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## Caribbean Large Marine Ecosystem (CLME) Project

# DRAFT CLME Full Project Component 4: Spiny Lobster Pilot Project

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# 1 Background

The Caribbean spiny lobster inhabits tropical and subtropical waters of the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico, in a range that goes from Bermuda and North Carolina in the United States, to Rio de Janeiro in Brazil. Lobster fisheries is one of the most valuable fisheries resources in the Western Central Atlantic Fishery Commission (WECAFC) region and the most important species landed in the Caribbean is *Panulirus argus* (Latreille, 1804). *Panulirus guttatus* (Latreille, 1804), and *Panulirus laevicauda* (Latreille, 1817) are also caught in many countries. This paper deals with the *Panulirus argus*, the most valuable species (Carpenter, 2002), which supports a significant fishery that can be considered fully exploited to overexploited in most of the Caribbean countries (FAO 2007).

Between 1992-2001, average annual lobster landings in the Caribbean were reported to be 36,827 tonnes, with an estimated value of US\$500 million. Around 50,000 lobster fishers are estimated to be active in the area, with an additional 200,000 people working in positions related to the lobster fishery (FAO, 2003). The fishery therefore represents a source of employment and generates incomes to fishers and, in many cases, high export earnings for the countries involved.

## 1.1 Lobster Fisheries

Lobsters are caught by both small-scale fishers and an industrial fleet, thereby creating many different fishing groups working in different areas and targeting different components of the lobster population. The fishery is one of sequential exploitation in which resource users need to move to new grounds, as the original ones become unprofitable (Grima and Berkes 1989). However, with declining adult stocks, fishermen using small scale traps and diving fish increasingly on the juvenile pre-recruitment stages to avoid moving to new grounds farther offshore or diving deeper. Meanwhile, industrial traps and divers target the spawning adults or those which normally inhabit deeper waters, often catching many berried females and larger animals.

Throughout the Central/South America sub-region, the benefits accrued from the fishery varies considerably as lobster catches differ substantially (Table 1). However, in terms of impact of the fishery on the well-being and livelihood of many coastal communities in the region as a whole, the absolute size of the catch can be misleading with communities being near-totally dependent on relatively small catches.

**Table1. Landings of spiny lobster from the countries of the Sub-Region CenterCentral/South América (kg)**

Countries	Landings
Belize (2004)	278,000
Colombia (2002)	338,800
Costa Rica (2005)	34,109
Guatemala (2005)	83,600
Honduras (2005-06)	958,780
México (Q. Roo 2003)	416,000
Nicaragua (2005)	1,269,545

Panamá (2006)	5,000
Venezuela (2005)	139,312

## 1.2 Lobster management

Sustainable management of lobster fisheries in the Caribbean region is very important for the attainment of national economic and social development goals, as well as for the human well being and livelihoods of individuals and families dependent on these fisheries. The documented decline and in some cases overexploitation of the resource is considered to be a great threat both from the biological as from the socio-economic standpoint. This decline may be in part due to the lack of a governance regime in which all actors in the fish chain from production and distribution to consumption have input in decisions affecting the resource. Problems facing the sustainable management of the fishery include: open-access nature of the fishery and failure to control fishing effort; large-scale landings of juvenile lobster and berried females; diving accidents of lobster divers; large-scale illegal, unregulated and unreported (IUU) fishing; lack of control and surveillance; lack of harmonization amongst fisheries regulations of the countries involved; insufficient financial resources and human capacity in government institutions; and lack of capacity (organizational, human, financial and technical) among fishers and others involved in the fishery to engage meaningfully in its management. The lack of information throughout the region on landings, effort, IUU fishing, juvenile and berried females also led to inadequate fishery management policies.

The importance of the lobster fisheries and their management in the Caribbean has been widely recognized by institutions such as the Gulf and Caribbean Fishery Institution (GCFI), FAO WECAFC, Caribbean Regional Fisheries Mechanism (CRFM), Caribbean Fishery Management Council (CFMC), National Oceanic and Atmospheric Administration (NOAA). Furthermore, the lobster fishery is significant throughout the Wider Caribbean in that it is regional and transboundary by virtue of planktonic dispersal, whilst local and national in terms of its governance. The fact that it is traded extensively within the region and beyond also calls for a regional approach to management.

In 1980, FAO WECAFC initiated a Working Party on spiny lobster management at its Commission meeting in San José Costa Rica, that included most of the countries in the region with a lobster fishery (WECAF 1982). In 1997 the Working Party was replaced by a WECAFC Ad Hoc Working Group on which has conducted five more workshop on the management of this resource: Belize (1997), Merida, Yucatán (1998 and 2000), Cuba (2002), and Mérida (2006). These meetings included major lobster fishing countries with the support of experts to facilitate the analysis of the information.

At the 2006 FAO Workshop, one of the major decisions taken was to divide the stocks in the Western Central Atlantic – FAO Fishing Area 31 -, into four groups, based on the biogeography and knowledge of the prevailing currents in the region:

- **Group I - Northern Stock:** Bahamas, Bermuda, Cuba (North), Turks and Caicos Islands and United States of America (Florida).
- **Group II - North Central Stock:** Belize, Cuba (Southwestern) and Mexico.
- **Group III - South Central Stock:** Colombia, Costa Rica, Dominican Republic, France (Guadeloupe and Martinique), Haiti, Honduras, Jamaica, Nicaragua and United States of America (United States Virgin Islands and Puerto Rico).

- **Group IV - Southern Stock:** Antigua and Barbuda, Brazil, Netherlands Antilles, Saint Lucia and Venezuela.

There has been considerable effort in the region to assess and address the problems of the lobster fishery by organizations at different jurisdictional levels and at different stages in the policy cycle. Lack of monitoring, control and surveillance (MCS) is a common problem amongst the countries in the region, resulting in increased fishing effort and large-scale IUU fishing. The large-scale illegal sized lobster catch, which can contribute between 25-50% of the total catch in some countries, are not reported to the national fisheries agencies and can lead to significant bias in estimates of the biomass and the age structure of the stocks. Many governments lack information on the state of exploitation such as the catch per unit of effort (CPUE), the catchability coefficient (q); and, due to the lack of local-level information related to the applied effort, many of the countries cannot estimate maximum sustainable yield (MSY), assess biomass or correctly set annual catch quotas. Failure of adequate control, combined with the high unit value of the species at the global market, has resulted in many conflicts between fishing groups (e.g. small-scale vs. industrial, trappers vs. divers and national vs. international fleets).

In the Central/South American sub-region of the CLME, the Organization for the Fishing and Aquaculture Sector of the Central American Isthmus (OSPESCA) held a meeting in Managua, Nicaragua on January 2005 entitled the “Regional Alternatives for the Harmonized Administration of the Lobster Fishery in the Caribbean, on the basis of coordinated actions”. As an outcome of this effort, Nicaragua and Honduras signed an agreement on the harmonization of the closed season, minimum size, a ban on lobster meat exports, the dimension of the escape gap in lobsters’ traps, and other management measures, with the support of delegates from Belize, Costa Rica, Guatemala, Panama, and in the presence of delegates of Bahamas, Colombia and México, and the Latin America Fishing and Aquaculture Organization (OLDEPESCA).

One of the conclusions of the Cuba 2002 workshop was: “we recognize that while some progress has been made in addressing these recommendations and conclusions, much still remains to be done and that in much of the region, problems in the fisheries and their management continue to threaten the sustainable utilization of the resource” (FAO 2002).

Nevertheless, the problems with the sustainability of this fishery remain, as it was concluded at the most recent FAO workshop held in Merida in September 2006 that “despite good management and control, the populations in these important lobster areas – referring to Cuba, Mexico and USA – are showing signs of declining”, they are also declining in the South and North Central Region, as well “the unacceptable high levels of capture of undersize and juvenile lobster that were reported by the countries” (FAO 2007).

Key issues with respect to the fishery can be summarized as follows:

- The spiny lobster is a transboundary species, which spends a year drifting in the ocean waters while in larval stage, indicating that some countries are supplying larvae to their neighbors or even farther, and that the harvest of one country affects the potential harvest of the neighbouring countries;
- In most of the countries, there is a lack of information on to the fishing effort applied in industrial or small scale fisheries; that is the number of fishermen, small-scale boats, number of traps, scuba tanks, compressors, hookahs and other means that are used in the different countries for capturing this resource;

- In most countries, there is little input from the local level into the policy cycles at higher levels resulting in fractured vertical linkages and dysfunctional policy cycles at multiple levels;
- Despite the fact the Caribbean spiny lobster is a single species and the concept of a regional population has been usually accepted, the legal size for harvest varies from one country to another, mostly due to market-driven factors. This results in growth overfishing, as has been recognized by scientist at different workshops, including FAO 2006. In most countries, markets for undersized lobster exist, hence the imperative to include actors throughout the fish chain in the sustainable management of the resource.
- Closed seasons are one of the most restrictive management measures taken in fisheries, severely affecting the lives of fishermen. Yet, they are necessary when other measure fail, but are often implemented without input to the decision from the local level. There are many examples of neighbouring countries making decisions that result in differing periods of the year marked as the closed season without having adequate information, analysis and advice on the spawning or the recruitment season.

## 2 Objectives

The major issues discussed above are relevant to the sustainability of the lobster fisheries, and must be taken very seriously if this important economic activity is to be improved and fully functioning, linked policy cycles at the local, national and sub-regional levels are to be realized. By focusing on sub-regional cooperation in the management of the resource through the development of linkages between the local and higher levels policy cycles within the Central South American sub-region, this demonstration project also serves to implement the recommendation of the last FAO workshop for the Caribbean spiny lobster (Merida, 2006), which stated that “a number of pilot studies should be undertaken, where circumstances were suitable, in different countries and that exchange programmes should be expanded to include more countries and opportunities”. While limited in geographical scope, the replicability of the project in other areas within the Wider Caribbean where the lobster fishery is of significant importance is to be expected.

The purpose of the project is to create implementable policy cycles at the local, national and sub-regional levels so as to establish a regular sub-regional management cycle for the spiny lobster stocks in the countries of the Central/South America Sub-region that utilizes the best available information from all sources, provides advice to a legitimate decision-making body, makes transparent decisions and implements them in timely fashion.

Specific objectives include:

- Identifying and engaging the full range of stakeholders in the fish chain in each stage of the cycle;
- Filling the gaps as identified in the different stages of the policy cycles at the local and national levels as being required to achieve ecosystem based management; and
- Enhancing linkages between the local and national level cycles with the sub-regional cycle.

### **3 Key activities**

The following activities are proposed in order to achieve the stated objectives of the project and should be supported by all the countries involved in the project

- Review the management and governance systems applied to the lobster fisheries, in order to recommend the best practices for the sustainable use of the resource.
- Explore the need for and operation of a sub-regional policy cycle for management of the lobster fisheries in the sub-region.
- Review the existing information and gaps on the lobster fisheries in the Demonstration Project area,
- Obtain the basic information on the migration, landings and fishing effort for the lobster fisheries in each country in the Demonstration Project area and within the region.
- Review the management tools that affect the sustainability of the fishery such as minimum legal size of catch; the need for a closed season for the lobster fishery at each country and the possibility of harmonizing it at regional scale; and, the effectiveness of a closed season based on gear type.

Administrative considerations to be included are suggested as follows:

- Identify in each of the countries a Technical Team to assist in carrying out the activities, drawn from representatives of key stakeholders
- The National Fisheries Agencies (and other appropriate partners) can be solicited to provide logistical support for the activities.
- Some of the activities require working at sea, so with industrial fleet as with the small scale boats; this means a collaborative agreement will need to be developed.
- Action plan, templates and special field forms must be supplied, trying to harmonize the information required, the methodology of work (including meetings, workshops, final discussion) and the guidelines for reporting.

**Table 2. Objectives outcomes and activities for the Spiny Lobster Demonstration Project**

Objectives	Outcomes	Key Activities
Review and reform governance systems for lobster at local, national and sub-regional levels	Functional multilevel governance cycles. Effective vertical and lateral linkages Tools for decision makers and enhancement of political will	Review the actual management systems for the lobster fisheries at each level. Recommend options for improved cycles and linkages. Ensure harmonization of management measures at the regional level.
Explore need for sub-regional policy cycle for management of the lobster fisheries in the sub-region	Sub-regional entity with responsibility for management	Review the actual status of the regional arrangements. Determine the need for a special lobster group to assist countries in the management of lobster fisheries
Identify information gaps, determine work needed to fill them and implement workplans	Workplan to fill gaps More accurate data and information for scientific and policy assessment leading to better ecosystem based management advice to decision makers	Review all available biological, environmental and socio-economic information for lobster fisheries in the sub-region. Identify ecosystem based management practices needed. Identify gaps To contract the services of a leading research group to review lobster migration patterns Obtain information of the historical landings and export by destination country. Compile fishing effort information on the operating fleets in each country Gather information on the number of units of effort (traps, divers, scuba tanks, hookahs, nets, others).
Improve management measures	Harmonized regulations at sub-regional level, e.g. Minimum size and closed seasons.	Review the minimum legal size criteria Conduct study of size at first maturity to harmonize the legal size Harmonize the legal size Review the closed seasons (why & when) Define the closed seasons for all countries and the need of harmonize them.
Improve fisher safety	Fishers practicing safer harvesting methods	Review the problem of divers and the chance to have a major control of their health and security

## 4 Outputs

The following outputs are expected:

- Information on the juridical, institutional conditions and policies affecting the management of the resource in the countries participating in this demonstration project, including information on key actors in the fish chain and their level of current or potential influence in decision-making
- Sub-regional consensus on the governance of lobster fisheries and harmonization of the management measures, including minimum catch size and closed season on the sub-region countries defined.
- A sub-regional arrangement for the governance of the lobster fisheries.
- Updated information on the spiny lobster fishery in the countries of the subregion Central/South America in the CLME.
- More accurate data about the migration, catch and fishing effort applied in the lobster fisheries, so for the industrial fishing as to the small scale fishery.

## **5 Management structure and accountability**

The Project will be led by OSPECA. Implementation partners will include, but not be limited to, FAO-WECAFC, CRFM, national fisheries departments and related agencies and fishing industry representatives throughout the fish chain (production, distribution and consumption). There will be a Project Steering Committee comprising representatives from these agencies and partners. OSPESCA will be accountable to the PRU for all funds and pilot project outputs.

## **6 Stakeholders and beneficiaries**

Stakeholders are national governmental and regional intergovernmental management agencies, fishers, vendors, exporters and all persons engaged in associated support activities. Beneficiaries are all who earn a living, either in whole or in part from the utilization of the lobster resources. The countries of the sub-region will also be able to maintain or increase their foreign revenues from the sale of products from these resources.

National governments are of great importance to the project. Both political support and collaboration with the technical staff of the Fisheries Administrations are necessary. Scientists that work in stock assessment, population dynamics, and monitoring; could be of great help through sharing their knowledge with the less advanced countries in order to harmonize the assessment methodology and management measures.

Universities and research centers involved in lobster fisheries can be of great help dealing with the lobster larvae migration; this is a prime part of the project, because it must be confirmed to a better understanding of the life cycle of lobsters and the regional management of this resource.

NGOs are aware of the lobster fishery situation and are especially very concerned with problems of the divers; many foundations will be interested in participate in a review of this practice, and might be able to sponsor a complete research on this subject; this can lead also to a different alternative of living for the divers, and to new regulations in the countries and the region.

Regional organizations can be of great support through the governments they represent; there are no specific funds for specific activities such as the sustainable management of spiny lobsters, but they can drive to a better understanding of the needs of regional management of the resource, and keep the issues on the decision makers minds.

## 7 Long-term sustainability strategy

The strategy for long-term sustainability is foremost to develop a process that is appropriate to the value of the resources and the capacity of the participating countries. It is envisaged that once the policy cycles have been established and operated, stakeholders will begin to appreciate their value and to recognize the benefits that can be derived. It is however, likely that it will take longer than two years for this to become self-supporting and that follow-on funding will be necessary for this to become established as a fully-self supporting process. During the period of implementation, alternatives to direct government support will be explored. Discussions will be pursued with stakeholders to encourage them to supporting the processes required for transboundary management of spiny lobster resources.

## 8 Replicability

The establishment of a functional policy cycle with appropriate linkages to national and local entities as well as to regional and global cycles will provide an example that can be adapted to other situations of shared fishery resources. Given the significance of the resource throughout the CLME, lessons on vertical linkages between local level users of the resource with national and sub-regional fishery management agencies as well as lateral linkages at multiple levels will be of direct benefit to other sub-regions in the CLME.

## 9 Monitoring and evaluation

A programme of monitoring and evaluation will be developed based on GEF indicators for resource status, governance processes and environmental pressures.

## 10 Co-funding

Partner	Role	In-kind	Cash
OSPESCA	Overall coordination of pilot project. Coordination among OSPESCA countries and technical input		
Countries	Participation in process and implementation of decisions		
Fisher organizations, vendors, processors/exporters	Participation in process		
FAO	Participation in process and linkage to Wider Caribbean through Ad Hoc WG		

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