E-News Bulletin

Gulf of Mexico Large Marine Ecosystem (GoM LME)

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Gulf of Mexico Governor's Action Plan II "Implementation and Integration Workshop & Pre-workshop Priority Issue Team Sessions
2 – 4 August, 2010
Biloxi, MS, US

The GoM LME project staff attended to this meeting organized by EPA's Gulf of Mexico Program, with the overall objective to meet with Gulf of Mexico Alliance (GOMA) representatives and move towards a joint action plan for the Gulf of Mexico, as well as to promote the GoM LME project priorities in the different working groups of GOMA.

Many important links and agreements between representatives of the different working groups of GOMA were established:

1.- Ecosystem Integration and Assessment group: develop a mirror project of valuation of goods and environmental services in Terminos Lagoon and develop the "living marine resources" component.

2.- Water Quality group: share information and search for counterparts in the Mexican side.

3.- Habitat Conservation and Restoration group and Environmental Education group: start a joint collaboration with Mexico to replicate exercises such as Sea Grant and their participation in the Environmental Education Workshop in September.

Introduction to Monitoring Techniques and Sampling Design Training Course
August 4 - 6, 2010
Merida, Yucatan, Mexico

The pilot project: Joint Assessment and Monitoring of Coastal Conditions in the Gulf of Mexico focuses in Terminos Lagoon as a pilot site in the Mexican Gulf. In addition, the experience obtained during the assessment phase will be useful during the implementation stage in the entire Gulf of Mexico.

With a surface area of 1.51 X 10^6 km^2, the Gulf of Mexico contains a large number of coastal ecosystems. Unfortunately, due to a lack of consistency in sampling designs, the results from different areas of the Gulf can not be compared. A proper way to share information among all research groups who are monitoring the Gulf of Mexico would be through a standardization of the sampling design.

The probabilistic sampling design is a useful statistical tool that enables the comparison of data from ecosystems with high heterogeneity. However, the probabilistic design requires some basic technical knowledge, a reason why the pilot project organized an introductory course on statistics.

The purpose of the training course was to gather staff members of the National Water Commission (CONAGUA) who are interested in monitoring the Gulf's coastal conditions in order to:

- Provide them with the basis and criteria for developing an adequate monitoring sampling design.
- Provide them with the theoretical and practical knowledge of statistics to begin training advanced probabilistic sampling design.
- Strengthen their capacities and foster integrated management through ecosystem-based approaches in the region.

Overall conclusions from the workshop were:

- Hydrological mangrove rehabilitation, a proven successful technique at many other sites will be the approach to be used in the development of a local restoration ecosystem-based action plan in Laguna de Terminos.

- Local institutions and stakeholders play a key role in developing and implementing habitat restoration programmes, and therefore community-based participation and involvement, and local capacity-building are essential components in the design and execution of this type of initiatives.

- The ecosystem-based approach stems from connectivity at the hydrological (pollutants-nutrients), ecological (biodiversity), and physical (currents-tides-waves-climate) levels.

- An agreed methodological strategy (work plan) under the ecosystem-based approach is necessary to enhance replication of ecological mangrove restoration programmes in the Gulf of Mexico region.
It will be necessary to conduct this kind of training workshops in the future with institutions and stakeholders from other locations along the GoM.

Bilateral US-Mexico Meeting on the Deepwater Horizon MC252
Oil Spill in the GoM LME
4-5 August, 2010
Washington. D.C.

In due consideration to the MC252 well oil spill, the Gulf of Mexico Large Marine Ecosystem Project (GoM-LME) based at Mexico's SEMARNAT headquarters has been fully involved in the analysis of the spill providing support to collect information on its status and related environmental impacts.

The GoM LME Project Coordination Unit (PCU) requested information to the US project country focal point Dr. Bonnie Ponwith highlighting the importance of working towards the TDA and SAP in due concern of the spill, the importance of collaborative actions for the project, and a special request to exchange and obtain official information on the spill forecast and prediction. A formal answer from Dr. James Turner (NOAA) was received highlighting that the authorities were willing to collaborate with regional partners and expressed a high commitment of US institutions and fellows to jointly work together towards the GoM LME project.

A letter was sent to both countries' project focal points requesting their opinion on the mechanism to deal with the oil spill, particularly for the integrated assessment of the GoM and the strategic action program (SAP) development for the future in the region, in order to set appropriate actions of the GoM LME project and get project participant countries' engagement and support.

In addition to the GoM LME project PCU communication with the US, the Mexican Government also had established a permanent communication with the US government through the mentioned exchange of "diplomatic notes" and once the MC-252 well was under apparent control.

The US government accepted to receive a Mexican delegation and to host their first bilateral meeting to address the Deepwater Horizon MC252 oil spill. The meeting was held on 4 August at the Department of State, with the participation of 24 US officers from NOAA, EPA, Department of State, Coast Guard, USGS, BOEM (former MMS). The Mexican Delegation was comprised by SEMARNAT, CONANP, PROFEPA, INE, SRE, SEMAR, PEMEX, CONAPESCA, and the GoM LME project participated as a guest of both countries.

The visit was divided in two activities, a visit to the National Incident Center and the Bilateral meeting in the facilities of the Department of State, in Washington DC. The overall objective of the bilateral meeting in Washington DC was to exchange oil spill information and the actions between both governments to conduct an integrated assessment of the Gulf of Mexico and the measures taken by the US government to assess overall impacts in the region.

The meeting highlighted that the GoM LME project is the appropriate platform for the long term collaboration between US and Mexico and with particular emphasis to the oil spill.

Bilateral Meeting Main Agreements

(These are the draft agreements proposed by the Mexican Delegation and are currently in the review process by the US Government and will be approved by both countries in the following days).

The US will support Mexico to obtain from the oil company BP, a sample of the oil spilled from the DWH MC 252 well. The US government also offered a package of information including a molecular oil fingerprint study conducted in the US.

The US will share all materials presented at this bilateral meeting.

The US has a particular interest to collaborate with Mexico on information to help understand the impacts on shared marine resources and highly migratory species in the Gulf of Mexico (i.e. marine turtles).

The US will send the protocols used to evaluate the quality of fisheries products for human consumption.

The US will send a counter report and comments on the information provided by Mexico in this meeting related to Mexico's Ocean Policy.

Mexico requested to the US to take part as observer on the next Gulf Summit or Scientific meetings related to the Oil Spill conducted in the US or those promoted by the US Government.

Course/Workshop: "Technical Guidelines and Identification of Needs for an Ecological Mangrove Restoration Program at the Local Level
11–13 August, 2010
Ciudad del Carmen, Campeche

Within the framework of the pilot project "Natural Habitat and Ecosystem Conservation of Coastal and Marine Zones of the Gulf of Mexico: Wetlands, Mangroves, Sea Grass Beds, and Sand Dunes", are the development of strategies and actions to mitigate impacts and restore deteriorated coastal areas and habitats, with an emphasis on critical coastal ecosystems such as wetlands, mangroves, sea grass beds, and sand dunes, using the ecosystem-based approach.

Enhancement of knowledge, information, capacity building, and technical skills training to management authorities and decision-makers at federal, state, and municipal levels is a priority, as is the development of coastal habitat and ecosystems standard restoration and rehabilitation methodologies for replication throughout the Gulf of Mexico region.

In this context, a course/workshop aimed at consolidating a local stakeholders group to define and participate in an action plan for the above mentioned pilot project was organized by the GoM LME Project.

The workshop took place at the Botanical Garden of the Universidad del Carmen (UNACAR), with the participation of several representatives from local environment agencies related to marine protected areas as well as representatives from academic institutions, and staff members of the Gulf of Mexico Large Marine Ecosystem Project.

Activities were structured in a three-day long course/workshop format with both a theoretical and practical approach.

The first day began with sessions consisting mainly on theoretical lectures on a number of topics ranging from concept definitions and importance of wetland management, to classification criteria, ecological characteristics, mangrove uses and values, structural adaptations, and mangrove geographic distribution.

On the second day, a field practical exercise was carried out so that participants could perform a comparative analysis of the vertical structure of a mangrove reference-site along a 100m transect perpendicular to the coast. The structural analysis was complemented with the measurements of an array of environmental variables associated to interstitial water of the first 25cm of soil (salinity, pH, edaphic substrate type, soil texture; depth and thickness of the organic horizon, and duration of tidal flooding),

During the third day, there was time for open discussions on the results of the field exercise, which provided participants with insight to better understanding mangrove distribution patterns associated to variables such as interstitial salinity,

For the closing part of the workshop, participants were divided into two groups in order to come up with a table of needs organized by different topics for the proper execution of restoration activities at the local level. This has been the first approach to identifying management and technical needs for successful implementation of habitat restoration efforts with a focus on replication in the mid and long terms.

As a result of the training course, participants have strengthened their capacities for participating in the design, implementation, and re-orientation of strategies and actions for conservation, restoration, sustainable use and management of mangrove ecosystems in the region.

Workshop: "Invasive Species and Other Drivers of Biodiversity Change in the Gulf of Mexico"
8 September, 2010
Mexico City

The workshop: *"Invasive Species and Other Drivers of Biodiversity Change in the Gulf of Mexico"* was held on 8 September, 2010 at the National Commission for Knowledge and Use of Biodiversity (CONABIO) in Mexico City, following the presentation of the National Strategy of Invasive Species on the previous evening. The workshop aimed to generate knowledge and experiences of the current threats to biodiversity of the Gulf of Mexico, based on first hand information, and through a wide experts' participation in order to aid in the development, strengthening and implementation of conservation strategies for the GoM LME project.

The workshop format included keynote presentations during the morning session and working tables in the evening session, where participants identified, developed, and prioritized topics of the index for each of the drivers of biodiversity change: 1) marine invasive species pathways and settlements, 2) main sources of pollution to coastal and marine environments, 3) main over exploited fisheries, and 4) potential impacts related to climate change; to be incorporated in the TDA Chapter: Threats to Biodiversity of the Gulf of Mexico.

In the working table on marine invasive species, participants stated the importance of understanding the invasion process, evaluating impacts on native species and habitat modification, and identifying the drivers of change that benefit the invasions.

Outcomes from the working table on sources of pollution, showed a high priority focus on residual waters, agrochemicals, coastal infrastructure, residues, and oil activities.

Results from the working table on over exploited fisheries showed that it is essential to focus on both legal and illegal fishing to assess the overfishing problem. They also stated the need to include objective and non-objective species in fisheries management.

As for the working table on climate change, results showed a very high priority on sea level rise issues for coastal ecosystems and human infrastructure; temperature increase for corals and biological invasions; modifications of currents for marine living resources; and extreme meteorological events for coastal ecosystems and human infrastructure.

Finally, regarding all drivers of change, in every working table participants remarked the importance of tools and strategies to mitigate biodiversity loss, such as risk analysis, monitoring, regulations, institutional collaborations, and capacity building.

Participants represented various Mexican and U.S. institutions.

Regional Workshop: "Education for Sustainability in the Gulf of Mexico Region"
8-10 September
El Carrizal, Veracruz

The Regional Workshop: "Education for Sustainability in the Gulf of Mexico Region" aimed at strengthening education and culture for sustainability in the Natural Protected Areas of the Gulf of Mexico and at generating inputs for the future development of a regional strategy of environmental education for sustainability in the Gulf of Mexico Large Marine Ecosystem, trough the participation of important regional stakeholders and representatives from the Natural Protected Areas of the Coastal Plain and Gulf of Mexico Region.

This was a three-day workshop, where 46 participants from Mexican institutions such as the National Commission for Natural Protected Areas (CONANP), the Center for Education and Training on Sustainable Development (CECADESU), the Universidad del Carmen (UNACAR); US institutions (Gulf of Mexico Alliance, The National Oceanic and Atmospheric Administration, NOAA, and The Gulf of Mexico Foundation), and staff members of the Gulf of Mexico Large Marine Ecosystem Project worked together to gather inputs that will be used to integrate two documents: the Regional Program for Environmental Education in the Natural Protected Areas and the Regional Strategy for Environmental Education in the Gulf of Mexico Large Marine Ecosystem.

The first two days were dedicated to collect information through working groups and discussion tables in an informal format through a SWOT analysis that enabled the integration of a regional scope. Different readings were reviewed and discussed in order to create awareness about aspects such as unsustainable economic development, the need to modify consumption patterns and the importance of changing behaviors at all levels through education and public participation tools. Priority issues of important regional stakeholders were identified and possible solutions were addressed.

The third day was left for keynote speakers presentations: The first presentation was the experience of UNACAR in education programs for protecting mangroves and wetlands in Ciudad del Carmen, Campeche at different school levels. The second one addressed the experience that the Gulf of Mexico Alliance has had in the integration of the environmental education component since 2006, the importance of building working partnerships, and possible collaboration efforts between Mexican and US institutions regarding environmental education. The third presentation explained the Gulf of Mexico Foundation and its current activities related to environmental education. Possible collaboration efforts were identified such as a bi-national ocean cruise with high school teachers. Finally, the University of Veracruz participated with a lecture on education and climate change in which the need to carry out activities in order to change individual behaviors through environmental education was pointed out.

Main conclusions drawn from the workshop were the need to start an environmental education network to facilitate information exchange and promote team work activities, as well as the creation of a Regional Committee for Environmental Education that will be lead by the Gulf of Mexico Large Marine Ecosystem Project, CONANP and CECADESU.

Technical Workshop of the Pilot Project Enhancing Shrimp Production Through Ecosystem Based Management
12-13 September, 2010
Ciudad del Carmen, Campeche, Mexico

The shrimp fishery is the most valuable one in the Mexican Gulf. In the Campeche Sound the fishery has been steadily decreasing since the late seventies, today being practically collapsed. Several hypotheses have been postulated like habitat degradation, changes in primary productivity, food web changes (loss of ecological niche, competitive displacement), fishery-related issues (overfishing), recruitment (due to catastrophic events like volcanic eruptions, hurricanes, oil spills affecting recruitment), spatial effects on population (such as negative effects of the oil rigs exclusion zone), the shrimp's reproductive capacity being affected by pollution, and other direct and indirect effects of pollution (hydrocarbons, heavy metals, PCB's, pesticides, etc).

One of the objectives of this Pilot Project is to gather information that could give some light on the relative importance of these factors for the fishery's observed trends, as part of a broader assessment that include ecological modelling. Socioeconomic aspects of fisherfolk communities and local governance within an Ecosystem- Based Management approach will also be considered.

The workshop was carried out on 12-13 August in Ciudad del Carmen, Campeche, Mexico. Experts from NOAA, CICIMAR, EPOMEX, Metropolitan Autonomous University/IRD's Joint Environmental Study of Terminos Lagoon, among others, collaborating with the Pilot Project, made presentations ranging from fisheries management and assessment and sampling methods to wider ecosystem-related aspects. The Universidad Autonoma del Carmen (in whose facilities the workshop took place), the Instituto de Ciencias del Mar y Limnologia (ICMyL, Marine Sciences and Limnology Institute) field station in Ciudad del Carmen, and CONANP's Terminos Lagoon Natural Protected Area participated as well. The agenda was arranged in such a way as to permit interactions with the experts attending the seagrass experts workshop, organized by the Pilot Project Enhanced Natural Habitat Conservation in the coastal and marine areas of the Gulf of Mexico LME.

The first day agenda comprised talks that could be of interest for participants in both workshops. The last day comprised a common session to present the conclusions of both workshops and look for possible collaborations.Several paths of action and fields of collaboration were identified.

Meeting for the development of education, communication, awareness and participation programs for people living within wetland ecosystems
20 -22 September, 2010
Patzcuaro, Michoacan Mexico

The meeting was organized by SEMARNAT'S Center for Education and Training for Sustainable Development (CECADESU) with the aim of harmonizing activities of the Regional Centers for Developing Communication, Education, Participation and Awareness (CEPA Program of the RAMSAR Convention) with those of the National Commission for Natural Protected Areas and CECADESU. The CEPA program is a powerful tool for the conservation and wise use of wetlands. In this context, the GoM LME project was invited to participate in this meeting provided that there are important activities that can be strengthened in a joint collaboration since there are many shared objectives of each institution regarding environmental education and awareness-raising for people living within wetland ecosystems.
The meeting started with several presentations to introduce specific terms and concepts such as what is a RAMSAR site, which activities for education and awareness are already in place and where, and what are the main necessities of the CEPA programs. There were also work groups that reviewed the preliminary draft for education, participation, and awareness of people living within wetland ecosystems.
Finally, a visit to wetlands that are being used for cleaning water in a small community close to the Patzucaro Lagoon was organized during the last day of the meeting.
Main results were:

- All the participants agreed on a final draft for the Program for Education, Awareness and Public Participation of people living in wetlands.

- The GoM LME will be collaborating in future activities related to education awareness and participation in RAMSAR sites located in the Gulf of Mexico (Laguna Madre, La Mancha y el Llano, Ría Lagartos, Pantanos de Centla, Laguna de Términos, among others). It will be necessary to include these activities in the Environmental Education agenda for 2011.

- It was also suggested by the participant institutions that this program should be harmonized with other regional programs for environmental education and participation in the Gulf of Mexico as this will avoid duplication of efforts and facilitate possible joint collaborations.

International Forum "From the Rivers to the Gulf of Mexico: Towards an Ecosystem Based Management"
27—28 September 2010
Mexico, City

As part of its scope and activities, on 27-28 September 2010 the GoM LME Project hosted the international forum "From the Rivers to the Gulf of Mexico: Towards an Ecosystem Based Management" at the Camino Real Hotel, Pedregal, Mexico City. The Forum was designed to draw preliminary land-based marine pollution control strategies.

- Identify common environmental priorities and cross-border issues of concern
- Identify legal voids
- Build consensus towards river basin and coastal governance
- Promote "transversal agendas" and move towards sectoral integration
- Apply the Ecosystem Based Management approach in environmental policies

In order to achieve the forum's main goal, the worktables content and methodology were circumscribed to problems related to land-based marine pollution. A linkage with the SEMARNAT planning instrument "the Regional Ecological and Marine Spatial Zoning Program of the Gulf of Mexico and Caribbean Sea" (to be finished by the end of 2010) was chosen as a coherent starting point. From the list of problems related to land-based marine pollution presented in such document, the facilitation team explored and presented their cause-effect relationships (considering that it was far from complete or needed a change) with the aim of participants discussing which ones could be missing or changed when focusing on the entire management of the Gulf of Mexico.

A high number of missing problems were identified. Some examples are:

- Lack of monitoring
- Changes in ecosystem functioning
- Corruption
- Lack of security to work in certain areas
- Reluctance to share information between organizations, people, etc
- Ethnic groups conflicts and economic situation
- Environmental illiteracy
- Lack of integrated approaches
- Invasive species

A total of 17 strategies were developed in the worktables. They covered the following main themes: a) Land use management and erosion processes in the river basin; b) Agricultural practices; c) Hypoxia events; d) Urban wastewater; e) Industrial pollution; f) Integrated Coastal and River Basin Management; and g) Environmental education and awareness.

Some important comments were:

- Highlight the water quality issue on the zoning instrument
- Specific strategies depend on analysis of the situation of each watershed
- Need of science to define the problems and stakeholder participation to develop the strategies (bottom-up approach, eg. planning by communities or different stakeholders, inter and intra-disciplinary)
- Monitoring in the context of adaptive management

The objectives of the forum were achieved. The forum finalized with a work agenda to carry on the discussions and agreements reached by participants. Key participants will be invited to the working group (early 2011) aimed at taking it to the next level (from strategies to action plan).

The participants input will be incorporated by SEMARNAT in the Ecological Territorial and Marine Zoning Planning Instrument that will come available in the coming months.

The first preliminary version will be sent in mid November and is intended to be reviewed by all the participants with the aim of further comment on the content. The due date to send corrections and comments is December 06, 2010.

Gerardo Gold-Bouchot

Post title: **Pilot Project Coordinator** (Joint assessment and monitoring of coastal conditions in the Gulf of Mexico).

Key Qualifications: Long experience in marine pollution monitoring projects in Mexico, particularly in the Gulf of Mexico. Experience in determination of contaminants in marine environments with expertise in the analysis of biomarkers of contamination. Experience working in international projects concerning environmental monitoring. Past president and vicepresident of the Society of Environmental Toxicology and Chemistry (SETAC) Latin America chapter, and founding vicepresident of Asociación Mesoamericana de Toxicología y Química Ambiental (AMEQA). Member of the Pool of Experts of GESAMP, and member until the end of the IOCARIBE/UNESCO Regional Group of Experts on Marine Pollution of the Wider Caribbean. Coordinated the planning phase (PDF-B) of the project A Transboundary Diagnostic Analysis and Strategic Action Programme for the Gulf of Mexico Large Marine Ecosystem. Former director of the Merida campus of Cinvestav. National Resercher Level 2.

His functions in the project are to coordinate all activities.

Fluent in English and Spanish.

Specialties: Marine Environmental Monitoring, Marine Pollution, Ecotoxicology.

Virginia García-Ríos

Post title: **Pilot Project Technical Assistant** (Joint assessment and monitoring of coastal conditions in the Gulf of Mexico).
Key Qualifications: Involvement in pollution monitoring projects in Mexico, with a strong education background in marine pollution with a main focus in metals: Masters degree in Marine Biology (thesis topic metals in sediments in Chetumal Bay), PhD in Marine Science with the study of responses of macroalgae to metal exposure published in the top journal in the field. Wide experience in determination of contaminants in marine environments and expertise in analysis of biomarkers of contamination. Experience working in cooperation internationally on projects concerning environmental monitoring. Participation in the planning phase (PDF-B) of the project A Transboundary Diagnostic Analysis and Strategic Action Programme for the Gulf of Mexico Large Marine Ecosystem.
Her functions in the project are providing support in the technical development of the pilot project and the experts' coordination.
Fluent in English and Spanish.
Specialties: Marine Environmental Monitoring, Marine Pollution, Ecotoxicology.

NAME	DATES	VENUE
First Mexican Congress on Mangrove Ecosystems	25—29 October	Merida, Yucatan
Baseline Sampling of Joint Assessment and Monitoring of Coastal Conditions in the Gulf of Mexico Pilot Project	25—31 October	Ciudad del Carmen, Mexico
Firts Regional Academic Encounter and Training Course: Mangrove Restorarion	8—12 November	Ciudad del Carmen, Mexico
Scientific Study Group Meeting for the Design of Marine Protected Areas Networks in the Context of Climate Change	15—19 November	Woods Hole, Massachusetts
Probabilistics Sampling Desing Trainig Course	22—25 November	Merida Yucatan