
# E-News Bulletin

## Gulf of Mexico Large Marine Ecosystem (GoM LME)

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## Gulf of Mexico
## Large Marine Ecosystem
## (GoM LME)




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NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

UNIDO

SEMARNAT
SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES

# VI Clean Beaches National Conference

The main objective of the Clean Beaches National Program is to promote the recovery of coastal areas, beaches and watersheds, gullies, aquifers, and associated water-receiving bodies, as well as to prevent and lessen pollution with the aim of protecting and preserving the Mexican beaches, respecting native ecology, and enhancing the quality and standard of living of local people, leveraging tourism, and fostering the competitiveness of beaches.

This is a joint effort from several federal agencies such as the Ministry of Health, the Ministry of Environment and Natural Resources, the Ministry of Tourism, the Ministry of Education, and the National Council for Science and Technology, who work together to promote specific actions and enhance their crosscutting impact in coastal areas.

The GoM-LME participated during this event, making a presentation in Panel no. 8 called "Perspectives and actions for the sustainable development of coastal and marine areas of Mexico".

Representing the GoM-LME, Dr. Porfirio Alvarez introduced the project under the title *Show romanization "Coastal Management in a Transboundary Context: The Large Marine Ecosystem of the Gulf of Mexico"*.

The presentation covered a regional vision (as part of the Great Caribbean), as well as a sub-regional scale (within the Gulf of Mexico LME itself), where many of the participants are conducting local actions to clean beaches. In this context, it was pointed out that there are large quantities of contaminants released through domestic residual waters into the Gulf of Mexico coastal areas contributing with large amounts of nutrients such as nitrogen and phosphorus.

Considering the importance of non-point sources of marine pollution derived from agriculture and livestock practices, the GoM-LME presentation stressed the importance of inviting the authorities responsible for agricultural policies such as the Ministry of Agriculture (SAGARPA), to the next VII Clean Beaches National Conference, as they are a crucial stakeholder in the topic (contaminant practices from upstream to downstream) and they have not been considered yet.

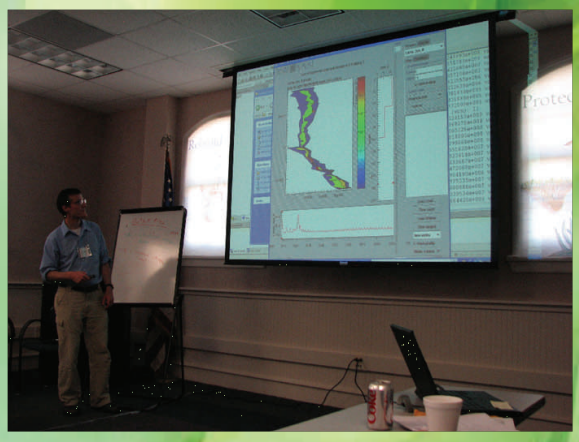
# ATLANTIS workshop held in NOAA's Galveston Laboratory.

The adoption of Ecosystem Based Management, the main objective of the GOM LME project, requires a solid support of scientific advice for the decision-making process. In particular, regarding fisheries management, the increased awareness of the importance of taking into account interactions among fishery resources and the ecosystem in fisheries management has prompted the need to improve the knowledge base on how ecosystems function, including how they are impacted by marine capture fisheries. Over time this has led to the development of different approaches for the modeling of ecological interactions in marine ecosystems exploited by fisheries.

With the aim of strengthening its ecosystem modeling capabilities, the National Oceanic and Atmospheric Administration, NOAA organized an ATLANTIS Modeling Workshop at NOAA's Fisheries Galveston Laboratory on 7-9 June, 2010. Personnel from Mexico's Ministry of Environment and Natural Resources, SEMARNAT and the GoM LME project were invited to attend the workshop. The speakers/instructors (Isaac Kaplan, Hem Morzaria, Cameron Ainsworth, and Phil Levin) clearly presented themes ranging from technical details and procedures, to the strategic implications for the use of this kind of tools.

ATLANTIS, developed from the ''Bay Model 2'' ecosystem model (Fulton et al., 2004), is a deterministic model that tracks the nutrient (v.gr. Ntrogen) trough the main biological groups found in marine ecosystems and three detritus groups (labile detritus, refractory detritus, and carrion). From a model comprising only up to the primary producers, it has been expanded to incorporate vertebrate and invertebrate functional groups, fisheries and the effect of management. The invertebrate and primary producer groups are simulated using aggregate biomass pools, while the vertebrates are represented through age-structured models. The primary processes considered are consumption, production, waste production, migration, predation, recruitment, habitat dependence, and natural and fishing mortality. ATLANTIS is spatially resolved, with a polygonal geometry that matches the major geographical features of the system simulated. The size of each polygon reflects the extent of spatial homogeneity in the physical variables represented in the model (depth, seabed type, canyon coverage, porosity, bottom stress, erosion rate, salinity, light, and temperature.

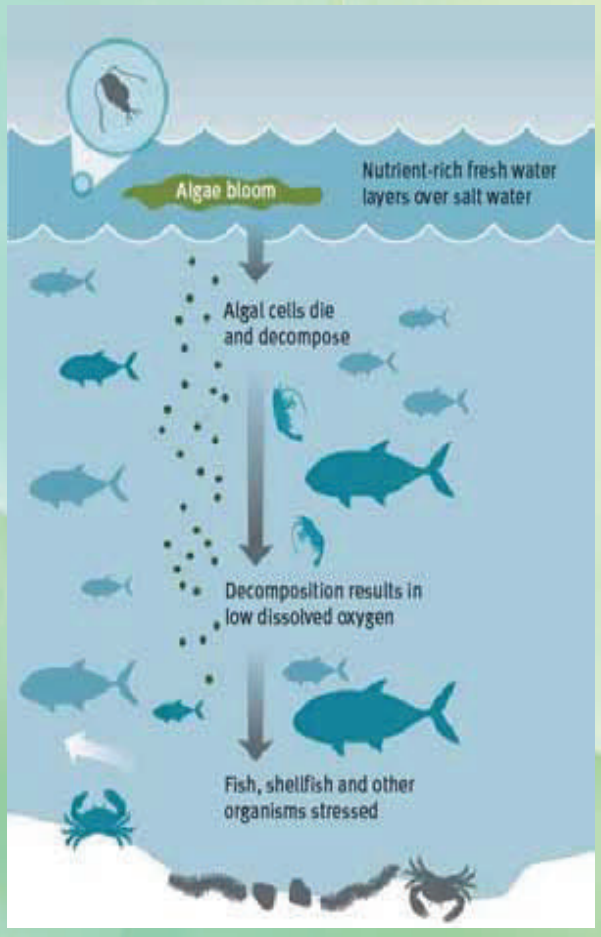
ATLANTIS, as well as Ecopath/Ecosim or other ecosystem models, should be used under a "strategic", rather than "tactic", approach. That is, general insights over system behavior (v.gr. "this group of species should go up if this management scheme is adopted") rather than numerically precise predictions are to be expected as outputs. Researchers and managers should use these results as guidance in decision-making processes that involve ecosystem-wide repercusions or trends.



# GEF STAP experts panel meeting consultation on hypoxia in coastal waters

The GoM-LME project participated in GEF STAP Workshop on Hypoxia. Strategic positioning of the GoM-LME project in the context of the planned GEF intervention to reduce hypoxia was achieved.

The meeting was attended by US scientists such as Robert Diaz, Gene Turner, Meryl Williams, Douglas Taylor, and many others from around the world who contribute to the enrichment of management options to deal with Hypoxia and to build a STAP GEF document on hypoxia that will help managers to deal with it and to highlight the importance of Nitrogen and Phosphorus cycle in the oceans.

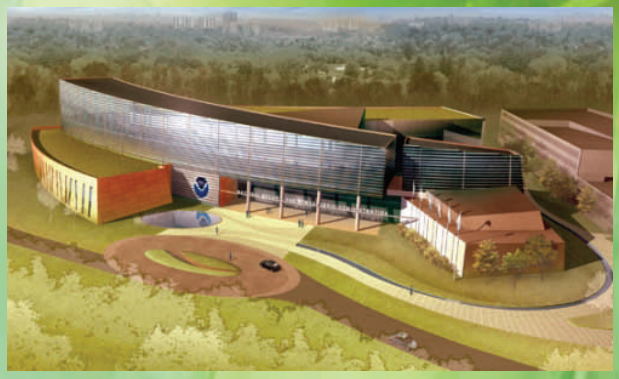



The discussions were very interesting and the GoM-LME proposed-agenda to be discussed during the GoM-LME Regional International Forum (From the Rivers to the Gulf of Mexico, to be held in September 27-29, 2010) seem to be well tuned with its objectives and scope.

# Meeting with NOAA

The objective of such meeting was to share views on the GoM-LME project and its current activities as to strengthen future collaboration between the US focal point and the GoM-LME project. The overall goals of the GoM-LME project were to explain and update Dr. Robinson on the great participation the GoM-LME had from both countries to implement the project.

Furthermore, views on the environmental impacts in the marine and coastal areas due to the current oil spill issue were exchanged and concern was particularly expressed. Dr Robinson clearly pointed out that the US government has been providing open information to the public and that there are good signs of collaboration at all levels.



# First Summer Workshop on Governance for the Gulf of Mexico

The Harte Research Institute for Gulf of Mexico Studies at Texas A&M University Corpus Christi (TAMUCC HRI) and the GoM Large Marine Ecosystem Project co-organized an international educational initiative in pursuing the mission of supporting and advancing the long-term sustainable use and conservation of the Gulf of Mexico with two main objectives:

1. Analyze the institutional and legal frameworks of Mexico, Cuba and U.S. related to the establishment of Marine Protected Areas (MPAs).

2. Provide participants with an integrated view of the most relevant issues on international resource management and conservation policies in the Gulf of Mexico LME region.

The workshop took place at the Harte Research Institute facilities in Corpus Christi, Texas, US, with the participation of several authorities from Mexican, Cuban and US federal agencies related to marine protected areas, as well as students from different universities, representatives from NGO's and academic institutions, and personnel of the Gulf of Mexico Large Marine Ecosystem Project.

Activities were structured in a one-week long course/workshop format in which several lectures and presentations from experts were made during morning sessions and time for open discussion was left in the afternoons.

Key questions/topics were thrown in advance and addressed on each day during the workshop. These were the basis for further discussion/analysis.

As a result of the workshop, several tri-national working petite committees were created to follow-up on the below mentioned take-home messages and activities that were agreed upon:


**Information**

- Need to gather all currently available MPA information (e.g. geospatial data, GIS)

Regional gap analysis

**Education and outreach**

- Compilation of legal framework and other MPA resources for a website with other potential topics to address, such as: environment and science, socio-economics, institutional issues, legal framework, and management tools.

Exchange visitations to current and potential MPAs/NPAs

**Connectivity issues**

- Public awareness campaign
- Standard methodology for conducting scientific research
- Lion fish
- Whale shark
- Ocean acidification

**Other action items**

- Funding
- Indicator tools to measure progress, effectiveness, and success.

# Consultation on Operationalisation of the Caribbean Sea Commission

# "Building a science-policy interface for ocean governance in the Wider Caribbean"

The Expert Consultation on Operationalisation of the Caribbean Sea Commission "Building a science-policy interface for ocean governance in the Wider Caribbean" was held in Barbados in July 7-9, 2010 with a wide participation of regional organizations, institutions and experts, among distinguished participants attending the consultation were: Ambassador Andrade Falla Luis Fernando, Secretary General Association of Caribbean States (ACS), Ambassador Garcia Diaz, Valeriano Jesus, Head of Delegation of the European Commission in Barbados and the Eastern Caribbean, Mr. Nicholas Cox, Caribbean CARICOM Division Ministry of Foreign Affairs and Foreign Trade, Ambassador Pyhälä, Mikko, Finland and Finland's representative to CARICOM and the OECS, Caracas, Venezuela, Dr. Paul Sammarco, Executive Director Association of Marine Laboratories of the Caribbean (AMLC) and Professor Louisiana Universities Marine Consortium (LUMCON).


Representatives of different organizations such as Conservation International, GEF-GoMLME Project, GEF-IWCAM Project, GEF-CLME Project, IUCN, SICA, OSPESCA, Caribbean Fishery Management Council, CARICOM, The Cropper Foundation, University of Cumana, INVEMAR Colombia, University of South Florida among many other institutions. A meeting conducted and leaded by Professor Robin Mahon, Director of Marine Affairs CERMES University of the West Indies Barbados.

The Expert Consultation on 'Operationalisation of the Caribbean Sea Commission - Building a science-policy interface for ocean governance in the Wider Caribbean,' is being held to carry forward the process of establishing the CSC and its functions.

The GoM LME project coordinator Dr. Porfirio Alvarez was invited by the organizers as an expert to present an overall review on the current process for developing scientific research and information for the decision making in Mexico in regard to marine and coastal issues.

The Association of Caribbean States (ACS) has been pursuing the Caribbean Sea Initiative since 1998 through the promotion of the UN Resolution 'Towards the sustainable development of the Caribbean Sea for present and future generations' at the UN General Assembly. An outcome of this process was the establishment of the Caribbean Sea Commission (CSC) in 2008 as a body to promote and oversee the sustainable use of the Caribbean Sea. Since its establishment the ACS and CSC have been working towards developing appropriate structures and arrangements for the work of the CSC. The CSC could benefit from linking the establishment of its own regional mechanism to the global process and harmonizing its outputs so that they can contribute directly to the latter.

The CSC comprises a number of national representatives and expert members. It reports directly to the ACS Council of Ministers. Barbados is the current Chair of the CSC and Guatemala is Vice Chair.

The operation of the CSC is supported by three Sub-commissions:

- Scientific and Technical Subcommission;
- Governance, Outreach and Public Information Subcommission;
- Legal Subcommission.

The key function of the Subcommissions is to acquire and synthesize of information relevant to ocean governance in the Wider Caribbean Region (ACS region) and based on this to provide policy advice to the CSC for review and onward communication to the Council of Ministers.

The current challenge is to develop and operationalise the mechanism by which (1) the Subcommissions will be able to fulfill their function, and (2) the CSC proper will review the information provided, transform it into advice for the ACS Council and facilitate feedback from the council through the Sub-commissions to stakeholders in the region.

As currently proposed the overall mechanism would have the following characteristics:

- It would make best use of the full range of information and expertise available in the region by creating an effective network;
- It would allow for communication and information flow in two directions (1) upwards from information sources through synthesis mechanism to policy makers and (2) downwards, the reverse direction, for feedback and queries;
- It would be regular and transparent.
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The next steps are to operationalise these arrangements. This is envisaged as being initiated through a first phase of four years duration with a focus on living marine resources of the Wider Caribbean Region, including their linkages with productive sectors such as fisheries and tourism, and with reference to the threats posed by climate change.

Congratulations to The University of West Indies and the CSC for their excellent results of the Expert Consultation.

# 8th International course on structure and function of mangrove forests: updated concepts and their application on restoration and rehabilitation of the coastal zone.

Mangrove forests are one of the most productive biological communities in coastal zones; however, their coverage has been drastically reduced over the last 20 years in the tropical Americas. This reduction results mainly from human-made impacts such as tourist and urban development, road construction, and the expansion of land for agriculture and aquaculture. Although the critical ecological role that mangrove ecosystems play in maintaining fisheries and water quality, among other functions, is recognized at present, information on mechanisms that control their functioning (e.g. productivity, nutrient flow, etc.), is limited.

Within this scenario, for the last seven years the Center for Research and Advanced Studies (CINVESTAV) has been offering a course that aims at reviewing and applying ecological concepts such as ecological succession, biogeochemical cycles and ecophysiology, which are key to understanding and assessing anthropogenic and nature-caused effects (e.g. hurricanes, and El Niño and La Niña phenomena) within a rehabilitation and restoration context.

This year's eighth edition of the course was co-sponsored by the Gulf of Mexico Large Marine Ecosystem Project, Ducks Unlimited of Mexico, and the Center for Scientific Research of Yucatan.

The main objectives of the course were to provide participants with theoretical and practical training to understand how nutrient cycles and hydrology are linked with mangrove forest productivity; evaluate the difference between the concepts of restoration and rehabilitation, and their use in the development of management plans; understand the variations of the structure and functioning of mangrove communities that depend on a combination of geophysical, geomorphologic, and ecological processes; and identify the proper methods to apply in evaluating the structure and productivity of mangrove forests considering spatial and temporal scales within coastal management plans.

Fourteen participants from Mexico, Colombia, and Panama with a wide range of backgrounds including Masters and Ph.D. students, researchers from regional institutions, technicians, NGO's staff, and local government officials, received 50 effective hours of on-site training organized in 6 units covering topics such as:

- Hydrology of coastal wetlands, sediments, typology, structure and function.
- Echophysiology, hydraulic balance, nutrition balance, saline balance, photosynthesis.
- Impacts, restoration and rehabilitation: hurricanes, floods, aquaculture, oil spills.
- Biogeochemical cycles and global climate change.

The training can be grouped into two main areas:

| TECHNICAL — SCIENTIFIC | MANAGEMENT |
|---|---|
| Characterization | Ecological restoration |
| Diagnostic | Conservation |
| Processes | Impact-rehabilitation |
| Indicators | Adaptation |
| Monitoring | Mitigation |

A field visit to Celestun coastal lagoon in the Yucatan Gulf of Mexico was conducted so that participants could perform a comparative analysis of the vertical structure and floristic composition of the different mangrove communities along a 200m transect perpendicular to the coast. The structural and floristic analysis was complemented with the measurements of an array of environmental variables associated to interstitial water of the first 25cm of soil (salinity, pH, redox potential, edaphic substrate type, soil texture; depth and thickness of the organic horizon, frequency, and duration of tidal flooding).

As a result of the training course, participants have gained a better understanding on the variations of the structure and functioning of mangrove communities, thus strengthening their capacities for the design, implementation, and re-orientation of strategies and actions for conservation, restoration, sustainable use and management of mangrove ecosystems in the region.

# Project Coordination Unit Staff

**Post title:** Chief technical advisor
**Name:** Porfirio Álvarez Torres

**Key qualifications:**
Experience with public and private sector related to coastal and marine resources management, with emphasis in fisheries and sustainable aquaculture, ocean policy development, regional and sectoral integration processes, environmental policy development, and international marine affairs. Strong leadership to establish cooperation with and among institutions related to coastal and maritime affairs.

**Background and professional experience:**
Biologist from the Metropolitan Autonomous University of Mexico (1978-1982), masters and doctorate in Fisheries Science (Tokyo University of Marine Science and Technology of Japan, 1988-1994). Regional coordinator for inland aquaculture projects in rural areas of Hidalgo State, in Mexico (1982-1984). Assistant professor and researcher in coastal lagoons and estuaries of the Gulf of Mexico (Autonomous Metropolitan University, 1984-1986). Research fellow in marine aquaculture at Ube Junior College, Yamaguchi Prefecture, Japan (1986-1987). Served as a Director General for Research in Aquaculture at the National Fisheries Institute (1995-2001) participating in the development of the national fisheries chart of Mexico and promotion of sustainable aquaculture. Deputy director for regional and sectoral integration at the Ministry of Environment and Natural Resources of Mexico Leader of the design and implementation of management strategies and public policies oriented to the conservation of marine resources and the integrated management of coastal areas of Mexico. Lead SEMARNAT´s task force to develop the national policy for oceans and coasts and the national strategy for the sea and land use planning of Mexico, in charge of the marine zoning process for the Gulf of Mexico and Caribbean Sea region. Directed the development of Mexico´s ocean policy, built under the ecosystem based management approach. Lead the design and implementation of the National Interministerial Commission for the Sustainable Development of Oceans and Coasts (CIMARES) and currently advisor to this commission (SEMARNAT, 2004-2009). Has participated in the construction of GEF funded Binational (Mex-US) Project “Gulf of Mexico Large Marine Ecosystem" (2005-2009), and has represented Mexico in several UN forums and other international conventions related to ocean and coastal issues.

**Specialties:**
Marine and coastal areas resources management, fisheries, aquaculture, environmental policy, ocean policy, land and sea use planning and management, stakeholder involvement, public administration.

Fluent in English, Spanish and Japanese.

# Upcoming events (August, September)

| NAME | DATES | VENUE |
|---|---|---|
| Implementation and integration workshop of the Gulf of Mexico Alliance | 2—5 August | Biloxi, Mississippi |
| Bi– national (MEX– US) Meeting on GoM Deepwater Horizon Oil Spill | 4 August | Washington, D.C |
| Introduction to Monitoring Techniques and Sampling Desing Training Course | 4—6 August | Merida, Yucatan |
| Mangrove Restoration Workshop and Identification of Management Needs at the local level | 11—13 August | Cd. Del Carmen, Campeche |
| Technical Workshop of the Pilot Project: Enchancing Shrimp Production through Ecosystem—Based Management | 12—13 August | Cd. Del Carmen, Campeche |
| Bi—national workshop Meeting on seagrass experts | 12—13 August | Cd. Del Carmen, Campeche |
| GCOOS Board Meeting | 17—18 August | Biloxi, Mississippi |
| Oceanographic Monitoring Cruise in the Hypoxia Area of the Gulf of Mexico | 21—25 August | Louisiana (LUMCON Pelican Vessel) |
| Presentation of the National Strategy of Invasive Species and Biodiversity<br>Hotspots Workshop | 7—8 September | Mexico City |
| Environmental Education Workshop | 8—10 September | Veracruz, Veracruz |
| International Forum “From the Rivers to the Gulf of Mexico: Towards an<br>Ecosystem Management Approach” | 27—28 September | Mexico City |
| International Forum on Water | 29 September—1 October | Mexico City |