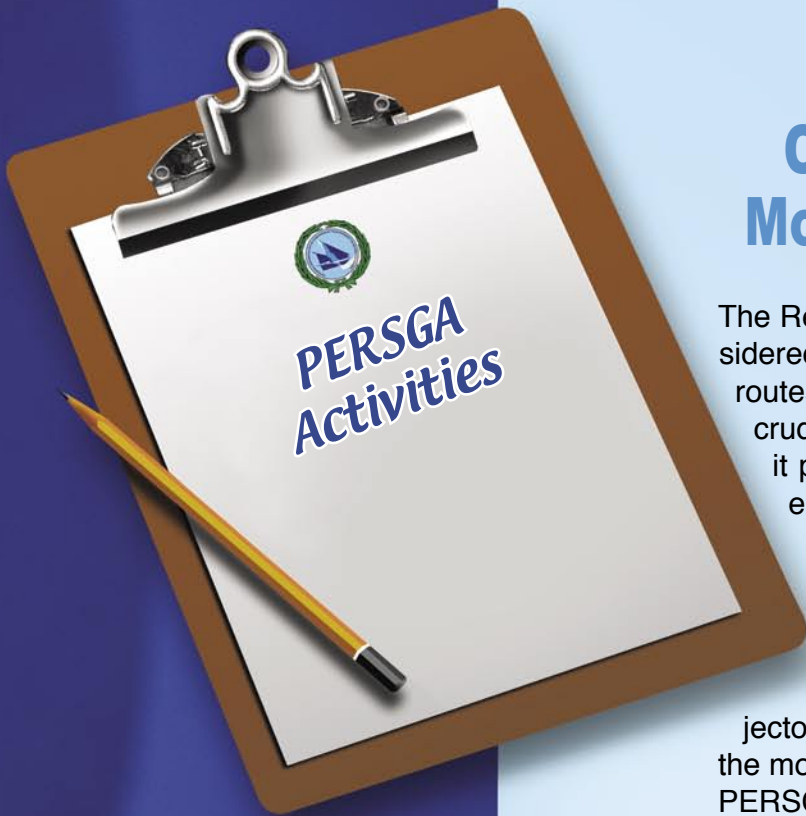
In the field of training and capacity building during the post-SAP phase, PERSGA organized various training courses in different fields in the framework of building the capacity of personnel that can contribute in achieving sustainable development, and capacity building in priority issues in the Region. Such courses included, for instance, sewage management, fish stock assessment, environmental inspection, ballast water management, monitoring of invasive species, Persistent Organic Pollutants, contingency planning in case of pollution, monitoring of tectonic movement in the Red Sea, and economic valuation of marine resources. These training courses have been organized in collaboration with various international and regional organizations, thus, providing an opportunity for participation of specialists from outside the region and exchange of experiences and information.

The breakthrough that followed the SAP were not to occur without the concerted efforts and cooperation of the countries of the region embodying the principle of partnership in the same region; hence there has been technical and financial support to PERSGA and its activities by all countries in the region, particularly the support and backing from the hosting country: the Kingdom of Saudi Arabia.



Prof. Ziad Abu Ghararah
Secretary General





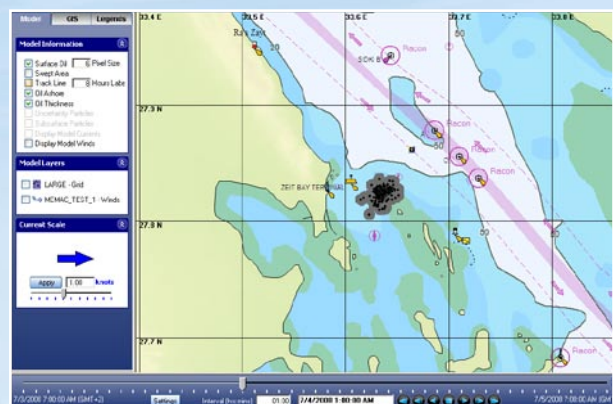
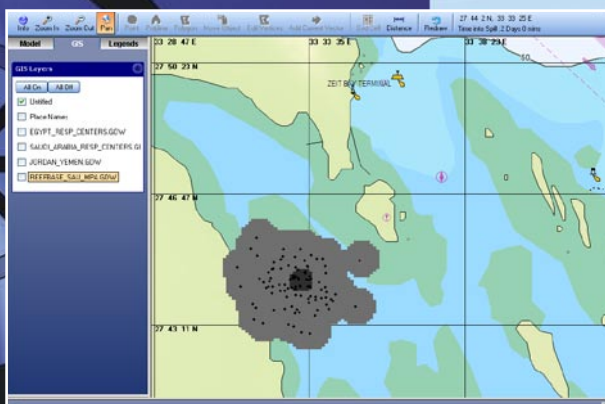
Oil Spill trajectory Model for the Region

The Red Sea and Gulf of Aden is being considered one of the major Global Navigational routes, through which 30% of the global crude oil movement passes, which makes it prone to the risk of oil Spill accidents, especially if we added to this the nature of the Red Sea as a semi-closed water body.

When oil is spilled in the marine environment, the primary concern is where the oil will go. Oil Spill Trajectory Model provides rapid predictions of the movements of spilled oil.

PERSGA has decided to provide this service to its member states by implementing a User-friendly oil spill modeling system that was designed for oil spill response and contingency planning which is called OILMAP.

The system was developed by ASA and has been proven as a response tool for oil spills all over the world and is being used in over 40 countries around the world by more than 200 licensed users. It has been applied to hundreds of spills accidents varying in size globally; and it worth mentioning that the same model is being implemented by Saudi ARAMCO and by PESCO in Egypt.



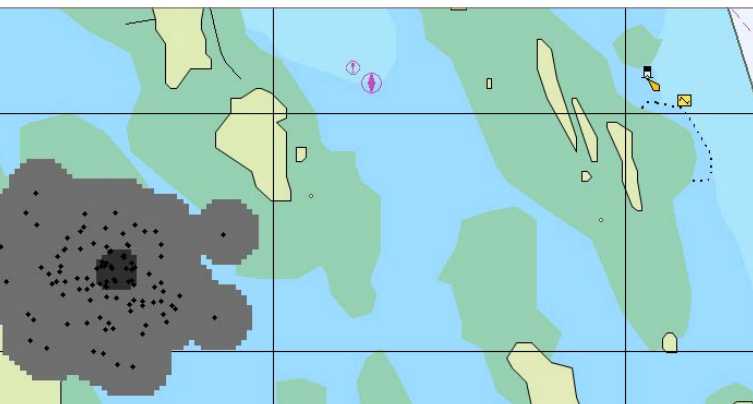


OILMAP includes simple graphical procedures for entering spill information with capability to connect to on-line weather forecast servers for accurate wind and current data.

OILMAP uses can work with a variety of electronic chart systems, including global nautical CMAP charts and is also compatible with PERSGA GIS software. The power of this system lay in its ability to rapidly provide oil spill trajectory predictions anywhere in the region makes oil spill modeling accessible to the PERSGA member states.

PERSGA has implemented this system in the Mutual Aid Center PERSGA/MEMAC at Hurghada Egypt aiming at three main goals:

- 1 - Providing support for the decision maker during the oil spill response by providing rapid prediction about the movement of the oil spill;
- 2 - Assisting the member states in preparing and updating its national contingency planes specially the members that still preparing their own plans.
- 3 - Training the specialists in the member states on this state of the art technology



Regional Habitat Monitoring Programme



A brightly coloured soft coral



The Regional Habitat Monitoring Programme has been initiated at the beginning of this year.

Coral reefs field surveys have been carried out in Djibouti (during April 2008), Egypt (during June 2008) and Yemen (during July 2008).

With regard to Mangrove habitat surveys were carried out in Djibouti at the beginning of August 2008. This periodical habitat monitoring programme will continue in the rest of the member states during the coming few months.

PERSGA and the World Bank will implement a GEF funded Project in the Region



A Regional Meeting in Jeddah finalized the PIF document prior to its submission and approval by GEF

On the last 28 August 2008, the PERSGA HQ in Jeddah witnessed a regional meeting with the World Bank for finalizing a “Project Identification Form” document to be submitted to the GEF. The meeting was headed by PERSGA Secretary General, and attended by Mr. Steve Maber and Ms. Samia Al-Duaij (representing the World Bank), the PERSGA Focal Points, and the technical/ administrative team at PERSGA.

Discussion in the meeting was focused on the PIF document for the project “Ecosystem Approach in the Implementation of Jeddah Convention for sustainable fisheries and sound management in the Red Sea and Gulf of Aden”. The Project, which is jointly funded by GEF and PERSGA member states, will be implemented by the World Bank and executed by PERSGA in the Region. The principal objectives of the meeting were to refine the specific, objective-based activities drafted in the original proposal, on the essence of the national priorities, and to validate the endorsement of the project by the member countries.

The meeting was opened with a welcome address by Prof. Ziad Abu Ghararh (PERSGA SG), who explained to the meeting the objectives, outputs and activities of the project in the context of PERSGA work, and portrayed the efforts done by PERSGA in collaboration with the World Bank during last months to solicit the necessary funds for the project from the GEF. Prof. Abu Ghararah concluded his address by expressing his thanks to the World Bank representatives, PERSGA FPs and delegates for their attendance and participation in the meeting. Following the Secretary General address, Dr. Ahmed Khalil (Coordinator Regional Marine Resources Program) gave a brief presentation outlining PERSGA activities during the last four years following the accomplishment of the Strategic Action Program (SAP) in 2004. The presentation demonstrated significant expansion and improvement of PERSGA work benefiting from the capacities established during the ex- SAP, and outlined the manner of intervention required to carry on with the conservation efforts in the region.

Afterward, a comprehensive presentation on the project PIF document was delivered by Dr. Mohamed Badran (Coordinator PERSGA Projects) and Mr. Steve Maber (World Bank). The presentation outlined the project main focus, objectives and the proposed components of activities. These mainly tackle the issues of sustainable management of living marine resources and biodiversity on the basis of ecosystem approach. Hence,

the specific objectives identified in PIF document include:

Further development of regional capacities to improve coordination and governance across the region through promotion of current conservation activities and generate new partnership to support and sustain them, consistent with the Jeddah Convention and subsequent protocols, particularly the Biodiversity and Marine Protected Areas Network Protocol; strengthen environmental policies, legislation and regulatory framework Enhance sustainable fisheries identifying optimal yields, regulating fishing, and conducting pre-investment and environmental impact studies of aquaculture as an alternative fish resource and a pressure relief off capture fisheries. Enhance collaboration with different stakeholders such as NGOs and private sector in environmental conservation efforts. Conduct joint research projects, upgrade monitoring program and agree on standards and indicators of environmental qualities in parallel with building awareness to demonstrate the linkages with economic development and success.

Promoting tools to facilitate regional communication, knowledge sharing and develop standards for common appreciation of trans-boundary collaboration in reducing risk of marine pollution through meeting requirements of the international and regional conventions and protocols, improvement of navigation safety, legal control and enforcement

After the PIF document presentation, the delegates of PERSGA Focal Points were invited to put in their comments on the project document, and further suggestions regarding national and regional priorities to be addressed. Each delegate presented its respective country scene on the project document, specifying the primary national concerns and priority issues recommended to be addressed.

Next to the presentations by the delegates, Mr. Steve Maber provided a synopsis of their inputs. The subsequent deliberations identified and evaluated a range of priority issues. Prior to the meeting conclusion, the meeting agreed upon a list of regional and national priority issues to be concentrated on in the upcoming project, and requested updating the PIF to include the meeting recommendations.

After the meeting, PERSGA technical staff and the World Bank representatives worked together at the PERSGA HQ, to finalize and submit the PIF document. At the same time, PERSGA received endorsement letters from the member countries. Later on, the PIF document was approved for financial support by the GEF Council.



Continuing its support to PERSGA:

The Kingdom of Saudi Arabia ratified the Biodiversity and LBA Regional Protocols

In its meeting held on Monday 18th Rajab 1429, and lead by HRH The Deputy Custodian of the Two Holy Mosques, the Saudi Council of Ministers ratified the "Regional Protocol Concerning the Conservation of Biological Diversity and the Establishment of Network of Protected Areas", and the "Regional Protocol Concerning the Protection of the Marine Environment from Land Based Activities" in the Red Sea and Gulf of Aden. The two protocols were drafted by PERSGA in 2005 and later on signed by the member states, pending to their ratification and implementation in the region.

In his speech to "Alhayat" and the "Al-Sharq Al-Awsat" international newspapers, the PERSGA Secretary General expressed that this initiative asserts the keenness of the Kingdom to take serious and effective steps in conserving marine environment at both regional and national levels. He explained that the ratification of the two regional protocols has come as a deep recognition of the historical, cultural and ecological value of the Red Sea, in addition to its economic importance for development. The Red Sea is an important renewable resource for food, as well as freshwater. It is particularly characterized by a unique biological diversity and represents a globally significant maritime pathway. Conservation efforts will no doubt protect the huge investments and projects in the coastal areas through sustaining their inputs from natural resources, and prevention of pollution that harms the environment and threatens sustainability of such development projects. This in turn will hamper sustainable development. The Secretary General expressed PERSGA's deep thanks and appreciations to the government of Saudi Arabia for its continuous moral and material support to PERSGA, highlighting the considerable efforts by HRH Prince Turki bin Nasser bin Abdul Aziz, and ensuring that this support has enabled PERSGA to achieve a great success in various domains of its work such as improvement of the regional legislation, establishing frameworks of regional cooperation, and implementing conservation programs and action plans at both regional and national levels.

Regarding the contents of the two protocols the PERSGA Secretary General emphasized that the protocol concerning "Protection of the Marine Environment from Land Based Activities" includes 25 articles, which generally focus on requested national appropriate measures to protect marine environment from pollution discharged by land based sources and activities; and to eliminate such pollution or reduce it to the least possible level giving special priority to gradual elimination of toxic, persistent, and biologically accumulating inputs. The protocol includes articles concerning development of regional and national action plans containing actions with time frames for their implementation;



H.R.H. Prince Turki Bin Nasser

treatment and management of used water and solid wastes; coastal sedimentation and dredging practices, protection of natural habitats; national legislations and guidelines, environmental monitoring, data management and impact assessment; and scientific and technical cooperation.

The protocol concerning "Conservation of Biological Diversity and Establishment of Network of MPAs" includes 30 articles. The general provisions of the protocol request to provide for the conservation, protection and restoration of health and integrity of the ecosystems and biological diversity in the PERSGA region; and to safeguard the threatened species, the critical habitats, sites of particular importance, as well as representative types of coastal and marine ecosystems; their biodiversity and their sustainable use and management to ensure long term viability and diversity. The protocol includes also articles concerning alien species and genotypes; environmental impact assessment; establishment of procedures and criteria, handling of biotechnology and genetically modified species; related national legislations and programs; the establishment of the regional MPAs network and the actions for its management; guidelines to be adopted by the contracting parties; technical cooperation; and restoration of ecosystems and populations of the species.

It is clear that the support by the member states and their adoption of regional protocols always strengthen PERSGA conservation efforts in the region. In this regard, the Kingdom of Saudi Arabia has played and continues to play a leading role through hosting and providing the driving force that enabled PERSGA to perform its regional task since its establishment in 1995.



11th Meeting of PERSGA Council

Mukalla hosts the 11th Meeting of the PERSGA Ministerial Council

At the kind invitation of His Excellency Abdul Rahman Al-Iryani, Minister of Water and Environment in the Republic of Yemen and Chairman of the tenth session of the Council, the 11th Meeting of the PERSGA Ministerial Council was held on the twenty-eighth of February 2008 in Holiday-Inn Hotel in the city of Mukalla being generously hosted by the Republic of Yemen.

As it is practiced in the Council meetings, this meeting was preceded by the meeting of the Regional National Focal Points Committee for the preparation of this session in the same hotel in Mukalla.

The meeting began with opening remarks by the PERSGA Secretary-General, the Minister of Water and Environment (Yemen), in his capacity as Chairman of the tenth session of the Council, and the representative of the Minister of Environment (Jordan) as President of the eleventh session of the Council. Before proceeding in its agenda, the award winners of the Champions of the Earth from two countries in the region were honored by the Council namely Abdul-Qader Ba-Jammal

(Former Prime Minister, Yemen), and Dr. Balqees Osman Asha (senior researcher Higher Council for Environment and Natural Resources, Sudan).

HRH Prince Turki bin Nasser bin Abdul Aziz suggested specialized prize from the Council to be delivered by the Council to those who are privileged in environmental work in the region starting next year; the suggestion was approved by the Council.

After the adoption of its agenda the Council continued its deliberations

starting with discussing the report of the Secretary-General on the achievements of PERSGA during the previous year.

The members of the Council commended the Secretary General's report and the great efforts made by PERSGA last year and the number of activities that have been implemented. Among the proposals made by members of the Council were the following: - With respect to the completion of reception facilities and ballast-water management in ports, the Council suggested an



HRH Prince Turki bin Naser bin Abdulaziz in the 11th Council Meeting

investigation to be made regarding the proposed scale of the needs of the region with the encouragement of private sector participation to invest in this area, and requested PERSGA to open up a channel of cooperation with ROPME to benefit from its experience and exchange experience in this regard. - The need for regional coordination and cooperation in completing the port reception facilities, in order to reach the desired goals in meeting commitments to international conventions on this subject. After its deliberations, the Council adopted resolutions in respect of the following items:

- Secretary-General's report for 2007;
- Financial status and payment of contributions of the Member States;
- Work plan and budget for 2008;
- Final audited account at 31 / 12/ 2006;
- Establishment of an environmental emergency center at Hodeidah according to the note presented by the Republic of Yemen in this regard;
- Activation of steps to declare the Red Sea a special area under MARPOL 73/1978 according to the memorandum presented by Saudi Arabia,

and the Declaration of Mukalla in this regard;

- Re-appointment of the PERSGA Secretary General.

PERSGA Council approved some new significant decisions

In its 11th Session the PERSGA Ministerial Council has approved several significant council decisions related to supporting the Republic of Yemen in its efforts to establish Pollution Emergency and Preparedness centers at Hudaidah and Mukala, and the Republic of Djibouti in its efforts to assess the Pollution Combating Stockpile in Djibouti aiming at its activation. Focusing on another subject related to combating marine pollution, the Council approved a new decision enhancing regional mechanism and



HE the Minister of Water & Environment in Yemen addresses the opening session



The Secretary General honors HE the former Prime Minister of Yemen for his award of the "Heroes of the Earth" international Prize

Djibouti hosts the 12th PERSGA Council Meeting

With the generous invitation of H.E. Mr. Elmi Obsieh Wais Minister of Housing, Urbanism, Environment and Land Use Planning, the 12th PERSGA Council Meeting will be hosted by Djibouti. The meeting is expected to be held in March 2009.



The Jordanian minister representative addresses the opening session

efforts to accelerate bringing the declaration of the Red Sea and Gulf of Aden as "Special Areas" under MARPOL 73/1978 into effect. These new council decisions are expected to promote regional cooperation and increase its effectiveness to reach the projected objectives. In its efforts to encourage individual contributions to the marine environment, the council approved a new decision on establishing PERSGA Prize for Marine Environment in the Red Sea and Gulf of Aden Region. In this context, the Council honored two distinguished scholars from the region, who recently have been nominated among the owners of the "Heroes of the Earth" International Prize.

Al-Mukalla Declaration

In its 11th Meeting the PERSGA Council issued "Al-Mukalla Declaration" which stressed on the commitments to continue regional efforts and cooperation for enhancing capabilities to declare the Red Sea "special area" in accordance with Annexes I and V of MARPOL 73/1978. The Declaration also stressed on re-assuring the commitments of the Contracting Parties of Jeddah Convention (1982) to implement the Convention and its Protocols. The Council issued this Declaration recognizing the significance of the Red Sea as one of the most important repositories of marine biodiversity on a global scale, its growing role as an important maritime route and the threats it faces.



PERSGA Secretary General gives the PERSGA Emblem to the Governor of Al-Mukalla Governorate



New Publications

ASEZA/PERSGA, 2008

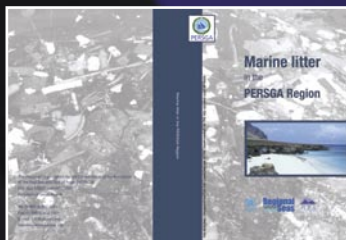
1. National Programme of Action for the Protection of the Marine Environment from Land-Based Activities.

The Jordanian NPA document was prepared under the auspices of the Aqaba Special Economic Zone Authority with support from PERSGA who contributed to the development of the NPA and mobilized a co-financial resource from UNEP.

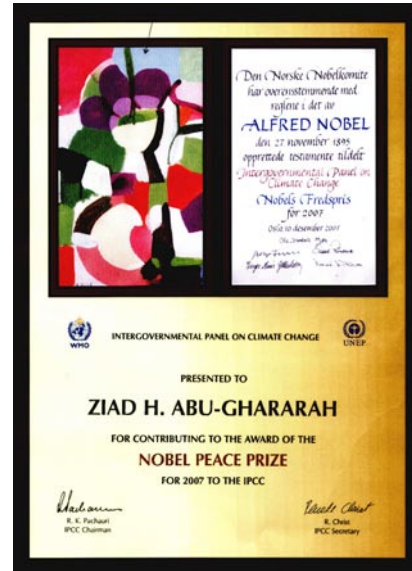
The document was developed in order to review Jordan's current plans and programmes on the protection of the marine environment, identify the remaining priority problems and to identify further steps needed to improve environmental protection.

PERSGA, 2008

2. Marine Litter in the PERSGA Region
This document provides a Regional Action Plan for combating the marine litter problem and achieving its sustainable management within the Red Sea and Gulf of Aden.



Nobel Peace Prize bestowed on the IPCC in 2007



An award certificate for the Nobel Peace Prize was bestowed on the IPCC in 2007. Copies of the award certificate were sent to the members of IPCC who have contributed so admirably to the work of the IPCC.

Prof. Ziad Abu Ghara-rah, the PERSGA Secretary General, was among those who received a copy of the award certificate for his contribution to the IPCC work for years.



Human Health and Coastal and Marine Environment in the Red Sea and Gulf of Aden

In the framework of its ongoing capacity building and training program, PERSGA has held in collaboration with UNEP ROWA a regional training workshop on “Human Health and Coastal and Marine Ecosystems”. The workshop has been held in PERSGA Headquarters in Jeddah Saudi Arabia during the period May 25th -27th 2008. Ten specialists from the region participated in the workshop that aimed at shedding light on important threats that endanger the coastal and marine environment and have direct consequences on human health and well being; and at suitable management practices and protection tools. Basic ecosystem characteristics of the Red Sea and Gulf of Aden have been discussed as a first step in understanding the ecosystem response and natural defense mechanism against anthropogenic pollutants. Health hazards associated with marine pollution and means of protection of the marine and coastal environments from anthropogenic threats have been discussed, particularly wastewater treatment plants and their effectiveness in reducing threats to the coastal environment and their consequences on human health.

The workshop was distinguished for effective discussions between the participants. Discussions

have been enriched by presentations of his Excellency PERSGA Secretary General Professor Ziad Abu Ghararah and PERSGA Projects and Scientific Research Director Dr. Mohammad Badran. Additional presentations were also given by Dr. Mohammad Kotb and Dr. Ahmad Khalil PERSGA Coordinators of Biodiversity and Living Resources. The workshop came out with several recommendations, amongst which was the recommendation of supporting studies and scientific research in the field of the workshop because only little is known about the link between pollution of the marine and coastal environment and human health both at the regional and global levels. There was a recommendation also on improving effective environmental monitoring of the coastal and marine environment and enhancing public awareness for protection of the human beings from adverse effects on the environment. Along with awareness, improved and effective legislations have also been recommended by the workshop’s participants as an important tool for protection of the marine and coastal environment from anthropogenic threats and their consequences on humans, emphasizing the great economic losses that can be associated with such consequences.



Within the framework of promoting capacities for marine emergency response: Training on On-Scene Commanders Discussion of Personnel & Equipment movement protocol



In the framework of its ongoing capacity building and training program, PERSGA has held two Regional Workshops at PERSGA/MEMAC in Hurghadah during the period 5 - 7 and 8 - 9 July, 2008 consecutively. Twenty three professionals and specialists from the region participated in the workshop in addition to an International Consultant from the International Maritime Organization (IMO) and the PERSGA Coordinator.

Regional Workshop on On-Scene – Commanders PERSGA/MEMAC Hurghada, Egypt 5 - 7 July, 2008. The aim of the workshop was to enhance the capacities of the member countries and to improve the overall performance of the region with respect to the implementation on the Contingency Plans, Sensitivity Mapping, Spill Response Strategy Options, Oil Spill Preparedness and Response, the key needs and mechanism of the contingency plans, and to clarify the role of the PERSGA/MEMAC during emergencies. The workshop came out with the following recommendations:

- The need for supporting studies and scientific research in the field of Sensitivity Mapping.
- The need for improving effective environmental monitoring of the coastal and marine environment for Oil Spill Preparedness and Response.
- The availability of adequate equipment and qualified personnel to deal with pollution emergencies in the region.

- Improved and Effective Communications during Incidents.
- Implementation of legislation as an important tool for the protection of the marine and coastal environment from any pollution.

Regional Meeting to discuss and review the draft “Regional Protocol on movement of Personnel and Equipment and materials in case of Emergency in the PERSGA Region” PERSGA/MEMAC Hurghada, Egypt 8 - 9 July, 2008. The objective of the meeting was to discuss and review the draft Regional Protocol, to improve the overall performance of the region with respect to the implementation of the Contingency Plans and their significance to the PERSGA/MEMAC . The first draft of the Regional Protocol was prepared by PERSGA. The Protocol intends to create legal, administrative and organizational framework to facilitate coordination and cooperation among the contracting parties in line with the Protocol Concerning Regional Cooperation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency that was signed in 1982. The meeting came out with several recommendations, including the need for:

- Supporting the draft Regional Protocol on Movement of Personnel, Equipment and Materials in Case of Emergency in the PERSGA Region;
- Improving effective environmental monitoring of the coastal and marine environment;
- Implementation of the Contingency Plans.



Tectonics in the Red Sea and Gulf of Aden: Assessment, preparedness and response



In the framework of its ongoing capacity building and training program, PERSGA has held in its Headquarters in Jeddah Saudi Arabia during the period June 23rd -25th 2008 a regional training workshop on “Tectonics in the Red Sea and Gulf of Aden: Assessment, preparedness and response”. Seventeen specialists from the region participated in the workshop that aimed at shedding light the geology and tectonic activities in the Red Sea and Gulf of Aden and to improve monitoring and response capabilities in the region. The workshop received significant attention of the media and public and several newspapers emphasized the importance of the workshop and expressed interest in disseminating its recommendations.

Basic ecosystem geotectonic characteristics of the Red Sea and Gulf of Aden have been discussed as a first step in understanding the ecosystem functioning and the likelihood natural disasters in marine and coastal areas to happen. Current seismic monitoring activities in the region have been discussed through case studies provided by participants from the different countries. Two invited experts from IFM GEOMAR institute in Germany and King Abd Al Aziz University enriched the workshop with presentations on international and regional seismic monitoring practices and discussed with the participants suitable ways of improving and fostering seismic monitor-

ing, preparedness and response in the region. The workshop came out with several recommendations, amongst which was the recommendation to benefit from historical records as prediction tools in the future. Earth quakes and tsunamis do have reoccurrence features and they tend to happen in the same place but with weak predictability of the reoccurrence period. To this effect major tsunamis (more than 10 m run-up along more than 500 km of coast) and major earthquakes (magnitude 8 or larger) seem rather unlikely in the Red Sea. But submarine slope stability needs to be investigated and more information is needed on the Gulf of Aden. This calls for supporting studies and scientific research in the field of the workshop and fostering the role of universities and research institutes in improving the current status of seismic monitoring and networking. There was a recommendation also on establishing a real-time virtual seismological RED SEA NETWORK, including instrumentation at Jabal Al Tair (Seismic, GPS, Gas). In preparedness the workshop’s participants recommend that seismic risk analysis should be made for all coastal areas where constructions are planned and that public preparedness should be improved by basic education and public outreach as well as education at the academic level. Detailed recommendation of the workshop both in Arabic and English are given below.

Use of mooring buoys for the conservation of coral reefs at diving sites in the region



In cooperation and coordination with the Presidency of Metrology and environment (PME), PERSGA held a national workshop on the use of mooring buoys for the conservation of coral reefs at diving sites in Tuesday 19th Feb 2008, more than 30 participants from government, coastal guard, KAAU, owners of diving centers and other stakeholders attended the workshop. PERSGA Secretary General explains the importance of this on-ground activity to install

mooring buoys in diving and fishing sites at Jeddah coast so it could be used instead of the steel anchors that destroys the corals. In its approach for the conservation of natural resources PERSGA aims to implement the same experience in all PERSGA member states. During the workshop a detailed explanation of the phases of the projects has been illustrated and the amount of the work done by PERSGA, that 40 mooring were installed in 20 diving and fishing sites.



The 10th Global Meeting of the Regional Seas Conventions and Action Plans



The 10th Global Meeting of the Regional Seas Conventions and Action Plans will be held in Guayaquil, Ecuador from 25-27 November 2008.

It is worth mentioning that at the 9th Global Meeting of the Regional Seas Conventions and Action Plans was organized by PERSGA in cooperation with UNEP and generously hosted in Jeddah by the Kingdom of Saudi Arabia. In this meeting a new set of Strategic Directions for 2008-2012 were endorsed by the Chairs of the Conferences of the Parties/Intergovernmental Meetings. Their aim has been to strengthen the Regional Seas Programme at the global level while complementing the implementation of the work programmes of the individual RSCAPs.

Regional Training Workshop

“Compensation of Coral Reef Damage by Ship/Boat Groundings



PERSGA organized a regional workshop on “Compensation of Coral Reef Damage by Ship/Boat Groundings” which was held during the period 3-5 August 2008 at PERSGA Headquarters in Jeddah. During the workshop a review of the procedures followed in each of the countries in the region to assess environmental damage and compensation procedures for the destruction of coral reefs due to ship and boat groundings were carried out.

Considerable variations were noticed in the capacity of individual countries and ways of implementing the compensation procedures in place. At the end of the workshop participants reached the following recommendations:

1. Importance of a unified action at country level in the region using the latest scientific methods and legal procedures recognized regionally and internationally to assess the damage and estimate compensation in accidents related to ship and vessels groundings on coral reefs;
2. Recommendation to PERSGA to prepare a regional guideline showing evidence of general guidance to assess the damage caused by ships and boats grounding on reefs and the costs of coral rehabilitation, which are destroyed as a result of grounding and to try to return to their normal situation that existed before the accident;
3. Recommendation that PERSGA produces regional maps showing areas with sensitive, environmental, economic and social importance along the coast of the Red Sea and Gulf of Aden, which can be used in estimating the value of compensation required;
4. Urged PERSGA to adopt a training program in this respect raise the skills of workers and specialists in the field of assessing damage and compensation procedures for the destruction of coral reefs by ship and boat groundings.

Jeddah: 6-8 April, 2008

Regional Training Workshop on Economic Valuation of Marine and Coastal Resources



A regional workshop was organized by PERSGA in conjunction with the Organization of the Islamic Educational, Scientific and Cultural Organization (ISESCO) on economic evaluation of marine and coastal resources, during the period from 6-8 April 2008 at the City Jeddah, Saudi Arabia. A number of important issues with regard to economic valuation of coastal and marine resources were reviewed during the workshop.

The present workshop comes as one of the actions carried out by PERSGA to preserve the marine and coastal environment in the Red Sea and Gulf of Aden, where the region has seen a steady increase in tourism and coastal projects and expansion in coastal cities.

Tourism development and environmental conservation require good economic evaluation of coastal and marine resources in order to move forward in coastal development in environmentally safe steps.

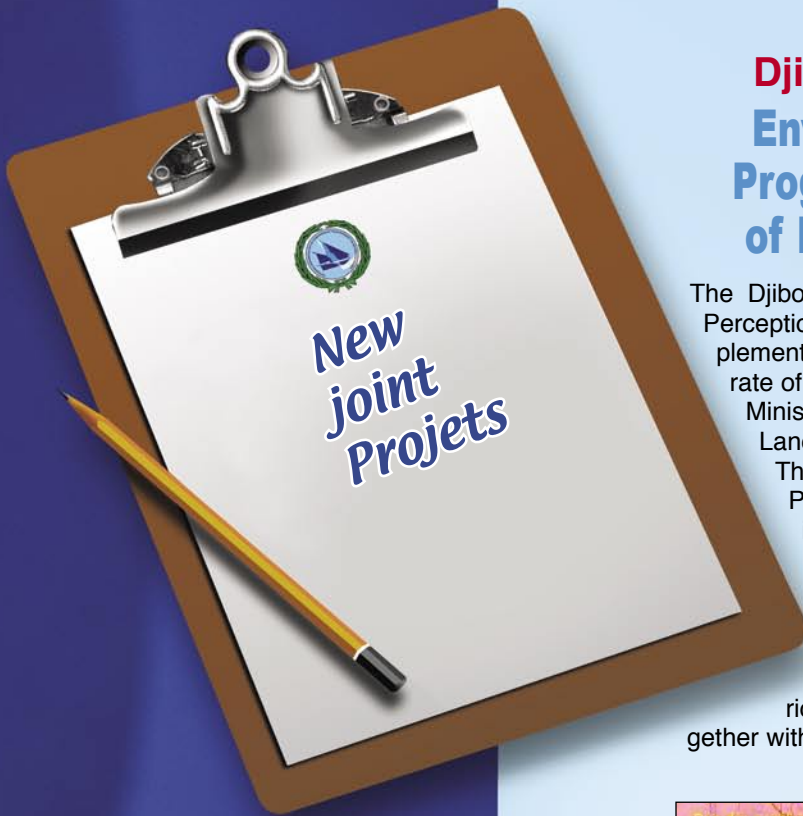
The workshop aimed to raise the capacity in the field of economic valuation of coastal and marine resources; it also provided an opportunity to exchange expertise and experiences during discussions between specialists from the countries of the region and from outside the region.



Reappointment of Prof. Ziad Abu Ghararah as the PERSGA Secretary General for four years

In its 11th Meeting the PERSGA Council decided to renew the appointment of Prof. Ziad Abu Ghararah as the PERSGA Secretary General for four years beginning January 5, 2009.

This decision came as a confirmation of the Council's confidence in his ability, and appreciation for his current and continued efforts to enhance the PERSGA growing role at international and regional levels, in addition to strengthen the sense of belonging to one shared region, the confidence he built in PERSGA, and the development witnessed by PERSGA at administrative and organizational levels which was reflected positively on its efficiency and functioning.



Djibouti On-ground project Environmental Awareness Programme for the Ministry of Housing & Environment

The Djibouti on-ground project entitled: "Environmental Perception and Public Awareness in Djibouti" is being implemented by PERSGA in cooperation with the Directorate of Environment and Land Use Planning (DELUP), Ministry of Housing, Urbanism, Environment and Land Use Planning (MHUEAT).

The project is being implemented in three phases. Phase I was accomplished by April 2008, and included preparation of outreach materials (the awareness brochure, the training manual and posters) and establishing the necessary network for implementing awareness activities at school clubs, media and NGOs.

Phase II is to be implemented during the period of July-November 2008. A progress report together with supporting documents, approved by the Ministry of Housing, Urbanism, Environment and Land Use Planning (MHUEAT), should be submitted to PERSGA by the end of this phase. Deadline for Phase II progress report is 30 November 2008. Phase III will be implemented during the period November 2008 –March 2009. A final report



on the project together with supporting documents, approved by MHUEAT, should be submitted to PERSGA by the end of this final phase March 2009.

Jordan On-ground Project Online monitoring and early warning

Preparations have started for Jordan's on-ground activity for the years 2008 and 2009. This is going to be an online monitoring station of full oceanographic variables, weather station, and a sea level and wave height system.

The system will be moored near the shore and will transmit data to a base station inshore as shown in the schematic diagram below.

Lay out of the buoy monitoring system and base data station

The online monitoring station will provide an early warning system of changes in the sea level and in the water quality. Variables that will be automatically measured are Seawater temperature, salinity, dissolved oxygen, pH, turbidity, chlorophyll a, ammonia, nitrate and nitrite. The system also includes a complete weather station.

Data transmitted to the base data station will be internet accessible to environmental managers and decision makers in Aqaba and also to the regional monitoring unit at PERSGA Headquarters. Data will



On-ground Project (Sudan)

Promotion of National System for Oil Spill Preparedness and Response in Sudan

Justification

Major threats facing the Sudanese coastal environment have been reported as restricted habitat destruction due to coastal development, damages to coral reefs through localized unsustainable fishing practices, coral trade and limited tourist divers, mangrove degradation. However, with the recent rapid growth of marine transport, industrial development, development of an Economic Free Zone, and development of the oil terminals at Bashayer 1 & 2 (for crude oil export), and Alkheir terminal (for products export) threats are turning out to be enormous, particularly from coastal pollution.

Responding to this emerging national concern, the PERSGA Focal Point (Higher Council for Environment and Natural Resources, HCENR) in Sudan submitted a concept paper to PERSGA requesting assistance to develop and implement a project aiming at promotion of national capacities for combating marine pollution and facilitate establishment of a National Pollution Response Center. The project focus is in consistent with PERSGA objectives of capacity building and the PERSGA On-ground Activities Program.

Relevance to PERSGA

Sudan is a party of both the Jeddah Convention and its Protocol of 1982, and has signed two other Regional Protocols to the Convention in 2005.

Within the framework of the revised PERSGA/IMO "Action Plan for the Development of National Systems and Regional Mechanisms for Preparedness and Response to Major Marine Oil Spills in the Red Sea and Gulf of Aden, PERSGA pursues supporting member states to establish capable national systems. The present proposed project is part of multilinked schemes carried out within the framework of PERSGA On-ground Activities Program.

There is a general lack of equipped centers providing pollution combating facilities along the whole western Red Sea coast south of Hurghadah. The proposed project will facilitate establishment of a response center in the central part of this extensive coast. It will therefore substantially contribute to fill part of this crucial gap in the regional network, besides building national capacities.



Objectives

The overall objective of the project is the development of national system for marine pollution preparedness, response and control, capable of implementing the National Oil Spill Contingency Plan and synchronizes with PERSGA regional network coordinated by PERSGA-MEMAC.

Achievements so far

A preparatory meeting was held on 24 August 2008 at the Higher Council for Environment and Natural Resources (HCENR) in Khartoum attended by PERSGA representative and relevant agencies in Sudan. The outcome of the meeting was as follows:

- The agreement of participants on the importance of establishing the Oil Combating Centre in Sudan;
- The urgency of taking the necessary steps towards the Sudan joining the maritime international conventions that support the establishment of the centre;
- The Sudanese Maritime Authority should be the focal point as mentioned in the National Plan for Oil Spill Combating;
- The Centre should be established within the Sudanese Maritime Authority;
- The preparatory phase of establishing the Centre should be coordinated by HCENR in cooperation with the Sudanese Maritime Authority.

also be displayed to the public in open areas .

The online data station is environmentally friendly as it will be powered by a solar system and it is self cleaning by the type material used in the construction.

The cost of installing the online monitoring station will be shared by PERSGA, ASEZA and the private sector. The station will be operated by ASEZA and PERSGA will provide technical assistance. Data of the online monitoring station will be shared by all the project partners and will be publically displayed on specially designed display panels in Aqaba and at PERSGA Headquarters.

We are starting this as a pilot project that we aspire to replicate in all PERSGA member states Online monitoring and early warning buoy



On-ground Project (Egypt)

Eco-tourism and management of Mangrove areas- Hamata Area

Objectives of the project

The project aims at integrated environmental management of one of the mangrove areas and the sustainable use of its resources; Such management will contribute to lifting the economic value of the mangrove, and increase utilitarian returns on local community. Moreover, the proposed project activities would promote awareness of the value of Mangrove habitats leading eventually to effective protection of such unique environmental system.

Project justifications

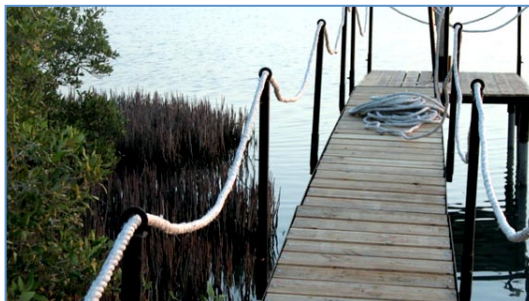
The project area has all the elements of eco-tourism: the mangrove is not seen only as a natural resource, but as an integrated environmental system and an important habitat for sea birds in addition to the natural beauty of the coastal zone. Thus, the area is proposed a major tourist attraction site for visitors as well as for bird watchers.

In spite of all these ingredients the local population in this area lives in difficult conditions because of lack of livelihood sources as the area is still under development.

It is known that preservation of indigenous people and culture is one of the fundamental objectives recommended by international conventions and treaties especially UN Agenda 21 concerning preservation of the environment and the heritage of mankind. Therefore, it is necessary to create opportunities for a decent life for local people in line with environmental conservation and sustainable exploitation of resources.

From this standpoint, the project aims to apply the concept of eco-tourism as an instrument to find new sources of income that provide decent livelihoods for communities living near the mangrove area, taking into account the preservation of social system for indigenous people and the protection of the mangrove ecosystem.

What has been accomplished so far



1 – Infrastructure

Construction of most of the infrastructure of the project was completed, which included the finalization of the parking area, the completion of installing a wooden jetty (Scaffold), the completion of the Bedouin tent, which took a circular shape to be in the form of an eagle nest, manufacturing an animated toilet.

2 – A plate showing the general location of the site and the scheme of the project: the design of the project and participating and funding agencies.

3 - Equipment and boats: the completion of the manufacture of a fiber glass boat with a total length of 8 meters, pending the completion of manufacturing 3 wooden Fellukas (Dingies), a list of needed equipment is being prepared to start various activities of the project, such as field binoculars and telescopes.

4 - Environmental monitoring of birds and marine organisms

A general Survey of the mangrove site was carried out, records and photographs of resident and migratory birds were taken, and compilation of available data prior to printing a guide to bird watchers. A marine survey was also carried out together with records and photographs of fish and invertebrate organisms; and compilation of data with regard to the characteristics of the site prior to printing leaflets for visitors.



Competition, Predation and Symbiotic Life In coral Reef Environment



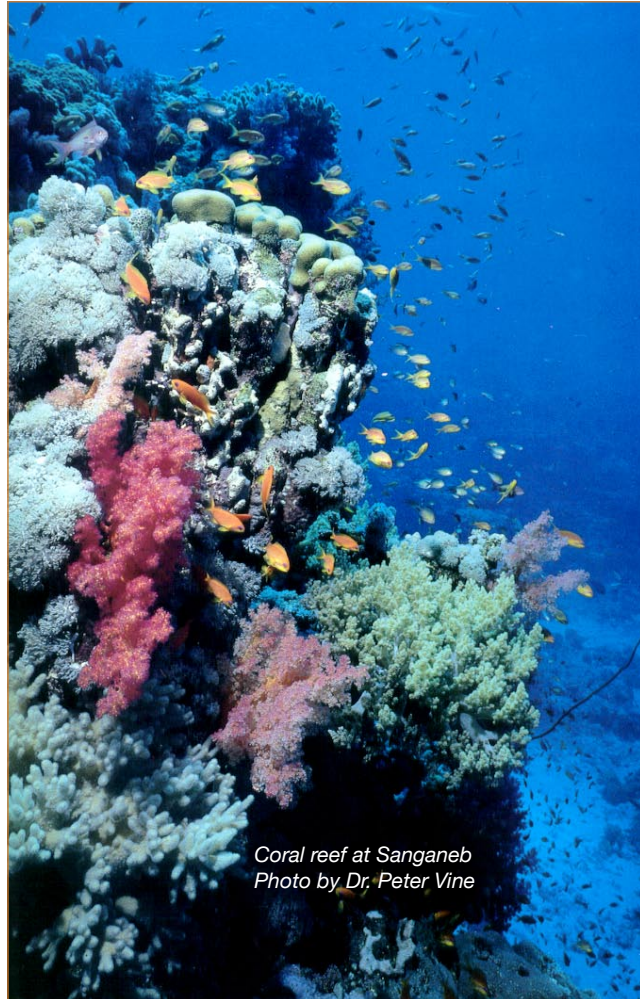
Coral polyps – individuals in a coral colony

Dr. Dirar Nasr

Red Sea University Port Sudan, Sudan

Coral reef environment

Coral reefs are one of the most important marine environments, an attractive and a unique environment being a result of purely biological activities, an environment rich in terms of biological diversity and scientific aspects. Coral reefs are regarded as huge limestone deposits produced by the corals themselves in addition to calcareous algae and other forms that produce lime. They lead a colonial life where the individual is called the polyp. Coral reefs can be fringing reef, barrier reef or an atoll.



*Coral reef at Sanganeb
Photo by Dr. Peter Vine*

Most of these reefs are regarded as submerged hills of fossilized corals cemented together by erosion, wave action, chemical agents and buried organisms.

Factors affecting coral reef distribution
Coral reefs are distributed in tropical regions throughout the world, however, there are factors that determine such distribution including the following:
Temperature: Coral reefs cannot live in low temperatures as in temperate regions; however, higher temperatures above the normal affect the corals causing what is known as coral bleaching. Bleaching appears to be worse in corals that are already stressed, either by pollution or

sediments. zooxanthellae that live in all reef-building corals are essential for coral life, because they provide most of the carbon energy and help the corals lay down calcium carbonate skeleton. So loss of them slows coral growth, stops reproduction or can result in coral death.

Depth:

Coral reefs cannot flourish in depths greater than 70 - 100 meters, and most grow in depths of 25 meters or less.

Light: which is one of important factors that determine the distribution of coral reefs; it helps in the process of photosynthesis of the symbiotic algae living within the coral and accelerates the rate of this



Surgeon fish (*Acanthurus shoa*) – a herbivore that protects its territory

process thereby increasing the production of calcium carbonate by the coral.

Salinity: the optimum salinity for corals ranges between 32 and 35 ‰; this explains why corals are not found at freshwater runoff such as rivers and rain waters. However, they can flourish at salinities that reach 42‰ as in the northern Red Sea for instance.

Sedimentation: limits the distribution of coral reefs by clogging their mouths and hindering the function of their tentacles with which they feed. Although the coral can get rid of sediments, they cannot do so with increasing sedimentation. Moreover, sediments increase turbidity which decreases light intensity and thereby decreasing the process of photosynthesis of symbiotic algae and thus reduce the production rate of calcium carbonate. However, corals differ in their response to sedimentation from one species to the other. In general, areas where corals can grow well are those areas that are subject to wave actions where massive corals can resist strong waves that remove sediments and supply them with waters rich

in oxygen and plankton on which they feed.

A last point is that coral reefs can resist exposure to air for an hour or two by covering themselves with mucous, but greater exposure will lead to the risk of death.

In the light of the above mentioned factors it seems that the Red Sea is an ideal environment for coral growth: the Sun is shining, the temperature and salinity are appropriate and the nature of the Red Sea being a deep sea without heavy freshwater runoffs.

Competition, Predation and Symbiotic Life

Coral reefs are among the most complicated marine ecosystems being subject to expansion and contraction according to the existing physical factors and the interactions between marine organisms such as competition, predation and symbiotic life.

Competition

It is noted in the coral reef environment that no open space is available; the whole area is occupied by corals themselves in addition to green, brown and red algae. As corals need light to live, competition is expected between corals themselves to occupy wide possible areas to be exposed to light.

Branched Corals grow faster than massive corals and therefore we find that branched corals can find a comfortable place in terms of light exposure but it affects other species with their shadows. Such competition is known as exploitation competition. But how can slow growing corals, such as massive corals, stay in such competition? Scientists recently discovered that some types of slow growing corals can extend some sort of threads from within their bodies to contact part of the competing coral



and digest the living contacted part i.e. killing this part. Such competition is known as interaction competition; it is a characteristic of sea anemones which are slow growing organisms. By this way slow growing corals can protect themselves from the effect of fast growing ones as a defensive mechanism.

However, there are other species, such as Pocillopora, that can take revenge. Field observations showed that Pavona, a slow growing coral, killed part of the fast growing Pocillopora, but within 60 days the healthy unaffected tentacles of Pocillopora increased their lengths thirty times and could destroy part of Pavona. With such a revenged motion Pocillopora could stay in such a competition for light and space.

In shallow areas available space for coral cover can reach a ratio of 100%. In such crowded areas it can happen that some fast growing corals can live on top of slow growing ones deprive light and water currents. Perhaps the way out of this situation for massive slow growing corals is to move to deeper areas facing dim light rather than to stay in areas where competition is aggressive in shallow areas.

Competition between corals and other fast growing forms such as algae can be diminished by grazing of herbivores.

There is also competition between coral and some invertebrate animals such as sponge and ascidians, and between these invertebrates themselves. The advantage of these invertebrates is that they can reproduce asexually which is an asset to the slow growing corals. But the competition between the two forms diminishes because of susceptibility of invertebrates to predation by other organisms and due to turbidity and disturbance in the neighbourhood.

Predation

Although vast numbers of invertebrates are found in coral reef environment, barely one can see only large ones such as Tridacna, sea urchins, holothurians, starfish, brittle stars and feather stars as if only corals and fishes are dominant. This is attributed to the act that all the small invertebrates disappear



Butterfly fish (*Chaetodon sp.*) – a predator living on coral polyp

inside coral reefs to avoid aggressive predation of other organisms. The existing law in this environment is “find something to eat and avoid being eaten”.

There are large numbers of animals feeding on corals, they do not destroy the whole coral, but, like herbivores, consume a great part of their polyps. Accordingly, if the destroyed part is not great, corals can restore the lost parts. Such predators include gastropods, polychaetes and crabs.

It is notable that these animals together cannot cause marked changes in coral cells or in the structure of associated community although they are classified as predators.

However, there are two classes of animals that do not feed on the coral itself, but can destroy a considerable part of it and these are the Crown of Thorn and some fishes. The Crown of Thorn can destroy the whole coral colony in a single feeding because of its large size. It has a peculiar way of feeding where it covers the coral colony with its entire body, exposes its viscera, secretes digestive material and then pulls back its viscera with the digested items, which are all the living tissues in the colony. Thus, leaving the coral colony white in colour indicating its death. However, this predatory animal cannot approach some coral species such as fire coral as they have a powerful defensive mechanism.

themAtaatgzy crash itself but part of it and appreciate these items: the crown of thorns and some fish. The crown of thorns he can break every cell in nutrition and one o'clock, due to the large size. The preferred feeding on coral branches ever Albossellobora such as rapid growth, but at the same time found that feeds on coral branches but slow growth in different depths.

Fishes that feed on corals include two groups: The first group feed on coral polyps and are called coral fishes and these include butterfly fish and trigger fishes.

The second group removes the polyps to feed on algae found inside the colony or invertebrates within the coral skeleton such as parrot fish and surgeon fish. This group feeds on polyps and algae; it breaks a coral branch, digests the useful material and the remaining sediment is spitted away.

Symbiotic life

As a result of the severe competition for space in coral reef environment we find the phenomenon of symbiotic life between two or more organisms inhabiting the reefs. Examples of these are the symbiotic life between the clown fish and sea anemone or between the goby and the snap prawn.

Actually there is no close relation between the sea anemone and the clown fish; the latter is a vertebrate animal and the former is an invertebrate animal. But the relation lies in the fact that both benefit from their symbiotic life; the initiation of this symbiosis starts with identifying themselves and signing some sort of a memorandum of understanding. The sea anemone has powerful tentacles that can kill any other animal in the size of the clown fish, but it does not hurt the clown fish. Some workers gave explanation to this that the anemone knows its partner from the peculiar movements it makes; others say that the fish covers itself with mucous that hinders the effect of the tentacles. The clown fish, enjoying such protection, has other duties including attraction of food material towards the anemone.

Similarly there is no relation between the vertebrate goby and the invertebrate snap prawn. But the relation is found in the mutual benefit of such symbiosis: the prawn prepares the living room for both of them, while the goby has the responsibility of guarding and patrolling their home. But all these activities are very complicated and not as simple as we imagine.

*Lion fish (Pterois volitans)
a remarkable predator*



Conclusion

The coral reef environment has been known as one of the most important complicated marine ecosystem. It is a source of food for mankind including fish, crustaceans, mollusk and algae; it is a source of medicine where the severe competition between the inhabitants of coral reefs made some to produce repellent material that keeps others away; such interaction is known as ANTIBIOSIS which was utilized in medical purposes; coral reefs protect coastal cities against heavy waves; they include organisms of economical importance such as pearl oysters which can be cultivated on a commercial scale for pearl production; coral reefs are a source of recreation for their beauty and the various tourist groups moving around the tropics to enjoy diving and snorkeling around various reefs can bear witness; coral reefs are regarded as a source for measuring the degree of pollution as they are sedentary and very sensitive to all kind of pollution including oil and thermal pollution; they can also keep the chemical balance in sea water as they consume large amounts of dissolved calcium carbonates to build their lime skeletons, if this calcium carbonates, brought by fresh water runoffs stay in sea water, the characteristics of sea water could have been altered and a lot of organisms could be disturbed; an enormous amount of publications have been produced with regard to coral reefs and still research is going on to explore other aspects of coral reefs and their inhabitants. Reefs face increasing levels of threat at local, regional and global scales; such increase in habitat destruction, overexploitation, pollution, climate change will interfere in the actual function of coral reefs; the coral bleaching of 1997-1998 is only a warning.

Can't we put more efforts to conserve the coral reef environment?