



# CLME+ Strategic Action Programme (SAP) Experience Note

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## Applying the Ecosystem Approach to Fisheries (EAF) to the Caribbean Spiny Lobster Fishery in the CLME+ Region



*Photograph:* ©Thomas Matthews, Florida Fish and Wildlife Commission.

**Abstract:** The Central America Fisheries and Aquaculture Organization (OSPESCA), under the General Secretariat of the Central American Integration System (SICA) through a Memorandum of Agreement (MoA) with the United Nations Office for Project Services (UNOPS) in support of the United Nations Development Programme/Global Environment Facility (UNDP/GEF) CLME+ Project, was tasked with the implementation of the Ecosystem Approach to Caribbean Spiny Lobster Fisheries (aka Ecolobster+) Sub Project. The aim of the Sub Project is to address the CLME+ SAP sub strategy 4a “Improve the governance arrangements for the implementation of the ecosystem approach to spiny lobster fishing”. This experience note highlights the main outcomes, outputs and lessons learned from this Sub Project.

The University of the West Indies  
Centre for Resource Management and Environmental Studies  
(UWI-CERMES)

Learning from best practices in CLME+ SAP implementation

Applying the Ecosystem Approach to Fisheries (EAF) to the  
Caribbean Spiny Lobster Fishery in the CLME+

Experience of the GEF - sponsored

GEF/UNDP: Catalysing Implementation of the Strategic Action Programme for the Sustainable Management of shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems  
GEFID: 5542; 2015-2020

PROJECT DESCRIPTION

The Caribbean and North Brazil Shelf Large Marine Ecosystems Strategic Action Programme – CLME+ SAP (2015-2025) is a 10-year strategy for the sustainable management of shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystem (CLME+ region). The CLME+ SAP uses an integrated, ecosystem-based approach to resolve the key transboundary issues (i.e. unsustainable fisheries, habitat degradation and marine pollution, as identified by Transboundary Diagnostic Analysis (TDA) studies) in a progressively holistic and collaborative way. Priority actions of the CLME+ SAP focus on the improvement of the transboundary governance and management of shared living marine resources.

The SAP has 6 strategies and 4 sub-strategies; sub-strategy 4a speaks to the spiny lobster fishery (Figure 1). In this context the United Nations Development Programme/Global Environment Facility (UNDP/GEF), through the CLME+ Project supported implementation of sub-strategy 4A (“Improve the governance arrangements for the implementation of the ecosystem approach to spiny lobster fishing”) through the Ecosystem Approach to Caribbean Spiny Lobster Fisheries (aka Ecolobster+) Sub Project. The aim is to apply an ecosystem approach to fisheries (EAF) to select Caribbean spiny lobster fisheries at a transboundary level. The Central America Fisheries and Aquaculture Organization (OSPESCA), under the General Secretariat of the Central American Integration System (SICA) through a Memorandum of Agreement (MoA) with the United Nations Office for Project Services (UNOPS), was tasked with the implementation of the Sub Project.

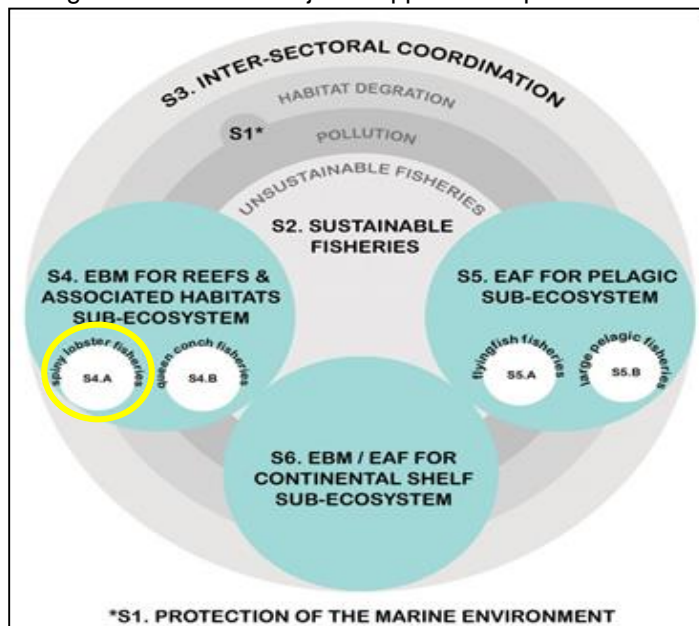


Figure 1. CLME+ SAP 6 strategies and 4 sub-strategies.  
(Source: <https://www.clmeproject.org/sap-strat/>)

arrangements for the implementation of the ecosystem approach to spiny lobster fishing”) through the Ecosystem Approach to Caribbean Spiny Lobster Fisheries (aka Ecolobster+) Sub Project. The aim is to apply an ecosystem approach to fisheries (EAF) to select Caribbean spiny lobster fisheries at a transboundary level. The Central America Fisheries and Aquaculture Organization (OSPESCA), under the General Secretariat of the Central American Integration System (SICA) through a Memorandum of Agreement (MoA) with the United Nations Office for Project Services (UNOPS), was tasked with the implementation of the Sub Project.

The University of the West Indies - Centre for Resource Management and Environmental Studies (UWI- CERMES) contributed to the Sub Project by applying the Governance Effectiveness Assessment Framework (GEAF). This experience note highlights the

main outcomes, outputs and lessons learned associated with the Ecosystem Approach to Caribbean Spiny Lobster Fisheries (aka Ecolobster+) Sub Project.

## THE EXPERIENCE

### Issue

An important aspect for regional management of the Caribbean spiny lobster (*Panulirus argus*) is the ability to define and delimit lobster stocks. The life cycle of *P. argus* is complex and lobster larvae have a long planktonic dispersal phase before eventually settling. Throughout its life cycle *P. argus* inhabits different marine ecosystems. Larval dispersal and the relationship with different ecosystems emphasizes the importance that management of this specie needs to be done from an interdisciplinary and intersectoral ecosystem-perspective. Effective cooperation among all countries that participate in this fishery is paramount.

The Caribbean spiny lobster has a wide geographic range that extends from the United States to Brazil, including the Gulf of Mexico and the Lesser Antilles. According to the Governance Effectiveness Assessment Framework (GEAF) analysis, the Caribbean spiny lobster is being fully exploited throughout its range (i.e. the Western Central Atlantic). This species is also threatened by the *P. argus* virus 1 (PaV1) that has been reported since 2000 with prevalence in the Caribbean being 3-5% of lobster populations.

Regionally, there are currently no harmonized methodologies for evaluating the status of *P. argus* that can provide quality data for regional estimates. Fishing effort data continue to be deficient, especially in countries where the fishery is considered small-scale, artisanal or is open/free access. Although many countries have fisheries regulations and laws, there has been poor regional or sub-regional management, and one of the weakest links continues to be the practical application and enforcement of laws, along with having sufficient finances to support effective management, monitoring and evaluation.

### Addressing the Issue

The distribution of the Caribbean spiny lobster and its bio-ecological characteristics described earlier warrant the establishment of governance mechanisms to facilitate the application of the ecosystem approach. Prior to 2009, there were only isolated sub-regional initiatives aimed at harmonising governance of the Caribbean spiny lobster. Post 2009, the initiatives, programmes and actions of the CLME and CLME+ Projects strengthened regional and sub-regional fisheries governance in the Wider Caribbean Region (WCR). The CLME+ SAP brought specific focus of the Caribbean spiny lobster fishery and gave consideration to the need for immediate and effective management using EAF.

As a result of these efforts, there have been some early results from implementing the CLME+ SAP in addressing sub-strategy 4A "Improve the governance arrangements for the implementation of the ecosystem approach to spiny lobster fishing":

- The establishment (in 2016) of a regional mechanism to integrate regional and sub-regional policy cycles. This currently functioning mechanism, known as the Interim Fisheries Coordination Mechanism (IFCM, comprises the Caribbean Regional Fisheries Mechanism (CRFM), the Western Central Atlantic Fisheries Commission of the Food and Agriculture Organisation (FAO-WECAFC) and the Central American Fisheries Organization (OSPESCA))
- Development of a Regional Management Plan for Spiny Lobster Fisheries
- The 8th simultaneous closed season for spiny lobster fisheries in Central America implemented by OSPESCA in 2017

The Memorandum of Understanding (MOU) of the ICFM aims to improve regional governance in favour of achieving sustainable fisheries, while supporting the coordination of actions among organizations for sustainable fisheries in the Western Central Atlantic region. The Ecolobster+ Sub Project executed in the region by OSPESCA serves as one of the major initiatives towards further strengthening of Caribbean spiny lobster governance.

The next section summarises the actions and outcomes of the Ecolobster+ Sub Project and highlights lessons learned from the experience through the lenses of the EAF and GEAF.

## RESULTS AND LEARNING

The lobster fisheries chapter of the forthcoming State of Marine Ecosystems and Associated Economies (SOME) report details the most recent status of the Caribbean spiny lobster fishery (throughout the CLME+ region) based on work of OSPESCA and the IFCM. Information was compiled based on three identified stocks across IFCM countries. Table 1 summarizes the main outcomes and outputs associated with key areas of interest for Ecolobster+ (2016-2019).

**Table 1. Summary of the Ecolobster+ (2016-2019) Sub Project with specific focus on key areas of interests, outputs and outcomes.**

<i>Key area of interest</i>	<i>Outcome</i>	<i>Output</i>
<b>Stock status</b>	<p>In March 2018, there was a new proposal for the distribution of Caribbean spiny lobster stocks. This discussion was based on a 2016 genetic study.</p> <p>The Ecolobster+ Sub Project provided baseline information on mechanisms in place for using stock assessment data and on the actual status of stocks.</p>	Report on the application of the GEAF.
<b>Social and economic status</b>	<p>Results of the GEAF analysis indicated that there was no specific data on the contribution of Caribbean spiny lobster fisheries to GDP. In most countries, the information available referred to the overall contribution of fisheries to the GDP, which was usually no more than 5%.</p> <p>Concerning employment, there are no specific estimates for the Caribbean spiny lobster fishery. Data from OSPESCA countries<sup>1</sup> indicate that in this sub-region there are about 117,000 people involved in fishing, aquaculture, processing and marketing of fishery products in general.</p>	No specific output generated, but useful knowledge was well mobilized and gaps noted in the process.
<b>GEAF application</b>	<p>The development and testing of a set of governance indicators and methodologies for assessing:</p> <ul style="list-style-type: none"> <li>- governance arrangements/architecture</li> <li>- governance processes</li> <li>- state of ecosystem (stressors and improvements)</li> <li>- stakeholder engagement</li> <li>- social justice; and</li> <li>- human well-being</li> </ul> <p>The Governance Effectiveness Assessment Framework (GEAF) was applied to pilot projects and case studies in the CLME+ region in order to examine and understand key parts of the governance framework through 'learning by doing'</p>	Reports (in both Spanish and English) on the application of the GEAF and the baseline information provided to inform the improved regional and sub-regional governance of the Caribbean spiny lobster fishery.

<sup>1</sup> SICA/OSPESCA Member States: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama and Dominican Republic.

<b>Key area of interest</b>	<b>Outcome</b>	<b>Output</b>
<b>Governance Processes</b>	A Regional Plan for the Management of the Caribbean Spiny Lobster has been developed, approved and adopted by the Fisheries and Aquaculture Ministers of the SICA countries: 1. The Plan was presented at the 9th Session of the WECAFC Scientific Advisory Committee in November 2018. 2. The management plan was approved in 2019 at the 17 <sup>th</sup> Session of WECAFC - a joint meeting of ministers of fisheries and agriculture of the SICA and CARICOM countries.	An updated draft regional management plan for Caribbean lobster fisheries based on the OSPESCA sub-regional management plan.

The March 2020 final report on EAF in the Caribbean Spiny Lobster Sub Project details the activities carried out by OSPESCA in its member countries through four components (Table 2).

**Table 2. Summary of the EAF outputs and outcomes under four components of Ecolobster+.**

<b>Component</b>	<b>Output</b>	<b>Outcomes</b>
1.Expanded and improved provisions for interactive and Intersectoral governance, to facilitate the implementation of the policy cycle using an EAF at the national and sub-regional level.	1.1 Expanded and improved provisions for regional governance. 1.2 Improved governance arrangements at the national level for the implementation of an EAF.	<ul style="list-style-type: none"> <li>Review and update of existing regulations at the regional and sub-regional level. Specifically, the expansion of the stock evaluation for the Regional Regulation OS-02-09 for the Caribbean Spiny Lobster Fishery. This evaluation was supported by the COPACO/OSPESCA/CRFM/CFMC Spiny Lobster Working Group.</li> <li>Studies, at the national level were conducted in Belize, Costa Rica, Guatemala, Nicaragua and Panama. As a result, the work plans in each of these countries have been executed allowing for improvements in the policy cycle.</li> </ul>
2.Increased capacity of knowledge-based management data for the Caribbean spiny lobster.	2.1 Regional Management Plan for the Caribbean Spiny Lobster Fisheries. 2.2 Increased capacity for collection, management, analysis, reporting and exchange of data at the national and sub-regional level. 2.3 Improvements in the capacity of Monitoring, Control and Surveillance (MCS). 2.4 Improvements in the evaluation capacity of the resource populations.	<ul style="list-style-type: none"> <li>The Regional Management Plan for the Caribbean Spiny Lobster (MARPLESCA, in Spanish) was finalized and formally adopted at the 17th Session of the WECAFC (held in Miami, June, 2019). This action required previous approval from OSPESCA's Ministerial Council, the Joint Working Group and WECAFC's Advisory Group.</li> <li>The existing Central America Fishing and Agriculture Registering System (SIRPAC, in Spanish) for artisanal and industrial fishing boats was updated (now version 2.0). The boat registration systems for Colombia and Jamaica have also been revised.</li> </ul>

<b>Component</b>	<b>Output</b>	<b>Outcomes</b>
		<ul style="list-style-type: none"> <li>• A total of 83 fishing inspectors have been trained. A pilot training took place in Costa Rica where 6 persons were trained to be on-board observers. Support was also given to the Nicaraguan Institute of Fisheries and Agriculture for the replacement of its Vessel Monitoring System (VMS).</li> <li>• A total of 29 fisheries officers and technicians were trained in the use of the calibrated size-based stock assessment model. Additionally, 16 OSPESCA personnel were also trained in this model for continued capacity building.</li> </ul>
<p>3.Implementation of management measures to reduce stress on the resource.</p>	<p>3.1 Coordinated implementation at the regional level of annual closures for the Caribbean spiny lobster.</p> <p>3.2 Implementation of improved and coordinated measures to combat illegal, unreported and unregulated (IUU) fishing of the Caribbean spiny lobster.</p> <p>3.3 Promotion and implementation of a traceability system for the products of the Caribbean Spiny Lobster Fishery.</p> <p>3.4 Evaluation of pilot-tested alternative spiny lobster fishing methods for replication and expansion.</p>	<ul style="list-style-type: none"> <li>• The distribution of the Caribbean spiny lobster stocks was updated defining the following areas: North, Central America/Colombia, Central Caribbean and North of Brazil.</li> <li>• In some countries analyse were conducted by applying spatial/geo-referencing models to industrial fishing practices. This was also an exercise in assessing the convenience of having different closed seasons across the Caribbean.</li> <li>• Several regional strategies and roadmaps were considered in reducing the impacts of IUU fishing on the Caribbean spiny lobster. These efforts support ongoing initiatives within the region to combat the overall issue of IUU fishing.</li> <li>• Support for the improvement and implementation of a standard for a fishing traceability system was developed by International Regional Organisation of Agricultural Health (OIRSA)/OSPESCA. This standard is being considered by their technical groups. A pilot study of this system in underway in Honduras.</li> <li>• Binational initiatives exploring new fishing techniques were conducted with support from FAO.</li> </ul>

<b>Component</b>	<b>Output</b>	<b>Outcomes</b>
4. Mechanisms in place that allow for the monitoring of EAF progress to ensure the continuity of efforts during the “post-project” period.	<p>4.1 Monitoring and Evaluation System (M&amp;E) for EAF progress facilitating strategic decision making.</p> <p>4.2 Lessons learned and best practices documents and widely disseminated among CLME+ countries and other stakeholders.</p> <p>4.3 Approval of additional co-financing leveraged for the Sub Project and “post-project” plans.</p>	<ul style="list-style-type: none"> <li>Using the GEAF (MEGG in Spanish) indicators to measure governance effectiveness were developed. This provided a baseline for monitoring governance effective progress over time. Support for this initiative was provided by CERMES.</li> <li>Lessons learned and best practices were and are being produced for outreach and education. The OSPESCA communication strategy was revised with focus on digital tools and applications (e.g. use of electronic media such as websites and social networks).</li> <li>The Nature Conservancy (TNC) and OSPESCA signed an agreement allowing for the continuation of several activities, creating valuable synergies.</li> </ul>

### ***Best practices and lessons learned***

- Strengthening of fisheries data collection and assessment systems should continue in a harmonized way. These data and results need to be comparable from a regional perspective. Additionally, catch and fishing effort data, as well as environmental and socioeconomic data associated with the fishery needs updating. Having current information on the status of the stocks is essential to effective management, especially for strengthening decision-making in the policy cycle.
- As a result of this Sub Project there has been improved regional (and sub-regional) intersectoral coordination for the sustainable management of the Caribbean spiny lobster. The strengthening and continuation of these intersectoral arrangements has proven to be critical to achieving effective transboundary governance of this fishery. This is especially important given the wide geographic distribution and dispersal of the spiny lobster larvae. Having a joint management framework has also resulted in improvements for MCS. These improvements will contribute to the health and safety of the fishery as well as assist in resolving issues of illegal, unreported and unregulated (IUU) fishing.
- Even though there may be adequate fisheries regulations and legislation in place at the national level, continued emphasis should be placed on enforcement. Establishing mechanisms (e.g. IFM) for providing human and financial resources to support regional management and enforcement are critical to improving the fishery and successfully achieving an EAF.
- The application of the GEAF exemplified that having an adaptable framework is critical to identifying operational objectives by using relevant indicators to effectively measure the performance of fisheries and institutional management.
- The use of spatial planning and geographic information systems to determine seasonal closures across the various spiny lobster fishing communities, helps to improve the overall management and sustainability of the fishery in the WCR. A best practice would be to consider the creation of marine areas for sustainable fishing and protection of the Caribbean spiny lobster species. This can help to ensure the socioeconomic viability of the species and the livelihoods of the fishers (and other stakeholders) depending on the fishery.

### **REPLICATION**

The work led by OPESCA with valuable contributions from the IFCM and partner agencies in implementing the CLME+ SAP is ongoing. Important lessons and best practices were learned from using ecosystem-based management (EBM) and EAF for the effective management of a regional fishery. The Ecolobster+ Sub Project and related national studies serve as a working example for achieving effective transboundary governance of a marine resource in a continental area. To be replicated in another area such as the small island states of the Eastern Caribbean considerable adaptation would be required as the fisheries value chains and governance arrangements differ. Spiny lobster management requires regional inter-institutional coordination, and this is not as well developed elsewhere as in the OSPESCA region. Modes of multi-level, multi-stakeholder collaboration should be monitored and well understood prior to any attempt at replication with adaptation.

## SIGNIFICANCE

The Sub Project aided development and improvement of regional intersectoral coordination arrangements for sustainable management of the Caribbean spiny lobster. Promotion of regional intersectoral integration should continue, especially in light of adaptation to climate change and variability which may disrupt fishery value chains. The data collected will make it possible to evaluate changes in the socioeconomic status of the fishery over time. This is particularly significant for social justice and equity in fisheries primarily for export.

The assessments completed show that there is room for improvement with respect to governance of the fishery throughout the WCR. Overfishing is likely to have significant adverse socioeconomic consequences for the communities and countries that utilise the fishery. Effective regional and sub-regional management of the Caribbean spiny lobster fishery is especially relevant to achieving Sustainable Development Goal (SDG) target 14.7 (increase the economic benefits to Small Island Developing States (SIDS) and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism, by 2030) and indicator 14.7.1 (Sustainable fisheries as a percentage of GDP in SIDS, least developed countries and all countries). Functional scalability and adaptation of the Sub Project is needed in order to continue achieving successful outcomes.

## REFERENCES

More information can be accessed from the following websites:

1. <https://clmeplus.org/>
2. <https://www.cavehill.uwi.edu/cermes/projects.aspx>
3. <https://www.clmeproject.org/sap-overview/>
4. <https://www.resilientcentralamerica.org/en/ospesca/>
5. <https://www.clmeproject.org/download/clmescm1-item-5-3-clme-annex-3-spiny-lobster-sub-project/>
6. <https://work.cgpsystems.cz/Small-tasks/hub-sequel/status-tracking-portal.php>

**KEYWORDS:** Lessons, best practices, Caribbean, lobster, regional, management

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