

# **GCRMN - Global Coral Reef Monitoring Network**

## **HALF YEAR REPORT – October 2006 to April 2007**

This 6 month report covers GCRMN activities under the contract between UNEP and the Reef & Rainforest Research Centre financed by US counterpart contributions to UNEP to support the GCRMN and Reef Check Asia-Pacific. This report is also submitted to the GCRMN Management Group, the ICRI General Meeting in Tokyo and key supporters of the GCRMN.

### **EXECUTIVE SUMMARY**

#### **GCRMN Report ‘Status of Caribbean Coral Reefs Following Bleaching and Hurricanes in 2005’**

- The report was recommended by ICRI at the Cozumel meeting in October 2005 and is scheduled for completion in May or soon after:
  - Chapters for the Northern Caribbean, Mesoamerica, Southern Tropical America and the French and Netherlands Antilles have been drafted, as well as the Introduction, an explanation of corals and bleaching, and chapters on management responses and future risks;
  - Other regional chapters are being drafted along with a chapter on hurricanes and the Executive Summary;
  - We are awaiting material on the sequence of events during 2005 as well as the reports from the US Caribbean and the chapter on the history of the Caribbean over the last 10,000 years;
  - Funding has been offered from WWF, IUCN, UNEP, IOC-UNESCO, ICRI and the PADI Foundation/Reef Check. The USA has also offered support; however almost half of the \$80,000 to \$100,000 budget is needed before the book can be finished and launched in the Caribbean and USA.

#### **Socioeconomic Monitoring (SocMon):**

- The global coordinator will work with the newly formed SocMon Advisory Committee to develop a long-term strategy and action plan for SocMon;
- The Global Socioeconomic Database at ReefBase will have adequate new data by September 2007.
- A new regional coordinator for SocMon Southeast Asia has started in a partnership with Palawan State University. The first SocMon workshop was held in the Philippines in early March;
- The Western Indian Ocean region has included the Seychelles and Comoros in the network. Train-the-trainers workshops were held in the Seychelles in January and Comoros in March;
- The Pacific region will develop SocMon guidelines based on existing regional protocols by August 2007;
- Two SocMon workshops in Spanish were held in Nicaragua and Honduras in March 2007, with data collection scheduled for late April. A SocMon side event in Belize in November 2006 made an unsuccessful call for information on the socioeconomic impacts of the 2005 bleaching season.

#### **Reef Check:**

- Surveys by Reef Check have increased in 2006 with more than 550 surveys;
- Reef Check is coordinating planning for the International Year of the Reef, with ICRI, US CRTF and others, and they have released the ‘Declaration on Reef Rights’ for signatures;
- Reef Check and partners in the Philippines established 6 new MPAs with ongoing coral rehabilitation using fish post-larvae;
- A 2005/6 Caribbean Bleaching report was released. The 10 year report is in preparation;
- EcoAction program is self-financing with train-the-trainers workshops completed in Mexico, Belize, Dominican Republic, USA, Germany, Egypt, Mozambique, Philippines, Australia, Indonesia, Malaysia, Thailand;
- Reef Check Asia-Pacific trained divers in the EcoAction program at the ITMEMS meeting last October and also in Townsville, and a Reef Check project is being established in Timor Leste later this year;
- The EcoAction is being sold in Indonesia, Philippines and Australia, and further marketing is underway.

## **Other Activities**

- The GCRMN will organise a Mini-symposium 'Reef status and trends' at the 11<sup>th</sup> International Coral Reef Symposium, in Ft Lauderdale Florida, 7-11 July 2008. This will feature the Status 2008 report and oral and poster presentations from the Nodes and countries.
- The ROPME Sea area held a planning workshop in February for Bahrain, Iran, Kuwait, Oman, Qatar, Saudi Arabia and UAE. Countries showed considerable enthusiasm for coral reef monitoring and planned several activities, including a methodology workshop in mid-2007;
- The GCRMN is assisting IUCN, CORDIO, TNC and other agencies with an Early Warning and Coral Bleaching Watch program to track future bleaching. David Obura of the Eastern African Node is driving this activity because of early indications of potential bleaching in the Indian Ocean;
- Eastern Africa has been active with a workshop on certification of MPA managers, the International Seagrass Conference, 2 workshops on coral bleaching and sampling methodologies. They have also launched the Regional Programme for the Sustainable Management of the Coastal Zones of the Indian Ocean Countries;
- The Indian Ocean Commission and CORDIO have assisted Southwest Indian Ocean countries such that all national sites were monitored in the first quarter of 2007. There are no early signs of bleaching in 2007, despite this year being warmer than normal;
- Good coral recovery is occurring in west Sri Lanka, but management is ineffective in stopping fishing and pollution damage to the reefs. Political instability is hindering monitoring on the east coast. A repeat of the Hans Haas expedition has been undertaken in the Maldives, 50 years after the original event;
- CoReMo III database was delivered in February 2007 and is being examined by the GCRMN and WorldFish Center for suitability to release to participating nodes and countries;
- The Southeast Asian Node is cooperating with the Coordinating Body of the East Asian Seas (COBSEA) to develop an 'East Asian Seas Knowledgebase for Regional Coastal and Marine Information and Resources' database that will include information on regional coral reef activities;
- The South West Pacific Node has received help from CRISP and ReefBase Pacific for expanded monitoring and data management and will run monitoring workshops in the Solomons and Vanuatu. Turtle monitoring is a developing theme;
- The Polynesia Mana Node completed training for Tonga, Cook Islands, Kiribati, Tokelau, French Polynesia and Wallis and Futuna in February at CRILOBE on Moorea;
- Northern Caribbean and Atlantic Node reports ongoing monitoring in all countries (except Haiti) and considerable Reef Check activities in Jamaica;
- The US Caribbean and Gulf of Mexico Node followed bleaching on Navassa Island and extensively surveyed the Flower Garden Banks National Marine Sanctuary using a nuclear-powered research submersible and other research ships. New no-take Research Natural Areas have been established within the Dry Tortugas National Park. Precious corals in the genus *Corallium* are proposed for inclusion under CITES;
- CRISP has completed all contractual and financial arrangements and work progressing well. The Moorea symposium in December focused on biodiversity conservation. They will have review meeting in Japan at Pacific Science Congress in June.
- Financial and logistic administration of the GCRMN has been transferred to the Reef and Rainforest Research Centre in Townsville, where the coordinator is based (with a good coffee shop nearby).

## **REGIONAL ACTIVITY SUMMARY**

**PERSGA Middle East:** Core activities by PERSGA are to understand and manage the Red Sea and Gulf of Aden focusing on: the establishment of MPAs; publishing *The Red Sea and Gulf of Aden Regional Network of Marine Protected Areas*; capacity building and training workshops in management experience; and research on some species and ecosystems (series of publications ending with: *The State of the Marine Environment Report for the Red Sea and Gulf of Aden*). Countries will produce reports for the national and regional status of the marine environment, via a regular monitoring programme including mangrove, coral,

sharks, commercial and non-commercial fish stocks, birds, mammals, and turtles. The previous surveys and data collection had gaps, mainly due to the lack of funding. The present task is to activate a network of national and regional experts with regular monitoring programme and interactive participation through an online comprehensive regional data-base and GIS (i.e. through *PERSGA web-site*). The monitoring programme will follow the *Standard Survey Methods for Key Habitats and Key Species in the Red Sea and Gulf of Aden*, produced through the Strategic Action Plan project. Existing MPAs do not fully represent the range of regionally significant and representative habitats and species (mangroves, turtle nesting and feeding, breeding seabirds), and more are needed to fill these gaps. These gaps constrain monitoring and assessments of the representativeness of existing MPAs. PERSGA is preparing atlases on marine and coastal biodiversity starting with *MPA Atlas* and *Corals Atlas*. Mohammed Kotb is now the Programme Coordinator for the PERSGA Biodiversity and MPA Programme and as such has taken over as the Node coordinator from Abdullah Alsuhaibany (from Mohammed Kotb [mohammed.kotb@persga.org](mailto:mohammed.kotb@persga.org)).

**Middle East ROPME Sea Area node:** During the 3-6 February 2007 workshop on *Monitoring Methods, Data and Information Management of Coral Reefs* in Tehran, coordinated by the Iranian National Center for Oceanography, major gaps and needs were expressed to improve coral reef monitoring and management in the ROPME Sea Area. The following recommendations were submitted: hold a Regional Workshop on Monitoring Methods; design Regional Coral Reef Sites; prepare a monitoring manual for ROPME Sea Area; assess the installation of artificial reefs; raise awareness of economic value of coral reefs; establish more MPAs; reduce the trans-boundary effects of ship-sourced pollution and fishing; provide for a regional Socioeconomic Manual; and establish national and regional collection centers. In November 2006, a 5 day multinational joint cruise was held between the SCENR Environmental Monitoring Section, Technical Affairs Department and Wildlife & Conservation Department research team and members of the research team from EAD (UAE) as well as experts from the National Institute for Coral Reefs (Florida, USA) to survey coral reefs along the eastern coast of Qatar and along Abu Dhabi coast. This is part of a 3 year project by WWF/EWS and funded by Dolphin Energy and used the research vessel 'Mukhtabar Al-Bihar' of the University of Qatar. Coral settling devices were installed in September 2005 and revisited and photographed in November. The cruise focused on training researchers from both institutes on monitoring the health of corals, determining the live/dead percentage and using CPC software. The cruise report is under preparation. A team from INCO conducted coral reef research around three islands, Hengam, Larak and Kish (in the Persian Gulf). This study will be further continued in Farurgan in the Iranian part of the Gulf. Results of this survey were presented in the workshop showing that coral cover in Larak and Hengam Islands is relatively higher than other islands in the state of Hormozgan. The ROPME field-based Regional Workshop on Monitoring Methods is scheduled for Muscat in Oman in June 2007 (from P. Eghtesadi, A. Maghsoudlou and M. Jalili INCO, [peghtesadi@gmail.com](mailto:peghtesadi@gmail.com) or [eghtesadi@inco.ac.ir](mailto:eghtesadi@inco.ac.ir)).

The CORDIO newsletter of March 2006 covers the Nodes in **Eastern Africa, Southwest Indian Ocean Islands and South Asia** in extensive detail (contact Jerker Tamelander [jerker.tamelander@iucn.org](mailto:jerker.tamelander@iucn.org) for a copy).

**Eastern Africa:** Annual coral reef monitoring programs were completed in Kenya (CRCP, WWF/KWS/CORDIO), Tanzania (IMS), Mozambique (WWF and ORI) and South Africa (ORI). Various regional monitoring programs (including CORDIO) are turning towards resilience-based approaches to monitor bleaching using the GCRMN sites. Research on many biophysical and socio-economic aspects including effects of bleaching on fisheries and livelihoods, reef resilience and alternative livelihoods such as sea cucumbers continue throughout the region. Under the bleaching early warning and response networks of the GCRMN (supported by the IUCN Climate Change and Coral Reef working group), trial warning products are under development for the region for incorporation into a global GCRMN warning system. Several training and capacity building activities were conducted including: a workshop on certification of MPA managers organized by WIOMSA and CRC; the International Seagrass Conference (Zanzibar, Tanzania); a workshop on the meso-scale effects of coral bleaching on corals and fishes organized by the WCS, the CRTR bleaching working group and IMS. A broader, multi-institutional standardization exercise, funded in the EU-funded Transmap project at Inhaca, is formulating plans for a transboundary network of MPAs between Tanzania, Mozambique and South Africa for reefs, mangroves and seagrass beds. Planning

covers biodiversity, genetic connectivity and socioeconomic parameters. Regional participants also attended ITMEMS and the ICRI meeting in Cozumel (Mexico) as well as the Climate Change Convention meeting in Nairobi (Kenya). A South African specialist participated in the IUCN Red List assessment for Groupers and Wrasses, which concluded that 20 species were under threat of extinction, including 6 in the WIO. The Regional Programme for the Sustainable Management of the Coastal Zones of the Indian Ocean Countries (ReCoMaP-IO) has been launched as well as the new phase of the Marine Science for Management (MASMA) of WIOMSA. On the legal front, the Tanzanian government passed the Deep Sea Fishing Authority Act Amendments Bill that should regulate fishing activities that impact marine ecosystems and large marine species in Tanzania and the Kenyan government gazetted specific regulations for solid and liquid waste disposal and a policy brief on marine and coastal ecosystems including for coral reefs are under development (from the East African Coral Reef Taskforce; contacts Nyawira Muthiga, nmuthiga@wcs.org and David Obura, dobura@cordioea.org).

**Southwest Indian Ocean Islands Node:** Coral reefs were monitored in all countries of the SWIO node in the first quarter of 2007. Contracts have been signed between the different national networks and the Regional MPA Network program of the Indian Ocean Commission to provide financial support for coral reef monitoring in node countries. The CORDIO program is also continuing to support coral reef monitoring. In the Seychelles, a coral identification training workshop was organised in January 2007, with the support of CORDIO, for the people involved in data collection. Training was given on the identification of the 47 most common genera found in the region. This is allowing data on coral diversity at the different monitoring sites to be collected. No signs of widespread coral bleaching have been recorded in the region, despite the predictions that 2007 was shaping up to be a 'hot spot' year and that teams were alerted to look for renewed coral bleaching in the region in early to mid 2007. In Mauritius, the coral reef monitoring at permanent stations is ongoing in 2007 with no signs of any coral bleaching. Water quality and sea surface temperatures are being closely monitored. Under the Fisheries and Marine Resources Act, Regulations have been made for the Prohibition of Removal of Coral and Sea Shell, which came into effect from 01 August 2006 (Government Notice No. 95 of 2006) to regulate the removal of corals and sea shells from the maritime zone of Mauritius in view of the important role they play in the marine ecosystem. The Marine Reserve on Reunion (Order in council, 23 February 2007) has been declared and management is being implemented. This will require negotiation with the informal stakeholders ('underground' fishermen). They were also represented in a delegation from the Indian Ocean (WIOMSA sponsored) to the coral reef biodiversity meeting at Noumea, New Caledonia, in November 2006 to present results of 10 years of long-term coral reef monitoring and biodiversity assessment in Reunion. Some reefs in Madagascar were heavily damaged during the recent cyclone 'Indlala' in mid-March; and their status will be reported soon as monitoring is continuing under support from the Indian Ocean Commission Regional MPAs network program (from Jude Bijoux, j.bijoux@scmrt-mpa.sc; Lionel Bigot, lbigot@univ-reunion.fr; and Jean Maharavo, maharavo@simicro.mg).

**South Asia:** Key sites on the west coast of Sri Lanka have been monitored. Areas of the shallow banks of the Bar Reef are showing rapid recovery with some coral patches having over 90% coral cover dominated by *Acropora cytherea* and *Pocillopora damicornis*. Several rare species of butterflyfish including *Chaetodon bennetti* were seen. Reefs on the south coast are in poor condition with a decline in coral cover due to anthropogenic impacts including sedimentation. The condition of the reef in the Hikkaduwa National Park remains poor with the dead *Acropora formosa* banks being colonized by *Montipora aequituberculata*. Heavy siltation and sand accumulation in the reef lagoon is inhibiting coral growth in many southern reef areas. The calcareous alga, *Halimeda* is proliferating on reefs in the south, but there is good recruitment of *Pocillopora damicornis* on southern fringing reefs including Hikkaduwa. Reefs in the east coast have not been surveyed since September 2006 due to the ongoing conflict. There is no fisheries management in the Bar Reef Marine Sanctuary despite the completion of a Special Area Management Project with financial support from the Asian Development Bank. Parts of the reef have been damaged by fishers using purse seine nets to catch jacks, barracuda, snappers and emperors. Many mangrove rehabilitation programs have been funded after the December 2004 tsunami and there appears to be a reduction coral mining. Mild coral bleaching (paling) has been observed at the Hikkaduwa National Park with several species affected. The coral species affected are *Galaxea fascicularis*, *Porites lutea*, *Leptoria phrygia* and *Favia speciosa*; no

bleaching has been observed at other sites. Awareness programmes conducted by USAID projects in Sri Lanka for glass bottom boat operators, tour operators and children e.g. Sustainable Coastal Tourism in Asia is training Department of Wildlife Conservation staff to snorkel and in basic management of the MPAs. New display boards in Hikkaduwa National Park highlight the value of coral reefs and regulations, but there is no policing and damage continues to the reef flats. In India, the Suganthi Devadason Marine Research Institute organized an 'International Training workshop on Coral Reefs and Livelihoods Initiative' in Tuticorin, Tamilnadu, in January 2007, under a ICRAN / SACEP / IUCN / CORDIO collaborative livelihoods intervention for 16 participants from Bangladesh, India, Maldives, Pakistan, Sri Lanka and Indonesia. Regular reef monitoring is continuing, including monthly assessment of sedimentation. A baseline survey on seagrass resources has been initiated. The maximum temperature in April – May 2006 was 33.6°C with the highest bleaching in the Keezhakkarai group (19.5%) while Mandapam group was the lowest (11.5%). Coral species affected were *Porites*, *Favia*, *Acropora*, *Montipora* however there was no mortality and recovery was complete in 2-3 months. 72 sediment traps were deployed at 14 locations in the Mandapam group and 4 in the Tuticorin group to establish a sedimentation rate baseline to follow possible impacts from the Sethusamudram Canal project. In the Gulf of Mannar, the Madurai Kamaraj University has been monitoring reef status monthly since January 2006 around the Manoli Reef Complex and coral recruitment and sedimentation rates in Pudhumadam. In the Maldives, several reef sites in North Male, South Male, Rasdhoo and Aril atoll were re-monitored by German and Austrian scientists to commemorate 50 years since the Hans Hass 'Xarifa' expedition to Maldives. The team included experts in coral taxonomy, reef fish, coral disease, coral bivalve association etc. They compared reef status with that described by Sheer and Pillai in 1976 and documented reef recovery from the 1998 bleaching. Live coral cover varied from less than 10% to more than 80% indicating variable recovery associated with specific resilience factors. Coral disease occurrence (e.g. white band and black band) was variable and may have increased at some reef sites. The overgrowing sponge *Terpios* is killing corals on some reefs. The 'Bleach Watch' Maldives program started in mid-March with Ministry of Tourism and dive schools in response to predicted bleaching in 2007. Although temperatures increased in March -April, local hydrography and other climate factors in 2007 are different from 1998; bleaching seems unlikely, however there has been some temperature stress observed. The bleaching surveillance program will continue to July. A follow-up on the CORDIO study on the impact of bleaching was carried out in late 2006, and grouper spawning aggregation site studies are planned for 2007 initiated by CORDIO. Annual coral reef monitoring program will resume in 2007, but a limited number of trained staff poses a serious constraint (from Arjan Rajasuriya, Arjan.Rajasuriya@nara.ac.lk; Jerker Tamelander, [jerker.tamelander@iucn.org](mailto:jerker.tamelander@iucn.org); Hussain Zahir).

**Southeast Asia – SEACORM:** The Node has been relatively quiet in the last 6 months, with no major activities or initiatives reported from most countries. In Singapore, a multi-agency effort to monitor the April/May coral spawning has been ongoing since February 2007. In Thailand, a variety of reef monitoring activities were conducted by Marine Biodiversity Research Group, Ramkhamhaeng University (coral reef and socioeconomic monitoring, recruitment studies), Prince of Songkla University (coral reef monitoring, recruitment studies, coral spawning monitoring), Phuket Marine Biological Center (coral reef and coral transplant monitoring) and Chulalongkorn University (coral reproduction and octocoral studies). On a regional level, the Coordinating Body of the East Asian Seas (COBSEA) is developing an 'East Asian Seas Knowledgebase for Regional Coastal and Marine Information and Resources', which will incorporate, among other things, relevant information on regional coral reef activities and initiatives, as well as resources for coral reef practitioners. In addition, COBSEA has also initiated a regional slogan contest for the Green Fins Programme, which aims to establish a network of environmentally-friendly dive operators that generates mutual benefits for the operators as well as the environment in coral reef areas and to assist in coral reef monitoring. The contest is also part of a Green Fins regional workshop to further expand the programme in the region (from Karenne Tun, [karenne@nus.edu.sg](mailto:karenne@nus.edu.sg) – Note change of email address).

**South West Pacific:** The Node continues with support from CRISP and a new database officer, Ms Priti Singh has joined from Fiji fisheries to assist in coral reef data analysis, hopefully including the CoReMo database. Sea temperature and turtle data will also be with ReefBase Pacific; Ms Asenaca Valemei and Cherie Morris have been appointed to collect and manage coral reef data and information. The GCRMN coordinator Kenneth Mackay attended ITMEMS and side meetings in Cozumel which catalysed future

activities to benefit the Pacific. The December 2006 GCRMN Node Newsletter has been sent to all national coordinators and others and production of the 2004 Status of Reef report for the SW Pacific Node is in the final stages. A workshop organised by CRISP-IRD (22-Nov to 03-Dec 2006) examined the effectiveness of taxonomic surveys in understanding the effects of Marine Protected Area designation on fish populations in Fiji. USP staff, students, Fisheries staff, members of the Coral Cay Conservation and community representatives attended with classroom sessions in USP and field work in Muaivuso Village. IMR in Fiji has 40 temperature loggers throughout the country, mostly at 5-10m depth with some at 30m. IMR has an active turtle research and monitoring program and hope to incorporate the data into GCRMN reports; the coordinator attended the 27th annual International Sea Turtle Symposium in February in South Carolina and the SPREP Regional Turtle Strategic Action Planning Meeting in March. Activities planned for 2007 include: regional workshops in Solomon Islands and Vanuatu in June on data analysis; coordination of a 2007 Status of the Coral Reef report for the SW Pacific node including development of national monitoring plans; developing monitoring and rapid response strategies for coral bleaching in Fiji and the network; presenting a paper at the Pacific Science Congress on 'Are we Measuring the Correct Parameters in Coral Reef Monitoring? Lessons from the Global Coral Reef Monitoring Network South West Pacific Node' (from Ken MacKay, Institute of Marine Resources Fiji, mackay\_k@usp.ac.fj, and Cherie Morris, morris\_c@usp.ac.fj).

**Southeast and Central Pacific 'Polynesia Mana':** The Node held its first training workshop in Moorea, French Polynesia, from 26 February to 01 March with 5 of the 6 member countries participating. Tonga, Cook Islands, Kiribati, Tokelau, French Polynesia and Wallis and Futuna came to the CRIOBE research centre for the workshop. The participants coming from Fisheries or Environment Departments, were trained in coral, fish and invertebrate data collection, analysis and interpretation. They were also given equipment such as digital cameras and housings, fish identification books as well as picture analysis software (from Caroline Vieux, carolinevieux@hotmail.com Node Coordinator).

**US Caribbean and Gulf of Mexico:** During the 3-week biennial cruise to Navassa Island in November, scientists discovered severe coral bleaching was underway; they also documented the continued resilience of the *Acropora palmata* population. Ground truth data on fish populations and new habitat maps were complemented by a socio-economic study of Haitian fishers who harvest marine resources at Navassa. Several research cruises in the Flower Garden Banks National Marine Sanctuary (FGBNMS) have focused on shallow-water coral and reef fish populations on the bank tops. The FGBNMS teamed up in February to explore deeper water areas of the Sanctuary with Robert Ballard using the Navy nuclear-powered research submersible and two research ships. A video was broadcast by 24-hour live satellite feeds to several remote sites and posted on the Internet. The importance of public participation and local ecological knowledge to improve MPA stewardship and conserve coral reefs has been confirmed in Puerto Rico. Outreach and education efforts earned several awards, and a workshop to strengthen enforcement of coral reef and fishery laws was held in Puerto Rico in November. Florida established no-take Research Natural Areas within the Dry Tortugas National Park, including a biological and human dimensions research and monitoring plan developed by an inter-agency group. In February, scientists agreed on a habitat classification scheme to map Florida's coastal and marine resources and a proposed ranking of 13 sub-regions to prioritize mapping efforts. A January research cruise investigated larval recruitment and connectivity in the Western Caribbean. A new comprehensive guide to monitoring reef fish populations in the National Park Service's South Florida-Caribbean network was completed and is available from NOAA. Precious corals in the genus *Corallium* and the Banggai cardinalfish have been proposed for inclusion in CITES Appendix II (from Mark Monaco, mark.monaco@noaa.gov and Jenny Waddell, jenny.waddell@noaa.gov).

**Northern Caribbean and Atlantic (NCA) Node:** All countries within the Node, except Haiti, continue to carry out monitoring and research. The scope and extent of their monitoring activities continue to be restricted by financial and human resources. In Jamaica, 4 Reef Check assessments were conducted in St. Elizabeth and the Port Royal Cays. Mean hard coral percent cover ranged between 5.6% and 26.9%. Annual CPACC assessments were conducted by the National Environment and Planning Agency (NEPA) in Port Royal, Portland and Discovery Bay (from Loureene Jones, loureene.jones@uwimona.edu.jm).

**Netherlands Antilles:** Coral bleaching occurred in the northern islands (St. Maarten, Saba, St. Eustatius) in late August 2005 and bleaching lasted until mid-November 2005; initial signs of recovery followed. In mid-October about 80% of coral colonies were bleached on all three islands; coral cover dropped from 24 to 6% on St. Eustatius at 15m and from 26 to 15% at 20m. Bleaching on Bonaire and Curaçao was much less, averaging 14% on Curacao with no apparent mortality. Average coral cover on Curaçao was 40% at 12m and 30% at 6m. Bleaching was negligible in 2006 (from Paul Hoetjes, paul@mina.vomil.an).

**French Caribbean:** Long term coral reef monitoring is still ongoing at 9 reef sites every 6 months on Guadeloupe, Saint-Barthélemy and Martinique. In 2005, major coral (and other zooxanthellate Cnidarian) bleaching resulted in 55% to 80% of the coral species being affected. About 50% of all colonies showed some form of bleaching, with total bleaching in one third of the colonies and two thirds were partially bleached. Temperatures returned to 28°C in late 2005, and very little mortality was observed on the corals (maximum 7%). Throughout 2006, numerous corals were still bleached and an important phenomenon of delayed mortality developed. Coral decay was minimal on the reef flats where the coral colonies recovered best. In December 2006, coral mortality estimations varied between 21 to 53% on the outer reef slopes of the 3 islands; varying according to reef sites. The average coral cover over the reef slope dropped from 32% before August 2005 to 21% in December 2006; an average loss of coral cover of 34% for the outer reef slopes of the French West Indies. Coral juvenile recruitment also exhibited a decrease during 2006, compared to previous years (from Claude Bouchon, claude.bouchon@univ-ag.fr, Yolande Bouchon-Navaro and Pedro Portillo).

**Southern Tropical America:** Monitoring activities in Costa Rica, Brazil, Venezuela, Panama and Colombia have continued, with surveys at several places in each country by different monitoring protocols (CARICOMP, PCRMN, SIMAC, SIMAVE, and AGRRA). A chapter about the effects of coral bleaching in the Southern Tropical America in 2005 was written under the coordination of INVEMAR-Colombia, in order to contribute to the book *Status of Caribbean Coral Reefs after Bleaching and Hurricanes In 2005*. With the support of UNEP, the members of the STA Node have been working to produce a special issue of *Revista de Biología Tropical* with the results of monitoring activities during last years (from Alberto Rodríguez Ramírez 'Beto', betorod@invemar.org.co and national coordinators, Carolina Bastidas Venezuela, cbastidas@usb.ve; Zelinda Leão, Brasil, zelinda@ufba.br; Hector Guzman, Panama, GUZMANH@si.edu; Jorge Cortes, Costa Rica, jcortes@cariari.ucr.ac.cr).

## **PARTNER ACTIVITY SUMMARIES**

**GCRMN SocMon (Socioeconomic Monitoring Initiative for Coastal Management):** GCRMN SocMon has constituted a SocMon Advisory Committee to work with Christy Loper as global coordinator to develop a long-term strategy and action plan for SocMon. Funding has been achieved from NOAA and the US State Department to produce SocMon guidelines based on existing regional protocols for the Pacific region by August 2007. Work is continuing on the Global Socioeconomic Database housed at ReefBase and the database should be populated by September 2007. A data call has gone out to each of the regions to submit all outstanding SocMon site reports that have not yet been submitted. In 2007, training in the use of SocMon has been undertaken in the Philippines, the Seychelles, Comoros, Nicaragua and Honduras; these workshops will also produce baseline data to include in ReefBase.

Southeast Asia. Sheila Vergara of Conservation International-Philippines has started as the new regional coordinator for SocMon Southeast Asia. Partnering with Palawan State University, she just organized a SocMon workshop in the Philippines in early March, at which 8 partner organizations committed to undertaking SocMon assessments beginning in March. Western Indian Ocean. The region has just added two new countries to their network: the Seychelles and Comoros. An advanced train-the-trainers workshop was held in the Seychelles in January and Comoros received their first training in March. Pacific. The Pacific region is currently developing guidelines for socioeconomic monitoring based on SocMon as well as other protocols currently used in the region. These guidelines should be complete by August 2007. Caribbean. Two SocMon workshops were held in Bluefields, Nicaragua and Tela, Honduras for the Spanish-speaking Caribbean in March 2007. SocMon data collection for both sites will start at the end of April. At the Gulf Coast Fisheries Institute meeting held in Belize in November 2006, Patrick McConney and Christy Loper

organized a SocMon side event. At this meeting, a data call was issued for any information on the socioeconomic impacts of the 2005 bleaching season. The data call was followed up by several email reminders; however, no one has submitted information to date (from Christy Loper, SocMon Coordinator at NOAA, USA, [Christy.Loper@noaa.gov](mailto:Christy.Loper@noaa.gov)).

**Reef Check Global:** The standardized Reef Check Surveys for 2006 have increased over the 2005 surveys with more than 550 surveys. Six new self-financed MPAs have been established by Reef Check with partners MAC and CCIF in the Philippines. A second round of coral rehabilitation work is underway using fish post-larvae also in the Philippines. Reef Check is playing a major coordination role in planning for the International Year of the Reef, in association with the ICRI Secretariat, the US CRTF and other partners. Planning has proceeded well with the mini-Summit in DC hosted by US CRTF garnering additional support from NGOs and agencies. Reef Check has released an 'International Declaration of Reef Rights' which has had rapid uptake and good publicity with more than 1300 signing on in less than 2 weeks; this will be reported to the ICRI meeting in Tokyo. A report on 2005/6 Caribbean Bleaching has been released and a 10 year report is in preparation following on the 5-year Global Coral Reef Crisis report of 2002. The EcoAction program is a self-financing scheme for local RC Teams, and in 2006, a successful launch was carried out. Training of trainers for the EcoAction Certification Program has been completed in 12 countries (Mexico, Belize, Dominican Republic, USA, Germany, Egypt, Mozambique, Philippines, Australia, Indonesia, Malaysia, Thailand) with over 150 Trainers Certified (from Gregor Hodgson; [gregorh@reefcheck.org](mailto:gregorh@reefcheck.org) and Cori Kane; [ckane@reefcheck.org](mailto:ckane@reefcheck.org)).

**Reef Check Asia-Pacific:** The EcoAction program is a self-financing scheme for local RC Teams. Jos Hill assisted with the EcoAction program launch at ITMEMS with Reef Check Coordinators from the Indo-Pacific and Caribbean trained in the new EcoDiver (Reef Check survey training) standards and how to deliver the other EcoAction programs: Underwater Reef Guide; Reef Check Adventures; and Discover Reef Check programs. The EcoAction program was also launched at the International EcoTourism Conference in Australia. Product development for the Underwater Guide was finalised and is now being sold in Indonesia, Philippines and Australia. Development of sales and marketing materials is underway which include a point of sale stand and key sales messages and posters. Following up on leads for sales and marketing through other Asia Pacific countries is now underway. EcoAction Training of Trainers was carried out for 9 Reef Check Scientists from 6 different countries in January; 3 of these trainers will establish a Reef Check project in East Timor during 2007 (from Jos Hill, [jos@reefcheck.org](mailto:jos@reefcheck.org), Reef Check Asia-Pacific Townsville).

**CRISP (Coral Reef Initiative for the South Pacific; [www.crisponline.net](http://www.crisponline.net)):** All financial agreements between AFD and the implementing agencies were signed and all technical partners had started activities at the end of 2006. A new French technical assistant started in SPREP to strengthen their involvement in CRISP. Support for the implementation of MPAs and ecoregional analysis were conducted under Component 1 in several Pacific countries, including French territories (Wallis and Futuna and New Caledonia). Actions for improving reef fisheries, reef monitoring and reef development (including Marine Active Substances) continued under Component 2, as the preliminary steps for developing the Pacific ReefBase database. A symposium was held in Moorea in December 2006 under the auspices of CRISP and co-organized by EPHE-CNRS (France), GUMP University marine station (USA) and Ryukyus University (Japan) focusing on tropical island biodiversity conservation. The agreement was finalised with France for a contribution of Australia to the CRISP Programme through the organization in September 2007 of a regional workshop in Townsville under an AusAID (80%) and French (20%) funding, for reinforcing the practical know how (about sustainable development of coral reefs) transfer towards the Pacific countries (from Eric Clua, [ericc@spc.int](mailto:ericc@spc.int), Noumea New Caledonia).

**AGRRA:** Recent additions to the AGRRA dataset include GIS extensions that allow the AGRRA data to be integrated with geographical databases. The AGRRA Sites are currently being intersected with the Millennium Maps dataset to add additional habitat information, and the various derived sample products (previously available as Excel spreadsheets) will soon be posted online as GIS shapefiles. As bleaching events increase in intensity, the vital signs of traumatized reef corals must be monitored like those of victims of heart attacks because the impacts of either life or death are of greater significance than the traumas

themselves. The two new BLAGGRA protocols are designed to provide this information. The BLAGGRA Line-intercept only method is so simple that it can easily be mastered by volunteers, allowing many sites to be assessed repeatedly for at least a year following the termination of bleaching. Details regarding protocols, databases and summary products can be found at <<http://www.agrra.org>>[www.agrra.org](http://www.agrra.org) (from Robert Ginsburg, [rginsburg@rsmas.miami.edu](mailto:rginsburg@rsmas.miami.edu), and Judy Lang, [jlang@riposi.net](mailto:jlang@riposi.net)).

**ICRAN:** Activities are ongoing in a number of regional and national initiatives. The ICRAN Mesoamerican Reef Alliance (MAR), funded by USAID-UNF, is focusing on watershed management, sustainable fisheries and sustainable tourism. Monitoring is lead by Reef Check, which feeds into regional GCRMN nodes. The total project of US\$3 million includes several ICRAN partners, and is entering the last stages of implementation having achieved great success in all three component areas. The CRISP project funded by French agencies includes two ICRAN partner proposals (SPREP and The WorldFish Center; EUR1.5 million)) in their EUR9 million budget, with support for coral reef monitoring in the Southwest and Southeast Pacific Nodes. ICRAN is assisting the Buccoo Reef Trust in Tobago via the UN Foundation and private donor funding (US\$1.5 million) to improve the coordination of monitoring efforts in the Southeastern Caribbean, and support the regional GCRMN nodes through increased opportunities for information exchange. ICRAN with SACEP are conducting activities in the 5 maritime nations of the South Asia region, and will facilitate the expansion of the Reef Check programme in the region, enhancing monitoring capacity and building greater data exchange mechanisms with the GCRMN South Asia node. ICRAN has initiatives in Mozambique (with WWF) and the Dominican Republic (Reef Check DR and the USAID-UNF funded Marine Tourism Alliance), which directly and indirectly support GCRMN activities.

ICRAN headed the organisation of the 3rd ITMEMS, a global meeting for marine and coastal managers and practitioners where workshops provided opportunities for the 324 participants (from 45 countries) to discuss the key monitoring challenges and successes from a local, regional, and global perspective, facilitating the exchange of lessons learned and experiences between GCRMN Coordinators and the wider marine community (from Kristian Teleki and Nicola Barnard - [info@icran.org](mailto:info@icran.org)).

**IOC/UNESCO:** The 'Biodiversity and Vulnerability of Deep-Sea Corals on Seamounts Beyond Areas of National Jurisdiction' report was published in late 2006. This was a joint effort by UNEP, World Conservation Monitoring Center and IOC-UNESCO and produced by the Census of Marine Life Seamount Programme (CenSeam). In addition, UNEP and IOC-UNESCO finished the synthesis report 'An Overview of Global and Regional Assessments of the Marine Environment' in late 2006. The Bleaching Targeted Research Group key activities in 2007 will be a research workshop at the African Center of excellence in Zanzibar, Tanzania, on coral diseases and algal genetics (April 16-25), a training and research workshop in Hawaii, (June 2-July 15, [www.hawaii.edu/HIMB/Education/pauley2007.html](http://www.hawaii.edu/HIMB/Education/pauley2007.html)) and the annual group meeting in Amsterdam, Netherlands (Dec 17-21). IOC will sponsor a BTRG capacity building workshop in 2007: training courses in Mexico; Indonesian participants will attend a coral reef ecosystem research and management course at Heron Island in June. In addition, IOC in Dec 2006 organized a UNESCO workshop in Paris titled 'Ecological and Socio-Economic Monitoring for Coral Reefs' with the aim to develop a monitoring strategy for coral reefs within WH sites, Biosphere reserves and CRTR Centres of Excellence. The World Heritage Centre is still actively seeking coral reef site nominations (from Maria Hood, [m.hood@unesco.org](mailto:m.hood@unesco.org), Christian Wild [c.wild@lrz.uni-muenchen.de](mailto:c.wild@lrz.uni-muenchen.de))

## **GCRMN COORDINATION OFFICE**

**GCRMN Management Group:** The Chair, Carl Gustaf Lundin, cannot attend the April ICRI general meeting in Tokyo and Jerker Tamelander will represent the Chair, and IUCN (from Carl Gustaf Lundin, Chair, GCRMN Management Group, [carl.lundin@iucn.org](mailto:carl.lundin@iucn.org) and Jerker Tamelander, [jerker.tamelander@iucn.org](mailto:jerker.tamelander@iucn.org)).

**Coral Reef Unit, UNEP, Cambridge:** The Coordinator of the CRU, Stefan Hain, also cannot attend the Tokyo ICRI meeting; thus Marea Hatzioiols will be in the Chair for the GCRMN Management Group meetings (from Stefan Hain, [Stefan.Hain@unep-wcmc.org](mailto:Stefan.Hain@unep-wcmc.org)).

**STAC and CRISP:** Bernard Salvat will attend the Tokyo meeting as the Chair of the GCRMN Scientific and Technical Advisory Committee.

**Funding:** Funds are still required by most Nodes. Potential donors may wish to seek advice on where money could be well spent and the GCRMN will offer to process small grants with no overhead charges. The GCRMN has a portfolio of requests from the Nodes for small grants; these will be presented again in Tokyo.

**11<sup>th</sup> International Coral Reef Symposium:** The GCRMN will be coordinating Mini-symposium 17: 'Reef status and trends' with the organisers listed as David Souter, Loureene Jones, Christy Loper & Clive Wilkinson. The session in Ft Lauderdale Florida, 7-11 July 2008 will be based on about 8 to 10 oral presentations and many posters (approximately 50 to 80) built around the following questions: What are the current status and trends of the world's coral reefs? How does recovery from stress differ in habitats that vary in depth and other physical attributes? What are the most appropriate metrics to characterize stress impact and recovery? What are the processes and mechanisms that link the state of the benthic community to the health and diversity of fish and invertebrate assemblages? Can we improve coral reef ecological and socioeconomic monitoring to answer the big questions: how are reefs responding to global climate change? ICRI is invited to comment on this session as to how we can present reefs in the best way and represent an ICRI Operational Network.

**GCRMN Travel:** The GCRMN Coordinator undertook 4 international trips in this period:

- October 2006, to Cozumel, Mexico for ITMEMS3 and the ICRI general meeting;
- To Thailand for the Australian AusAID post-tsunami project and to the East Asian Seas Congress in Haikou, Hainan, China in December (leave was taken in France following this meeting) and then to the Middle East for a meeting of the ROPME Sea Area Node in February (funded by ROPME);
- Late February 2007 to Noumea, New Caledonia for a CRISP funded meeting with Australia on seeking more coordination of reef activities in the Pacific; and
- April 2007 to Tokyo for the ICRI general meeting.

**Future Activities:** The major future activities will be:

- Continue drafting 'Status of Caribbean Coral Reefs Following Bleaching and Hurricanes in 2005' to a schedule that has drifted back a few months or more;
- Improve the GCRMN home page, links to Nodes and resubmit small grant requests;
- Start drafting case study report on catchment to coral reef to be produced with the UNEP GPA offices in The Hague;
- Plan the mini-symposium at the 11<sup>th</sup> ICRS (see above);
- Develop a program for the next global report 'Status of Coral Reefs of the World: 2008' for release at the 11<sup>th</sup> ICRS during the International Year of the Reef in 2008; and

#### Schedule for 2006/7 Caribbean report

- March to April -2007, finalise chapters for review by authors & experts;
- April -2007 or later, print & launch in Caribbean and USA mid-year;
- Proposed format is 120-150 pages in Spanish and English + CD version.

#### Schedule for 2007/8 Global report

- October 2006, inform all countries & Nodes of plan and schedule;
- April 2007 – produce draft format and schedule for all nodes;
- June – September 2007, collect data & information and draft chapters;
- November – January 2008, finalise chapters for review by authors & experts;
- July – 2008, launch in Ft Lauderdale, Florida;
- Format, similar to previous reports and based on National & Regional & language reports
- Will also include chapters on mangroves & seagrass beds;
- Other themes are possible;

- Proposed format - 200 pages, with larger CD version with all National & Regional reports

David Souter continues to assist the GCRMN coordination with production of the Caribbean Bleaching report on a part-time basis.

Clive R. Wilkinson  
Coordinator, GCRMN  
11 April 2007