



Support for the Establishment of Effectively Managed Platform Sites as Foundations for Resilient Networks of Functionally-Connected Marine Protected Areas

Meso-American Reef – Belize, Guatemala, Honduras, and Mexico

FY05 Annual Report

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Objective 1	Develop science and technical understanding needed to build resilience in the face of local threats and global change into the MAR network of marine protected areas.		
1.1	Identify and monitor priority spawning aggregation sites		
1.1.1	<i>Finalize criteria for prioritizing SPAGs; apply criteria to ground-truthed sites in Belize</i>	Completed	
1.1.2	<i>Define initial field assessment priorities for SPAG conservation</i>	Completed	
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1.1.4	<i>Spawning aggregation site evaluation and monitoring</i>	On-track	
1.1.5	<i>Complete a desktop study to establish threshold level of Nassau Grouper populations and determine its requirements for special management as a critically endangered target</i>	Delayed	
1.2	Initial application and field testing of bleaching resistant tools	Delayed	
1.3	Improved understanding of connectivity within the MAR		
1.3.1	<i>Integrate connectivity information and models into Caribbean-wide and MAR ecoregional planning</i>	Mixed Performance	
1.3.2	<i>Improve understanding of fine-scale oceanic circulation and its impacts on larval distribution.</i>	Mixed Performance	
1.3.3	<i>Improved understanding of fish migration patterns and site fidelity on the MAR.</i>	Delayed	

Objective 2	Help local partners improve the management and effectiveness of three platform MPAs strategically selected within the MAR network.		
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2.2	Improve the management of Gladden Spit MPA		
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2.2.2	<i>Conduct a Socio-economic assessment for Gladden Spit</i>	On-track	
2.2.3	<i>Implementation of key organizational sustainability strategies.</i>	Delayed	
2.3	Improve the management of Cayos Cochinos, Honduras	On-track	
2.4	Improve the management of Sian Ka'an Reserve, Mexico		
2.4.1	<i>Support completion of the management plan for the Reserve</i>	Completed	
2.4.2	<i>Complete threat abatement and biodiversity health measures for Sian Ka'an.</i>	On-track	
2.4.3	<i>Support the implementation of the land use zoning planning (OET) to control development densities along the beaches and dunes of Sian Ka'an</i>	Mixed Performance	
Objective 3	Establish a "virtual" Learning Center that convenes training courses, promotes exchanges, and facilitates coordination among the four MAR countries.		
3.1	Train MPA managers and planners from partner organizations to apply resilience principles to MPA design and management.		
3.1.1	<i>Develop training modules for the Tulum +8 Conference in September 2005/ Revised activity: Incorporate stakeholder priorities into the Tulum +8 agenda</i>	*Original act. Cancelled/Revised act. Completed	

3.1.2	<i>Train practitioners present at the Tulum +8 event</i>	Cancelled	
3.2	Provide fishers and other community members currently engaged in unsustainable uses of marine resources with appropriate training that will enable them to obtain employment in alternative, sustainable livelihood activities.		
3.2.1	<i>Evaluate results to date of fishers training program</i>	Delayed	
3.2.2	<i>Develop baseline of current capacities in communities</i>	Delayed	
3.2.3	<i>Revise economic livelihood training agenda to support community development based on evaluation, baseline information, needs assessment and desired outcomes.</i>	Delayed	
3.3	Complete the development of a conceptual and administrative framework for the Learning Center.		
3.3.1	<i>Develop a demand driven five-year curriculum for the Learning Center that outlines course offerings under key thematic areas of marine protected areas management effectiveness, successful threat abatement strategies (inclusive of alternative livelihood development), and community engagement.</i>	Delayed	
3.3.2	<i>Implement an abridged curriculum of course offerings based on existing capacities and resources.</i>	Delayed	
Objective 4	A MAR ecoregional plan is adopted and implemented that reflects agreement by all key conservation partners (local and international NGOs, government agencies and donors) on priority programs and activities, with the sharing of scientific and program data;		
4.1	Sign MOU with relevant collaborators for data sharing, assemble existing data sets, and analyze for compatibility issues	On-track	

	and gaps.		
4.2	Using updated target information and viability analysis, set target goals.	Delayed	
4.3	Using MARXAN/SPOT analysis, assemble updated optimal portfolio of sites using spatially described threats, target goals.	Delayed	
4.4	Increase understanding of regional macro socio-economic trends and develop a strategy to address the priority threats and opportunities at a MAR wide scale.	Delayed	
4.5	Develop a policy agenda for the MAR with TNC policy specialists, local staff and partners.	Cancelled	
Objective 5	Assure that field activities are effectively and efficiently supported and coordinated.		
5.1	Program Coordination and Management	On-track	

**Support for the Establishment of Effectively Managed Platform Sites as
Foundations for Resilient Networks of
Functionally-Connected Marine Protected Areas in the Meso-American Reef
*Belize, Guatemala, Honduras, and Mexico***

FY2005 GCP Progress Report

1. PROJECT BACKGROUND

The Mesoamerican Reef, the second largest coral reef system in the world, stretches for 625 miles along the coastline of Belize and parts of Mexico, Honduras and Guatemala. Lying just below the surface of the Caribbean Sea, the Mesoamerican Reef represents the best example of coral reef and mangrove diversity in the Atlantic realm. The reef is home to 66 species of coral, spiny lobsters, green moray eels, reef fish and a wide variety of other sea life including whale sharks – the largest fish in the ocean. Closer to land, sea turtles and Central America’s largest population of endangered manatees find shelter in mangrove habitats and sea grass meadows.

Although it plays an essential role in marine habitats and local communities, the Mesoamerican Reef is showing alarming signs of distress. Burgeoning tourism has invited additional coastal development and souvenir seekers to the reef. Forest clearing for agriculture has removed natural water filters, allowing silt, fertilizers and additional pollution to reach the sea. Growing intensity and frequency of fishing, especially at fragile fish spawning aggregation sites, is taxing the ecosystem. Global climate change has accelerated coral bleaching, a phenomenon threatening reefs with extinction.

Fortunately, considerable opportunities exist for conserving the Mesoamerican Reef. Each of the neighboring nations continues to promote sustainable development as part of its voluntary commitment to the Convention on Biological Diversity. Having established a strong presence in the region resulting from groundbreaking science used to shed light on the natural phenomena surrounding fish spawning aggregations, the Conservancy has included the Mesoamerican Reef in its goal to conserve a measurable amount of each of the Earth’s major habitat types by 2015. The Mesoamerican Reef is one of only three marine sites already identified for inclusion in the 2015 goal, which testifies to its significance.

Within this vision, the Nature Conservancy is working in collaboration with a coalition of stakeholders from the public and private sectors to achieve specific conservation objectives in the near term. Through the Global Conservation Program these include:

- A MAR ecoregional plan is adopted and implemented that reflects agreement by all key conservation partners (local and international NGOs, government agencies and donors) on priority programs and activities, adoption of conservation best practices, and sharing of scientific and program data.
- Four MPA platform sites, one on each country, are well managed by local partners and serve as examples of effective conservation and management for other protected areas within the MAR regional MPA network.

- All high priority reef fish spawning aggregation (SPAG) sites throughout the MAR are identified and monitored, and stocks of target fish species are stable or increasing at priority SPAG sites.
- Bleaching resistant areas of suitable sizes, scales, and distribution to replenish corals within the MAR system are identified and protected.
- The technical, managerial and marine science skills of at least 2,000 people are enhanced and result in improved MPA management, new economic opportunities for fishers and their families, more effective community leaders and conservation activists, and improved scientific understanding by both private and public stakeholders.
- The Alternative Economic Livelihood Program will be enhanced to meet the challenge of working at a MAR-wide scale to reduce the threat of over-fishing and allow fishers to benefit from the new economic opportunities that now present themselves. The expanded MAR Learning Center concept will be realized, dove-tailed with the alternative economic livelihood program and foster greater regional collaboration through training, exchanges and the sharing of experience, information and data.

2. Overall Assessment of Progress and Management Issues

The Nature Conservancy has made significant progress on its core objectives for the MAR over the past years, mostly characterized by the need to:

- 1) Go to scale and expand conservation efforts beyond the Conservancy's initial MAR focus on Belize;
- 2) Stabilize and strengthen capacity for conservation along the MAR despite numerous TNC and partner transitions;
- 3) Consolidate and focus the Conservancy's science and research program and ensure it was effectively applied toward conservation outcomes;
- 4) Build on the success and momentum generated through the establishment of 11 marine reserves based on spawning aggregations in Belize.

Given these considerations, the Conservancy, in collaboration with key conservation partners and stakeholders, achieved the following:

- 1) Enhanced structure and capacity to identify and monitor the health of critical spawning aggregation sites throughout the Meso-American Reef through the publication (in both Spanish and English) of the Spawning Aggregations Monitoring Protocol and the release of the Spawning Aggregations database 2.0 that has been validated by local stakeholders which will ensure the standardized entry of SPAGs-related monitoring data for consolidation and analysis;
- 2) A framework for developing the innovative MAR Learning Center is almost complete. The TOR for the Center's Coordinator, a contract including a capacity and needs assessment, analysis of appropriate delivery mechanisms, inclusion of best practices of similar efforts in other regions, and curriculum has been completed;
- 3) Completion of resilience and coral monitoring training sessions that will lead to the integration of resilience principles into standard management effectiveness methods and

- 4) Revised deep water oceanographic circulation model for the MAR Region critical to understanding and developing predictive models for larval transport important to protecting the full life cycles of target reef fish species completed;
- 5) Preliminary assessment of potential for spawning aggregations completed in Mexico and Honduras.

While these were important results in the second year of implementation, there have been important challenges and other management issues and lessons learned that will be incorporated in the third year of implementation. The Conservancy will ensure that effective strategies are in place to mitigate or plan for the often inevitable loss of critical staff in partner organizations and government agencies, in particular those upon which our work heavily relies. Furthermore, considering an external assessment of SPAGs monitoring methods and data generated, the Conservancy will revise, refine and focus its approach to SPAGs monitoring to ensure that these efforts are yielding the information needed to support conservation priorities and outcomes. Finally, based on an internal capacity assessment, the application of platform site criteria and stakeholder consultations, the Conservancy will consolidate and leverage efforts to effectively conserve three in lieu of five platform sites originally planned, while utilizing the virtual Learning Center as a delivery mechanism to share best practices and improve livelihoods along the Meso-American Reef.

Finally, since Nestor Windevoxhel was selected as the new MAR Director in mid-September 2004, a Program Coordinator who oversees the program's administrative and financial matters, a Marine Conservation Scientist to lead the conservation efforts in the region, and a very experienced Technical Coordinator have been hired. The Program is in the process of hiring the Learning Center Coordinator, who is expected to join the team in late October 2005. With the MAR Program staff now almost complete, we expect to bring a slow starting program up to speed.

Implementation Report

Objective 1: Develop science and technical understanding needed to build resilience in the face of local threats and global change into the MAR network of marine protected areas.

Activity 1.1: Identify and monitor priority spawning aggregation sites

Activity 1.1.1. Finalize criteria for prioritizing SPAGs; apply criteria to ground-truthed sites in Belize

Results Anticipated in FY05:

- Criteria finalized with experts (SPAGs working group in BZ, MBRS and other partners) for prioritizing SPAG sites for monitoring and protection;
- Priority sites identified for Belize using criteria.

The MAR program has worked with the Belize Spawning Aggregation Working Group to review and validate the criteria for prioritization of spawning aggregations. Recommendations and comments were solicited from group members at several meetings and incorporated into the criteria.

Activity 1.1.2. Define initial field assessment priorities for SPAG conservation

Results Anticipated in FY05:

- Initial priorities for field SPAG site assessment defined for Mexico and Honduras

In January 2005, the MAR program, along with key local stakeholders including Amigos de Sian Ka'an and CONANP, held a workshop in Cancun, Mexico to review and validate the criteria for prioritization of SPAG sites in Mexico. During the meeting 39 SPAG areas were identified in the Yucatan coast, of which more than half were not validated in the field.. All existing data for the Yucatan coast was reviewed and the criteria applied. The participants concluded that SPAG sites in northern Sian Ka'an would be verified and monitored first. Two sites of highest priority (Punta Pajaros and San Juan) in northern Sian Ka'an were field-verified and evaluated during a training workshop held in Punta Allen. Participants included CONANP and Amigos de Sian Ka'an staff, as well as local fishermen.

In May 2005, the MAR program, TNC Honduras Country Program, Honduran Coral Reef Fund and key local stakeholders from the North Coast of Honduras held a workshop in La Ceiba, Honduras to review the existing Reef Fish Spawning Aggregation Monitoring Protocol for prioritization of SPAG sites along the North Coast of Honduras. During the meeting 19 SPAG sites were identified in the Honduras coast, but none of them were validated in the field. The analysis and discussions surrounding the Protocol set the stage for the identification of potential SPAG sites in Honduras. Existing information was reviewed for the selection of potential sites for verification and monitoring programs. Two high priority sites (Punta Pelicano and Roatan Banks) were field-verified and evaluated during a training workshop that followed at Cayos Cochinos. This event also included on-site training on SPAG monitoring techniques.

Activity 1.1.3. Spawning aggregation monitoring protocol development

Results Anticipated in FY05:

- Monitoring protocol is peer reviewed and revised as appropriate and expanded to four countries

The Monitoring Protocol was peer reviewed by a broad group of stakeholders, including members of the Belize SPAGs working group, and regional stakeholders from Mexico and Honduras. It was officially adopted by the MBRS project and is used to conduct monitoring in the MBRS countries. It is available in both English and Spanish.

Given the substantial findings from the SPAGs research, Dr. Kevin Rhodes was hired to conduct an even more careful and thorough review of the protocol to ensure that comprehensive revisions are in place through coordination with the MAR Program Director, Belize SPAGs working group and MBRS. As a result, Dr. Rhodes produced version 3.0 of the protocol that includes extensive

reviews and assessments of local practitioner needs and monitoring potential, based on likely resource availability. Fishermen, dive guides, students, research scientists, marine biologists, fisheries managers, marine reserve rangers, government and non-governmental agencies who used the earlier draft provided recommendations and comments that were incorporated into this final document.

Activity 1.1.4. Spawning aggregation site evaluation and monitoring

Results Anticipated in FY05:

- Monitoring protocol being used to identify and evaluate at least 8 new SPAG sites (in addition to 16 identified already, for a total of 24 potential priority sites identified and evaluated throughout the MAR system).
- At least 8 sites being monitoring bi-annually

TNC, with key local stakeholders, conducted training sessions using the protocol to identify and evaluate sites in northern Sian Ka'an and three sites in Honduras (Punta Pelicano, Roatan Banks and Mariposales). In Belize, the MBRS project used the protocol to conduct monitoring activities at Sapodilla Cayes, Halfmoon Caye and Rocky Point, as well as two sites in Mexico. TNC has supported SPAGs monitoring efforts this year via key local stakeholders at three sites in Belize (Rise and Fall at Sapodilla Cayes, Caye Glory and Gladden Spit). These sites are being monitored by TIDE/TASTE, Belize Fisheries Department and Friends of Nature. TNC is presently supporting year round monitoring at Gladden Spit conducted by Friends of Nature which has produced the most consistent and comprehensive data set for Belize. More sites will be identified and monitored in the coming years.

Activity 1.1.5. Complete a desktop study to establish threshold level of Nassau Grouper populations and determine its requirements for special management as a critically endangered target

Results Anticipated in FY05:

- Comprehensive report on the status of the Nassau Grouper on the Meso-American Reef;
- Data analysis and viability threshold assessment for the Nassau Grouper;
- List of potential appropriate strategies for the long-term conservation of the Nassau Grouper along the Meso-American Reef.

TNC continues to support annual monitoring (December/January) of Nassau grouper aggregations in Belize and, through the Belize SPAGs working group, has helped to document trends in the number of individuals aggregating at known Nassau grouper aggregation sites. However, a comprehensive study to determine the status of Nassau Grouper has not yet been done. Belize is the only MAR country that has implemented specific protection for this species and where monitoring at known spawning sites has taken place. This demonstrates the lack of data and information for this species outside of Belize. In 2006, TNC will conduct a case study on Nassau grouper at Caye Glory "Emily," historically one of the most productive and well known Nassau grouper sites in Belize that has been overexploited and that is currently showing signs of recovery. In addition, a study in Mexico, Belize and Honduras will be conducted to determine the status of Nassau Grouper conservation for the entire MAR region using existing

data, literature and expertise at known spawning aggregation sites. This will assist us in determining the potential site-based strategies for the long-term conservation of this species.

Activity 1.2. Initial application and field testing of bleaching resistance tools

Results Anticipated in FY05:

- Pilot coral reef management and monitoring system that incorporates bleaching resistant areas is being implemented at Sian Ka'an Marine Reserve and Gladden Spit Marine Reserve.
- Critical resilient coral reef areas are under protected status as part of the prioritized MPA network designed through the Belize NPAPSP Conservation Assessment
- A preliminary system for establishing baselines and management impact monitoring for the coral bleaching resistant areas within the Belize priority MPA network has been drafted (based on the Sian Ka'an and Gladden Spit pilots).

These anticipated results cannot be achieved prior to the completion of the resilience survey in the MAR region, towards which we are currently working. Prior to implementing any pilot coral reef management and monitoring systems, we need to identify bleaching resistant areas for both Sian Ka'an and Gladden Spit, which will be done in FY06. The MAR Program will then evaluate the location of critical resilient reefs in relation to existing MPAs and their zoning patterns, but this will not be carried out with GCP funds. We initiated the process of identifying bleaching resistant areas in Mexico through the Rapid Reef Assessment. The RRA will identify the ecological characteristics of the area, give an overview of the general reef condition, and identify potential bleaching resistance and resilient sites. Identified resilient sites will then be included in a long-term monitoring program which will provide advice in the selection, (re)design and management of resilient MPAs and networks of MPAs. The RRA began August 29, 2005 and will last approximately two months. Similar efforts will be conducted in Belize, Honduras and Guatemala. Once the field data is gathered and analyzed, a final report identifying bleaching resistant and resilient sites will be prepared and pilot coral reef management and monitoring systems will be developed and implemented for Sian Ka'an and Gladden Spit.

Activity 1.3: Improved understanding of connectivity within the MAR

Activity 1.3.1. Integrate connectivity information and models into Caribbean-wide and MAR ecoregional planning

Results Anticipated in FY05:

- Functional oceanographic circulation model is fully developed based on continued calibration of the model;
- Oceanographic information generated from the circulation model is integrated into design of conservation blueprint;
- Resilient network of MPAs designed for the MAR encompass oceanographic features that are critical to their long-term integrity.

The MAR Program obtained, through a contract with the University of South Carolina (USC), two deliverables: an oceanographic model for the Caribbean, and a larval dispersion model.

These models show general patterns of deep water circulation in the Meso-American Reef by establishing:

- A high water residence time
- A general pattern of currents from west to south
- A general pattern south-to-north
- Frequent circulation patterns of “eddies” on the inside of the reef including one that goes into the Gulf of Mexico.

Despite these results, we cannot conclude or even statistically estimate anything for shallow waters, which compose most of the area of the reef and have the most interaction with coastal MPAs. Therefore, we cannot adequately answer the conservation questions related to connectivity on the inner part of the reef. Almost one year passed before USC presented these incomplete results. TNC’s legal department is now working to obtain all the data used to produce this information from the university to enable us to use it to consult with other institutions that may be better able to assist us with these shallow water connectivity questions. To further this effort, we identified a capable team of scientists from the University of Miami Rosenstiel School to assist us in answering our conservation questions through the use of the modified HYCOM model. At this point, we are working with Dr. Claire Paris to develop a contract to establish circulation patterns and their relationship with the movement of pollutants and contaminants along the reef from point sources.

Activity 1.3.2. Improve understanding of fine-scale oceanic circulation and its impacts on larval distribution.

Results Anticipated in FY05:

- Nested circulation model with enhanced predictive capability that is being used for real-time simulations of circulation and fish larval transport.

The USC model doesn’t provide information on either a vertical scale or on the difference in depth on the horizontal scale. However, the USC data gathered for the past three years and used in the consultancy is essential for the validation of the new model. TNC will look for another institution or consultant that can provide modeling services in shallow waters, specifically for the reef lagoon (area between the coast and the reef) to complement the information provided by the University South Carolina. As noted under Activity 1.3.1 above, we have contacted the University of Miami Rosenstiel School to complete this work.

Activity 1.3.3. Improved understanding of fish migration patterns and site fidelity on the MAR.

Results Anticipated in FY05:

- Description of the migration patterns and site fidelity behavior of key snapper and grouper species;
- Assessment of vulnerability of species and individuals within or between reproductive periods;
- Application of findings to the design and effectiveness of MPAs in protecting individuals throughout reproductive season.

Based on the an analysis by Dr. Kevin Rhodes of all conventional and acoustic tagging data gathered by TNC in Belize since 1999, we have a better understanding of the migration patterns and site fidelity for Nassau grouper and Black grouper at Sandbore and Halfmoon Caye spawning aggregation sites at Lighthouse Reef. Even though these results are preliminary, we anticipate that we will have enough data to validate these results by December 2005.

Results from this analysis will help us enhance the recommendations for the development and application of a more effective tagging program in collaboration with our local partners at these sites, as well as other sites. The sonic tagging data analysis will assist us in drawing definitive conclusions regarding fish residency times at sites, frequency of visitations, sex and fish species-specific migration patterns and distance of movement and whether individuals visit other spawning aggregations sites within or between spawning months or seasons. The limited analysis has indicated fish movements over long-distances as well as site fidelity particularly for grouper species. Based on his initial recommendations, in FY06 the tagging program will be revised to improve data collection methods that will include focus on targeted species and sites, increased number of fish tagged to increase the robustness of the findings, increase the number of receivers deployed and placing receivers outside of SPAG sites in addition to having receivers centrally located within SPAG sites, increase the frequency of analysis of the data collected from receivers, and increased public awareness of the program and the involvement of partners and key stakeholders in the tagging activities and in data analysis.

Objective 2: Help local partners improve the management and effectiveness of three platform MPAs strategically selected within the MAR network.

Activity 2.1: Agree on common management effectiveness framework, and establish baseline status for the platform sites. Identify common issues of interest for multi-site strategies.

Results Anticipated in FY04:

- Criteria for identifying platform sites agreed upon
- Candidate platform sites evaluated and socio-economic baselines established

After several attempts to apply the methodology developed by IUCN/WWF for the monitoring of effective management in MPAs (“How is Your MPA Doing?”), we concluded that it is too costly and complex an approach in terms of the information, resources, and time required to apply to MPAs in the MAR. Therefore, it was decided to develop a more appropriate set of criteria to measure MPA effectiveness in the region, in coordination with TNC’s Measures of Success Group. As a result, a “Protocol for Effective MPA Management” was developed and published by TNC in conjunction with MBRS. This Protocol has been applied at nine MPAs in Mexico, one in Guatemala and five in Honduras to establish socio-economic and other baselines against which progress can be measured. Twelve additional MPAs will apply the Protocol in FY06.

Activity 2.2: Improve the management of Gladden Spit MPA

Activity 2.2.1.: Implement the Enhanced 5-S framework to define biological impact measures for Gladden Spit Marine Reserve

Results Anticipated in FY05:

- Measures of Success completed for management plan.
- Implementation plan for executing strategies and monitoring drafted.

TNC and Friends of Nature embarked upon developing measures of conservation success in an attempt to demonstrate how conservation can be made more tangible. Two focal areas of measures development were identified and chosen for their learning potential: fish spawning aggregations (SPAGs) and social and economic parameters for Gladden Spit and Silk Cayes Marine Reserve being managed by FON. In each case, teams from TNC and FON worked together in a collaborative effort to produce pragmatic yet robust indicators that will signal success. For fish spawning aggregations, TNC's Conservation Action Planning process (also referred to as Enhanced 5-S or E5-S) was implemented as the operational framework to arrive at measures of success. Through this process, spawning aggregation data was analyzed and applied towards developing thresholds for key ecological attributes and their indicators. More importantly, a more thorough threats assessment was conducted and revealed that while over harvesting of SPAGs is likely a main threat, it is the rapidly increasing development of coastal mangroves and offshore mangrove cayes and seagrass beds that pose the most danger to aggregating species.

This measures exercise has allowed Friends of Nature and TNC to assess our conservation strategies for fish spawning aggregations in relation to community resource use in a comprehensive manner. This process has significantly improved and made clear the conservation and management objectives for spawning aggregations and the priority threats that need to be addressed. Most importantly, FON and TNC now have a specific and targeted means of measuring the impact these strategies will have on the spawning aggregations and determine whether management and conservation objectives are being met or not. FON and TNC aim to continue developing measures of success for the remaining targets as part of the continued effort to refine the Gladden Spit and Silk Cayes Marine Reserve management plan.

Activity 2.2.2.: Conduct a socio-economic assessment of Gladden Spit

Results Anticipated in FY04:

- 7 community assessments and development plans completed
- Community conservation strategy for Gladden Spit completed

In close collaboration with Friends of Nature and TNC's Belize program, a consultant developed a monitoring system that incorporates multi-scaled social and economic data to formulate community programmatic objectives based on clearly quantifiable measures, to incorporate the use of information in strategic programming and adaptive management decisions and to monitor the impact-response relationships of ecological and socioeconomic processes. The socio-economic study focused on Gladden Spit and Silk Cayes Marine Reserve. Instead of the assessment being limited to the local level (the 7 communities), as was anticipated in the FY05 implementation plan, it was decided that it would be a broader-scoped assessment, identifying

key indicators and trends at multiple scales (regional, national and local). The study provided an understanding of sources of available data and socio-economic trends, as well as some trends related to resource use and ecosystem health. Also, a comprehensive analytical framework was developed that displays ongoing marine resource use, resource viability, and community viability as embedded within a multi-scaled and multivariate system of drivers and feedback cycles. A recommendation of the study is to develop a dynamic quantitative model (or set of models) based on the analytical framework aimed at generating predictive scenarios for threat level and biological health based on changing market parameters, variable economic trends, and productive response indicators. Due to time and resource constraints, this working model could not be developed within the scope of this project. However, it is clearly a feasible undertaking and recommended as a good next step to this project. It will be included in the next fiscal year as part of a bigger approach.

Activity 2.2.3.: Implementation of key organizational sustainability strategies.

Results Anticipated in FY05:

- Implementation plan for executing recommendations based on findings of assessment with organizational improvement goals and objectives specified.
- Two to three strategic and priority actions derived from implementation plan completed and incremental improvement of management effectiveness objectives measured.

In FY05, Friends of Nature scheduled a basic institutional assessment that was going to establish the current status of the organization as manager of Gladden Spit Marine Reserve and was also going to identify areas in which improvement was necessary. Due to unforeseen circumstances and major changes in key personnel, including its Executive Director, no advances have been made in terms of measuring management effectiveness based on the analysis of their institutional capacities. We are waiting for FON to stabilize and the new administration to be established. In FY06, in an effort to improve the management of Gladden Spit and Silk Cayes marine reserves, TNC will work with FON to revise its organizational strategic plan. The revision of FON strategic plan will include an analysis of organizational functions and structure, policies and procedures, operational plans, financial systems and financial sustainability. The goal is to have a revised and updated strategic plan supported and approved by the Friends of Nature Board of Directors.

Activity 2.3: Improve the management of Cayos Cochinos, Honduras

Results Anticipated in FY05:

- Preliminary review of Cayos Cochinos Management Plan completed
- Preliminary identification of targets, including spawning aggregation sites completed

In June 2005, the MAR Program and Fundación Cayos Cochinos signed a subaward agreement for the identification and monitoring of SPAG sites in the archipelago of the Cayos Cochinos Natural Marine Monument, an important action contemplated within the protected area's management plan. Two sites were identified in coordination with local fishermen. The preliminary identification was done by analyzing existing information such as satellite images, radar, and bathymetry that was then introduced in a geographic information system. The next

step, before initiating the monitoring, was to visit the sites with local fishermen in order to validate the importance of these two sites. Once the agreement was reached, the sites were monitored for a period of 10 days each month since April 2005.

Additionally, this joint effort includes the demarcation of no fishing zones and fishing banks, as well as the implementation of boat registration and the strengthening of the tourism committee of Cayos Cochinos. For the posting of boundaries of the no-fishing zones, an initial proposal has been ratified by the communities and a participatory process has begun where boundaries will be set considering the input of the local fishermen.

Activities related to the Cayos Cochinos Natural Marine Monument Management Plan changed compared to what was included in the FY05 work plan. This plan was only recently officially approved. As a result, our local partner, Honduran Coral Reef Conservation Foundation, official co-managers of this protected area, and local communities have expressed their preference for receiving support to implement the management plan rather than in more planning processes. In FY06, we will share the CAP methodology with our local partners and discuss its application as a way to complement the current plan. If applicable, we will then assist them in using this planning tool to improve the management plan. During the next fiscal year, the activities for supporting the management in this area will focus on community livelihood and management regulation inside the Cayos Cochinos National Monument.

Activity 2.4: Improve the management of Sian Ka'an Reserve, Mexico

Activity 2.4.1: Support completion of the management plan for the Reserve

FY05 Anticipated Results:

- Management plan for Sian Ka'an is finalized

TNC assisted CONANP to revise its management plan for the Sian Ka'an Biosphere Reserve using information generated in the CAP (Conservation Action Planning), which was completed by TNC, Amigos de Sian Ka'an and CONANP in 2005. The management plan is being finalized by CONANP.

Activity 2.4.2: Complete threat abatement and biodiversity health measures for Sian Ka'an.

FY05 Anticipated Results:

- Measures of Success indicators finalized
- Existing information available for baseline is collected; gaps are identified

TNC and Amigos de Sian Ka'an organized various workshops with regional experts and practitioners to develop measures of success for coral reefs and implement the Enhanced 5-S framework to define biological impact measures for the Sian Ka'an Biosphere Reserve. Existing reef monitoring and characterization data that had been gathered by Amigos de Sian Ka'an over a period of 12 years was reviewed. A viability assessment for coral reefs to identify key ecological attributes, indicators and their respective thresholds was conducted. As a product of this process, Amigos de Sian Ka'an and CONANP agreed on the plan for monitoring the coral

reef bleaching in this important World Heritage site. Also, existing information on threats and strategies was reviewed and reef resilience principles were incorporated in the refinement of management strategies for Sian Ka'an Biosphere Reserve. Measures of success indicators for the remaining 6 conservation targets were not finalized and will need to be developed in FY06.

Activity 2.4.3: Support the implementation of the land use zoning planning (OET) to control development densities along the beaches and dunes of Sian Ka'an

FY05 Anticipated Results:

- Land use zoning plan for this area completed
- Long term monitoring plan for the OET completed

The land use zoning plan was completed and went into effect on May 11, 2002. During FY05, CONANP posted the coordinator position for several months; however, the Coordinator, Mr. Eulogio Puc Kinil, was not hired until June 1, 2005. For this reason, the long-term monitoring plan for the OET has been delayed and will need to be completed in FY06. Amigos de Sian Ka'an and CONANP are working jointly in developing a land tenure database for Sian Ka'an and are collaborating to promote the adequate implementation of the OET.

Objective 3: Establish a “virtual” Learning Center that convenes training courses, promotes exchanges, and facilitates coordination among the four MAR countries.

Activity 3.1: Train MPA managers and planners from partner organizations to apply resilience principles to MPA design and management.

Activity 3.1.1: Develop training modules for the Tulum +8 Conference in September 2005; Revised Activity: Incorporate stakeholder priorities into the Tulum +8 agenda

Results Anticipated in FY05:

- 3-4 Training modules developed

The MAR Director decided the Tulum +8 Conference was not the proper venue to conduct training courses. It is a political process for countries to reaffirm their commitments and develop guidelines for a regional course of action. This activity was cancelled and replaced by an activity to incorporate stakeholder priorities into the Tulum +8 agenda.

An advisory group was established to organize the main Tulum+8 event, and was tasked with developing a process to incorporate scientific as well as general feedback from interested parties. The MAR Director was asked to be the Co-President of the advisory group and has actively participated in 6 meetings which have allowed the establishment of links between the Tulum+8 agenda and interests of the MAR Program. One of the meetings that brought together scientists and scholars from all over the region concluded that there were too few interested participants from other parts of the world, and it was therefore decided to hold another meeting in September 2005 that would have a more geographically diverse participation (not funded by GCP). In addition, leading up to Tulum +8, stakeholder consultations were held with community leaders,

local mayors, and other MAR stakeholders for the purpose of incorporating stakeholder priorities into the Tulum +8 agenda.

Activity 3.1.2: Train practitioners present at the Tulum +8 event

Results Anticipated in FY05:

- At least 50-75 managers and planners trained in applying one or more of the lessons learned from the following training modules, resilience principles, management effectiveness tools, the SPAGs monitoring protocol, to their MPAs.

As indicated above, it was decided that the Tulum+8 meeting was not a proper venue to conduct training courses. However, there have been several TNC supported workshops and field trainings in many topics throughout the region. To name a few, there have been at least two workshops in each of the MAR countries on SPAGs monitoring, management effectiveness, and resilience principles that are mentioned as results of other TNC activities, including 1.1.2 and 1.1.4 above.

Funding under this activity will be reprogrammed to other activities in FY06.

Activity 3.2: Provide fishers and other community members currently engaged in unsustainable uses of marine resources with appropriate training that will enable them to obtain employment in alternative, sustainable livelihood activities.

Activity 3.2.1: Evaluate results to date of fishers training program

Anticipated Results in FY05:

- Fishers training program evaluation completed.

The MAR Program considers this activity a high priority, but unfortunately it is conceptually wrong. The MAR Program does not currently have a fishers training program *per se*, but has conducted several trainings in collaboration with TNC country program in Belize. In order to create a comprehensive agenda, in FY06 we will begin evaluating TNC and other fishers training programs, including examining increases in living standards, changes in behavior, and reduction of fishing threat to targets. The main outcome will be to establish types of training that are more successful in providing fishers with alternative livelihoods, and why, for incorporation in the Learning Center agenda.

Activity 3.2.2: Develop baseline of current capacities in communities

Anticipated Results in FY05:

- Alternative livelihood training program baselines and outcomes designed.
- Assessment of gender issues and tailored approaches completed.

As mentioned above, next year will be the starting point for evaluating TNC and other fishers training programs including a focus on gender issues. This activity will be carried out in FY06 under the development of the alternative livelihoods agenda.

Activity 3.2.3: Revise economic livelihood training agenda to support community development based on evaluation, baseline information, needs assessment and desired outcomes.

Anticipated Results in FY05:

- Revised training agenda completed.
- Assessment of gender issues and tailored approaches completed.

This activity is delayed since it depends on the progress of other activities in this objective. It will be included in the FY06 work plan.

Activity 3.3: Complete the development of a conceptual and administrative framework for the Learning Center.

Activity 3.3.1: Develop a demand driven five-year curriculum for the Learning Center that outlines course offerings under key thematic areas of marine protected areas management effectiveness, successful threat abatement strategies (inclusive of alternative livelihood development), and community engagement.

Results Anticipated in FY 05:

- A focused curriculum articulating specific courses related to critical thematic areas with an appropriate schedule and secured resource person;
- Specific guidelines for course and training materials as well as for conducting Learning Center courses that ensures quality of instruction and learning experience.

The Program hired Lucy Gallagher to develop a written framework to define and create the Learning Center for the MAR Region. Her first order of business was to consult with TNC's country programs, TNC partners, key academic organizations, governments and other programs and stakeholders in the region on the training needs and opportunities in the region, as well as informational and technical exchange needs. An additional task was to inventory existing available materials (manuals, methods and tools) for coastal management with emphasis on MAR protected areas. She conducted a series of interviews and surveys to identify the training needs in the region and prioritize the areas on which the learning center should focus. Although the design has suffered several setbacks with the compilation of information, progress has been made in terms of identifying more than 20 existing tools developed throughout the region for MPA management. A key finding is also absence of tools focused on gender issues.

As part of this consultancy, a job description for the Learning Center Coordinator was developed. It was published in September 2005, and we expect the position to be filled by the end of 2005. The Coordinator will begin by approaching organizations that have developed tools and other materials to encourage them to participate in the Center, formally agree to share relevant tools and information and up-load them to the Center's website. The Coordinator will also supervise the development of self-training modules in the form of videos, visual aids and/or presentations to include them in the Learning Center. This person will also be a point of contact between MPA managers and planners, partner organizations and anyone interested in training tools, and the application of resilience principles, MPA management, etc.

Activity 3.3.2: Implement an abridged curriculum of course offerings based on existing capacities and resources.

Results Anticipated in FY 05

- At least two courses conducted in any of the above mentioned thematic areas.
- Documented improvement and adaptation of guidelines and training approach based on pilot application of course curriculum.

Although this activity was not carried out pending completion of Activity 3.3.1, the MAR Program conducted several other training activities (not with GCP funds). Based in the SPAGs monitoring protocol and based on his community training experience, Nicanor Requena developed a comprehensive curriculum that was used to develop SPAGs monitoring skills among fishing communities, other stakeholders, and partners in Belize, Mexico and Honduras. Also, an exchange-type training workshop was organized in Gladden Spit that key people from the entire region attended to share their knowledge of SPAGs and experiences regarding the use of the protocol. There was also the development of hands-on training courses by Lenin Corrales in the use of the MPA Effective Management Protocol developed in conjunction with MBRS, which have been carried out in more than twelve MPAs in the region.

Objective 4: A MAR ecoregional plan is adopted and implemented that reflects agreement by all key conservation partners (local and international NGOs, government agencies and donors) on priority programs and activities, with the sharing of scientific and program data.

Activity 4.1: Sign MOU with relevant collaborators for data sharing, assemble existing data sets, and analyze for compatibility issues and gaps.

In May 2005, a workshop on planning for the MAR ecoregional assessment was held that assembled key personnel from the region including WWF and TNC's science advisors from the MAR division, Caribbean region, and Global Marine Initiative, all with experience in ecoregional planning and MARXAN application. The principal outcome of this meeting was the development of an agenda for collaborating on the development of the ecoregional assessment and to ensure the complete ownership of the results by the majority of stakeholders. It was determined that there was no need to develop MOUs since our formal solicitation for existing information received very enthusiastic responses from all relevant organizations in the region. Among the organizations that provided information, including GIS data sets, were WWF, Cayos Cochinos Foundation, MBRS, Amigos de Sian Ka'an, CONANP, Coastal Zone Management unit from Belize, the Inter-American Development Bank, and Islas de la Bahia Project. This information will be consolidated into a database and will later be analyzed and used for the development of the ecoregional plan. After gathering all the information, the first steps in the development of the conservation blueprint will be implemented, as well as a MARXAN exercise to establish a resilient area portfolio. These steps for the ecoregional plan will be included as activities in the FY06 work plan.

Activity 4.2: Using updated target information and viability analysis, set target goals.

Results Anticipated in FY05:

- Completed viability analysis produced
- Ground-truthed target goals defined and optimized

An objective of the ecoregional assessment is to prioritize conservation plans for the MAR region, however it depends on the information available and gathered in Activity 4.1. Since Activity 4.1 was not expected to be completed by the end of September 2005, no viability analysis or target goals have been defined yet.

Activity 4.3: Using MARXAN/SPOT analysis, assemble updated optimal portfolio of sites using spatially described threats, target goals.**Results Anticipated in FY05:**

- Optimal portfolio of conservation action areas completed
- Spatially described critical threats for the MAR completed
- Optimal scenarios for conservation action developed

As this activity also depends on completion of Activity 4.1, which is in the final stages, it is delayed until FY06.

Activity 4.4: Increase understanding of regional macro socio-economic trends and develop a strategy to address the priority threats and opportunities at a MAR wide scale.**Results Anticipated in FY05:**

- Outcome based strategy to address regional threats and opportunities with potential partnerships identified

This activity was beyond the capacity of the MAR Program team to carry out in the near term. It is being rescheduled until FY07, after we have a much better understanding of platform site based socio-economic models and analysis. Funding for this activity is being reallocated to other activities in the FY06 Work Plan.

Activity 4.5: Develop a policy agenda for the MAR with TNC policy specialists, local staff and partners.**Results Anticipated in FY05:**

- Conservation blueprint integrated into a policy framework developed and presented to four governments at Tulum+8 event;
- Comprehensive and harmonized fisheries policy developed and presented to four governments at Tulum +8 event.

This activity was more ambitious than the MAR Program could carry out and was therefore cancelled. The “conservation blueprint” has been delayed and thus was not available for the Tulum+8 event. However, TNC is playing a central role in the development of the Tulum+8 initiatives that seek to reconfirm the four MAR governments’ commitments to the conservation of the MAR and its resources and the development of a new updated action plan. Given TNC’s

presence in all four countries, and existing partnerships with local organizations, TNC is well positioned to ensure that partner and stakeholder perspectives are fully integrated into the agenda setting for the Tulum+8 initiatives. The MAR program has been actively participating in the different activities of the Tulum+8 initiatives, and will create an enabling environment to incorporate the key elements of the MAR conservation blueprint into the new Action Plan for the Mesoamerican Reef. On the other hand, MBRS was already well advanced in developing a comprehensive fisheries policy. TNC has expressed its full support to MBRS and willingness to contribute to their efforts if needed.

GCP funding for this activity will be reallocated to other activities in the FY06 Work Plan.