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# Fishery Regulations in the Wider Caribbean Region. Project summary.

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Submitted by:  
Edmund McManus and Carmen Lacambra  
**United Nations Environment Program**  
**World Conservation Monitoring Centre**

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**Lead Author:**

Ed McManus  
Senior Programme Officer  
Marine and coastal programme  
UNEP-WCMC  
[Edmund.McManus@UNEP-WCMC.org](mailto:Edmund.McManus@UNEP-WCMC.org)

**Data analysis:**

Carmen Lacambra  
Consultant  
UNEP-WCMC

**Database development and IT support**

Phil Fox  
Head of Programme: GIS and Internet Services  
UNEP-WCMC

Ian May  
GIS Developer: GIS and Internet Services  
UNEP-WCMC

**Project development and editorial support:**

Dr. Edmund Green  
Head of programme: Marine and coastal programme  
UNEP-WCMC

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## Introduction

Overfishing has been identified as a major problem affecting marine ecosystems and is acknowledged as a global threat to biodiversity. The FAO estimates that between 69% to 74% of fish stocks globally are overfished or fully exploited

Fisheries restrictions are used to manage and conserve fisheries resources. In the Caribbean these restrictions come in different forms (gear, species, effort interventions) and are implemented at a range of spatial scales. They may be implemented at a local scale e.g. marine protected areas, no take, catch and release areas, FCMZs (fisheries conservation and management zones), or in territorial waters and EEZs. This may mean a spectrum of interventions from restrictions on some gears at some times all the way through to a completely closed area protected from any anthropogenic impact.

**Definition:** IUCN has defined an MPA as *'any area of inter-tidal or sub-tidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment'*.

Globally, less than 1% of the planets marine environment is categorised as protected, and less than 0.01% as no-take zones.

All of these areas may directly or indirectly benefit fisheries resources in the area and in adjacent waters. Previous studies have catalogued and analysed the benefits of no take zones. This study is intended to detail all of the areas that will provide benefits to marine resources in the Caribbean that are not necessarily strict no-take zones.

No-take zones are *'areas of the sea completely protected from all extractive activities. Within a reserve, all biological resources are protected through prohibitions on fishing and the removal or disturbance of any living or non-living marine resource, except as necessary for monitoring or research to evaluate reserve effectiveness'*<sup>1</sup>.

## Background to project

The UNEP-World Conservation Monitoring Centre (UNEP-WCMC) and World Commission on Protected Areas (WCPA) Marine collaborated on a preliminary database and map of areas in the Wider Caribbean<sup>2</sup> where fishing is restricted<sup>3</sup>. The preliminary approach was to examine information within two databases. 1. The World Database of Protected Areas (WDPA). This is a global database of protected areas, including MPAs, maintained by UNEP-WCMC on behalf of a consortium of

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<sup>1</sup> Scientific Consensus Statement On Marine Reserves and Marine Protected Areas

<sup>2</sup> This list identifies all of the political jurisdictions which have interests in the Wider Caribbean, and many of the major islands or island dependencies in the region: Antigua and Barbuda, Bahamas, Barbados, Belize, Colombia, San Andres, Costa Rica, Cuba, Dominica, Dominican Republic (Hispaniola), France, French Guyana, Guadeloupe, St. Barthelemy, St. Martin, Marie Gallante, Isles des Saintes, Martinique, Grenada, Grenadines, Guatemala, Guyana, Haiti (Hispaniola), Honduras, Bay Islands, Jamaica, Mexico, Aruba, Bonaire, Curacao, Saba, St. Eustatius, St. Maartin, Nicaragua, Panama, San Blas Islands, St. Kitts & Nevis, St. Lucia, St. Vincent and Grenadines, Bequia, Suriname, Trinidad and Tobago, Anguilla, Bermuda, British Virgin Islands, Cayman Islands, Montserrat, Turks and Caicos, United States, Puerto Rico, US Virgin Islands, Venezuela, Margarita.

<sup>3</sup> Green, EP. 2001. Restricted Fishing Zones in the Wider Caribbean: results of a literature and database survey. UNEP-WCMC. 18pp and 1 map.

organisations. 2. The CAMPAM (Caribbean Marine Protected Areas Managers) database.

This research demonstrated that although basic data on MPAs are available, few data are available on the fisheries restrictions that exist within the MPAs. It was also found that many sites exist that do not adhere to the IUCN definition of an MPA (and consequently are not recorded in the WDPA) yet have fishery related restrictions, or restrictions that may indirectly benefit resources or biodiversity. It was the aim of the project to document the fishery restrictions for as many areas in the Wider Caribbean.

Importantly, it was never the purpose of this project to consider the degree of implementation of any one restriction. Rather, this data should provide the first step in collating knowledge on the existence on fisheries restrictions in the Wider Caribbean to which more data can be added in the future for further analysis.

### **Project summary and methodology:**

The three main steps of the project can be summarised as:

- 1) Collection of data through mail, phone and in-person survey of fisheries and MPA managers in the region, including consultations during relevant conferences. The questionnaire was developed with the assistance of WCPA marine, NOAA, CARICOM Fisheries Unit (specifically Milton Haughton), Jim Bohnsack and the fisheries and MPA managers in the region. For practical reasons<sup>4</sup> the starting / entry point for data collection was normally MPA and fisheries managers (involved in the management of MPAs). These sources generously provide data on no take areas, but also no entry, catch and release, spatio-temporal variations, and species and gear restrictions.

The questionnaire was divided into 5 separate sections. Each section had a series of options with tick boxes that could also be filled in on line.

- a) General information: Name, size, year established etc.
- b) Management of MPA: Legislative authorities etc
- c) Stakeholder involvement: Stage of involvement etc.
- d) Monitoring: Types of data collected etc
- e) Restrictions: Gear species and other restrictions.

There was also a section request any other relevant information or maps.

- 2) Analysis of the data to identify gaps in these restrictions, and attempt to correlate the restrictions in place with regionally important marine ecosystems;
- 3) Production of interactive maps and internet accessible database

Step 1 also necessitated the collation of national level plans from a variety of different national, regional and international organisations. This was to ensure that a proposed gap in restrictions at a site level was not provided through national legislation. The fisheries related sections of national legislation for 35 countries is included in the 'Details of fishery restrictions' (see page 23). This information has also been aggregated by species for a regional analysis of management for different taxa (see Appendices 4-6).

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<sup>4</sup> The CAMPAM (Caribbean Marine Protected Areas Managers) database already exists and served as a useful starting point.

It was felt that step 2 necessitated a simplified indicator approach for the assessment and presentation of restrictions for local sites that were not, no-take, no-entry or catch and release only. A novel approach is presented here (see page 23).

### **Project objectives:**

Based on the discussions at the 54<sup>th</sup> GCFI meeting, the database and maps are seen to have two primary benefits, which are the objectives of the initiative:

- Understanding Neighbours - The database will be a tool for regional information exchange; from defining the status of neighbouring management programs to identifying others in the region with similar issues, it will create a platform for regional communication.
- Determining levels of protection – Based on the levels of management and gaps in present coverage identified, the database will help regional policy makers formulate recommendations and draft new legislation for the protection of vulnerable species and promote the sustainable livelihood of fishermen within the region.

It is envisaged that the database will serve as the foundation and prototype of a global information initiative, growing to include data on restricted fishing zones in other regions through follow-up projects.

### **Purpose of the report key findings:**

The purpose of this report is to provide an overview of the results and discuss the key findings.

Through this project, data on areas with fishery restrictions that include no take, no entry, catch and release, and other areas that allow fishing and have a range of restrictions has been collected. Data has also been collected on all of the fishery restrictions that apply at a national level (restrictions within EEZs, territorial waters and national zoning and fishing priority plans). The national level restrictions have also been aggregated by key commercial species (see Appendices 4 – 6).

It was found that national level zoning is used to reduce conflict between commercial and artisanal fishers, and at a site level zoning is used to reduce conflict between fishers and recreational users. Monitoring and surveillance systems were often lacking in capacity (at a site and national level) and therefore there was a paucity of data to analyse the impact of MPA designation on resources and fishers welfare. Site level fishery restrictions were often complementary to national level interventions, however some taxa of vulnerable flora and fauna are currently not adequately protected.

## Summary of key findings

### National level

- At a national level. The number and extent of species, gear and other effort restrictions varies widely through out the region. For example there are few restrictions in the Caymans and Costa Rica, but many highly defined restrictions in Bermuda.
- Although bans (seasonal and all year) and restrictions are present for many vulnerable species of marine flora and fauna these are not found in every country. For example, bans exist for sharks in Nicaragua and the USA (seasonal). However, no other shark fishery bans were recorded for other countries.
- 13 of the 35 countries have bans on the use of fishing activities involving explosive or noxious substances (E/NS) (see Appendix 7).
- Some countries have implemented zoning that demarcates discrete areas that can only be targeted by artisanal fishers e.g. Costa Rica.

### Site level

- Of the 173 returned questionnaires (detailing 201 sites) 152 sites were recorded as no take (122 sites), no entry (17), and catch and release (13).
- Approximately 50 other sites are described that were NOT no take, no entry or catch and release. All year species and gear bans dominated these areas.
- Of the 14 categories of gear bans all were predominantly all year bans. The majority of the species bans were predominantly all year bans apart from deep slope, and coastal and large pelagics.
- There were approximately three times as many all year restrictions for conch, lobster, turtles and shallow shelf species (between 16 and 20 records) as there were for other species.
- For most countries there were complimentary sets of restrictions between the national and local level. For example in the Bahamas, Belize, Netherlands Antilles and Nicaragua there were a relatively high number of species bans at a national level, while there were no species bans at a site level.
- Of the 173 responses at least 77% of the MPAs contained coral reef, 25% mangrove and 16% seagrass (with 133, 43 and 27 responses respectively).
- 57% (of 161 responses) reported an IUCN designation. 53% and 40% of responses (92) recorded category IV and II designation respectively.
- The most frequently cited management objective was to conserve individual habitats (58% of 163 responses).
- 79% of respondents (from 116) and 77% of respondents (from 121) were unsure of any type of change in the welfare of the fishers and fishery resources respectively since establishment. For the other responses on fishery resources, 13% thought that there had been an increase, with 5% reporting a decrease and 4% responding no change. A total of 10% respondents thought that fisher's welfare had increased, 5% thought they had decreased and 6% thought it had remained the same since implementation.
- Approximately half of the MPAs had management plans.
- Many MPAs had awareness programmes.
- 73% (of the 141 responses) described the nature of the stakeholder involvement with the MPA as consultative. The most frequently reported stages for stakeholders involvement were at the initiation and enforcement stages (over 46% of responses).



## Challenges encountered

The major challenges encountered can be categorised into three separate categories.

### 1) Questionnaire development

The key stage of the questionnaire design was developing the questions. This was particularly problematic when deciding on question categories and response options for the actual fishery restrictions. For example when choosing response options for the species section it was difficult to decide on the degree of taxonomic resolution that should be provided. Should there be a complete list of all species / commercial species / taxonomic groups by genus or family in the region? Or would any of these options provide lists that were too long after each species has further options as to the temporal nature of the restriction e.g. all year ban / seasonal ban. After consultation it was agreed that only a few taxonomic groups would be mentioned (e.g. lobster, conch etc.) and that other options would be reflect the categories in country management plans as provided by the CARICOM Fisheries Unit.

### 2) Collating data and completed questionnaires

One of the lengthiest parts of the project was collecting the completed questionnaires. Questionnaires were sent to approximately 327 sites (173 responses detailing 201 separate sites). This was for many different and understandable reasons. Often MPA and fishery managers are too busy with their day to day activities to fill (yet another) questionnaire. However most of the questionnaires were completed (and the data further augmented by data from website as described by various managers). In the end nearly 60 % were completed in this way. It was also hard to decide on a cut off date for the receipt of questionnaires. Using other questionnaire based project advice (from a variety of sources) it was agreed that the data would be uploaded into the database and analysis started after 50% of questionnaires were received (several advisors suggested that 30% return rate is sufficient for an international project).

Also and far more importantly are the severe weather conditions that have affected the region. This year (2004) has seen some atrocious conditions with millions affected. In 2003 the region experienced a less destructive but still devastating season. Therefore it is unsurprising and understandable that throughout certain periods of the year the priorities for many locals are that of survival and recovery from the destructive forces of the hurricane season. It is also worth pointing out that in many cases the effects of these climatic events may be felt for many months after with communications effected within the islands.

### 3) Analysis of results

It was decided that providing the reader with an understanding on the number of responses to a particular question would provide an understanding on what weight a particular graph or conclusion should carry. Also it analysing the 'level of protection' afforded to any one MPA was considered problematic for the following reasons:

- For some categories of restriction not enough data was received
- It was considered naïve to oversimplify some of the responses and come to spurious conclusions regarding the information provided. For example one element that was to be considered when assessing the 'level of protection' was looking at the existence / non-existence, or the implementation / non-implementation of a management plan. Information to this effect does not provide evidence that conclusively says that there is active management on the ground. Nor does the presence of patrols, or the existence of penalties translate as active enforcement strategies. Therefore the conclusions that are

provided should be considered in this light. Also, differentiating between subtly different interventions (e.g. for lobsters, no take of berried females / as opposed to no take of berried females and moulting individuals) and weighing up and assigning a difference in the level of protection this represents, then standardizing it against equally subtle differences in other types of intervention. Then to eventually 'total' all the interventions points and provide a useful and accurate estimation of the level of protection for any one MPA is considerable. Furthermore to carry this out between different MPAs in the same or different countries with totally different gear restrictions and adds to the problem. As data was collected for nearly two years (November 2002 – July 2004) some restrictions may have changed. It is hoped that these problems were noted and corrected through a review of the initial draft of the report.

- Problems with the lack of particular answer options e.g. the differences between entry and gear restrictions for local and industrial fishers.

## **Introduction to the marine environment of the Caribbean**

The following text is based in whole or in part on information provided through the Seas Around Us Project<sup>5</sup> and the Large Marine Ecosystem<sup>6</sup> website<sup>7</sup>.

### **Brief Description:**

The Caribbean Sea Large Marine Ecosystem is a semi-enclosed sea located in the Western Hemisphere between North and South America, and bounded by Central America to the west. It encompasses an area of 2,515,900 square kilometres and is the second largest sea in the world. It is noted for its many islands, including the Leeward and Windward Islands situated on its eastern boundary, Cuba, Hispaniola, Puerto Rico, Jamaica and the Cayman Islands. There are numerous banks and breaking shoals. The LME is comprised of four deep basins: the Venezuelan Basin in the east, the Colombian Basin in the west (from which it is separated by a ridge), the Cayman Trough in the northwest, and the Yucatan Basin in the north. There is little seasonal variation in surface water temperatures. Temperatures range from 25.5 degrees Celsius in the winter to 28 degrees Celsius in the summer.

### **Productivity:**

According to the SeaWiFS global primary productivity estimates the Caribbean Sea LME is considered a low productivity ecosystem, although upwelling along the northern coast of Venezuela contributes to relatively high productivity in that area. Other factors contributing to the greater productivity of South America's northern coast are the nutrient input from rivers and estuaries. The remaining area of the LME is mostly comprised of clear, nutrient-poor waters.

### **Fish and Fisheries:**

The Caribbean Sea LME produces an estimated catch of ½ million metric tons. Venezuela accounts for 53.5%, Cuba for 16%, Guyana for 8%, and the Dominican Republic for 3%. The remaining 34 countries account for 2% or less. Since most of the fishing is artisanal, it is likely that a substantial proportion of the catch is unreported. The principal modes of fishing are traps and handlines, with some netting and spear fishing. Over 170 species are caught for commercial purposes, but most of the catch is comprised of less than 50 species. Venezuela has the higher catch due to higher productivity in that area, the size of its shelf and a pelagic fishery that includes yellow fin tuna and swordfish. On a country-to-country basis, the most common species harvested in the Caribbean Sea LME are spiny lobster (*Panulirus argus*), coralline reef fishes, and conch. Several species of sea turtles are threatened or endangered in many areas in the Caribbean as a result of overexploitation.

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<sup>5</sup> SAUP: <http://saup.fisheries.ubc.ca/lme/summaryinfo.asp?LME=12>

<sup>6</sup> A Large Marine Ecosystem is a distinct area defined by its hydrography, bathymetry, productivity and trophic structure.

<sup>7</sup> LME: <http://www.edc.uri.edu/lme/intro.htm>

## **The role of fisheries in the regional economy<sup>8</sup>:**

### **Contribution to GDP**

Generally fisheries in the region play a minor role in the economy of each country. However, in most countries, the methodology used for estimating fisheries contribution to GDP only takes into account the primary production value, excluding the value added further along the production chains. However, despite the modest share of GDP, the economic importance of fisheries is localized and highly concentrated playing a major role in many coastal areas representing the main source of employment and livelihood.

### **Contribution to food supply**

Fish is an important contributor to food supply, and per capita consumption is well above the world average. For many coastal communities fish is the only source of animal protein, and per capita fish supply greatly exceeds national averages.

### **Contribution to employment**

No precise figures for employment are available, but it is estimated that hundreds of thousands of people are employed directly and indirectly. Most of this employment is generated in coastal areas often far from urban settlements, representing further economic and social benefits that also address regional development requirements.

## **Biological diversity<sup>9</sup>**

The diversity of life ensures that living things will be able to adapt to a future, which is certain to be full of change. The Wider Caribbean region contains diverse and productive coastal and marine habitats. The region represents the greatest concentration of biodiversity in the Atlantic Ocean Basin. The region was classed as one of the most important global biodiversity 'hotspots' by Myers et al. (2000<sup>10</sup>) using several different criteria. Chief amongst these criterion were the number of endemic plants and vertebrates, and the percentage of the global total of endemic species.

Marine biodiversity data for the Wider Caribbean region has been collated and published by the UNEP World Conservation Monitoring Centre in 1996<sup>11</sup>. Some of the data is presented here.

Caribbean Regional Sea: biodiversity data

SPECIES	ENDEMIC	TOTAL FOR REGION	%	SPECIES	ENDEMIC	TOTAL FOR REGION	%
Seagrasses	2	7	15	Sharks	14	76	22

<sup>8</sup> FAO Fisheries Circular No. 921 FIPP/C921, Rome, 1996, ISSN 0429-9329. FISHERIES AND AQUACULTURE IN LATIN AMERICA AND THE CARIBBEAN: SITUATION AND OUTLOOK IN 1996. Fisheries Department . FAO, Rome, Italy.

<http://www.fao.org/DOCREP/006/w3840e/W3840e01.htm#A12>

<sup>9</sup> WHAT IS BIOLOGICAL DIVERSITY: In the Convention of Biological Diversity the term biological diversity is defined as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems".

<sup>10</sup> Myers, R. et al. NATURE VOL 403, 24 FEBRUARY 2000, p. 853 – 858.

<sup>11</sup> WCMC Biodiversity Series No4, The Diversity of the Seas: a regional approach.

Coral genera	9	25	23	Seabirds	1	23	8
Molluscs	0	633	15	Cetaceans	9	30	34
Shrimps	0	45	13	Sirenians	9	1	25
Lobsters	8	23	15				

### **Governance:**

As many as 38 countries and dependencies border the Caribbean Sea Large Marine Ecosystem, and need to address the numerous transboundary issues existing in this LME. Currently there is a lack of coordinated support among nations for ecosystem monitoring and management, and there is a need in the region to share a relevant knowledge, harmonize legislation and effectively enforce regulations.

## **Fisheries: A major threat to marine biodiversity in the Caribbean**

Increasingly, ecosystems in the Wider Caribbean region are coming under pressure from human activities. Some of these main anthropogenic pressures include habitat destruction due to coastal development and certain fishing practices, increases in the local population, pollution and sedimentation, alien invasive species, and overexploitation of living resources. Overexploitation of marine resources is looked at in more detail in the following section.

### **Overexploitation Targeted fisheries**

Overexploitation of living resources means catching a species in amounts faster than it can reproduce and replace itself.

The main target fisheries within the area are for small and large pelagic finfish, reef fishes, coastal demersal finfish, crustaceans and molluscs. Many of these species have life history characteristics that make the development of sustainable fisheries targeting them possible. However according to FAO's 1994 assessment, over one third of the stocks in the region were regarded as fully fished, overfished, depleted or recovering (this assessment did not include mollusc stocks which are important for the fisheries of the region). Notably just under 60% of demersal stocks and 70% of pelagic stocks were overexploited. Crustacean stocks were not generally considered overexploited. However, these figures are only overall estimates, and the state of local stocks varies greatly.

Species, which mature slowly and produce few young are particularly vulnerable to overexploitation. Species that exhibit these characteristics include sea turtles and sharks. For example, some sea turtles take up to 50 years to reach sexual maturity. High mortality from natural causes combined with human exploitation and loss of nesting beaches has put six out of seven species of sea turtle in danger of extinction. Many of these species are migratory, passing through the territorial waters of many countries. Therefore to effectively conserve the whole population international cooperation is required.

### **By-catch and discards**

FAO estimated<sup>5</sup> that the Wider Caribbean Region has the highest percentage of discard of any of the major fishing areas, with nearly half of the catch believed to be discarded. Most of this is the by-catch of shrimp trawling, particularly in the Northern Gulf of Mexico.

By-catch species include marine mammals, sea turtles, seabirds, as well as finfishes and invertebrates<sup>5</sup>.

- Dolphins are caught in pelagic drift nets,
- Sea turtles in shrimp trawls,
- Seabirds in long-lines.

**Threats to habitats: Corals: An overview of the current state of a selection of Caribbean countries and the impact of fisheries<sup>12</sup>.**

Many coastal communities rely on coral reefs to supply them with goods and services. However many of these systems are under pressure from human activities. One of the main threats is overfishing. Many key commercial species spend their life history around these reefs and therefore by targeting these species fishers may inadvertently damage the corals on which the fish and fishers depend. This is because the gear that fishers use may physically impact the corals e.g. trawl nets, cast nets or traps may break or destroy large reef areas during fishing operations.

<b>COUNTRY</b>	<b>% CORAL THREATENED</b>	<b>MAIN THREAT</b>
Cuba	65	Overfishing
Cayman Islands,	80	Mainly overfishing
Jamaica, Haiti, and the Dominican Republic	80	Multiple sources (including overfishing)
Puerto Rico	90	Overfishing
U.S. Virgin Islands	85	Overfishing

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<sup>12</sup> This section is based on the text from the Reefs at Risk in the Caribbean Reefs at Risk in the Caribbean. 2004, ISBN: 1-56973-567-0 (80 pages). Laretta Burke and Jon Maidens

## **Current regimes for the conservation and management of marine resources and marine biodiversity**

### **Marine resources**

#### **Relevant international agreements for the region:**

- UNCLOS (United Nations Convention on the Law of the Sea);
- Code of Conduct for Responsible Fisheries;
- Agenda 21 of UNCED;
- the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982, relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks;
- The Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas.
- The 2002 World Summit on Sustainable Development's (WSSD) Plan of Action, which includes a target of achieving sustainable fisheries by 2015, and the establishment of representative networks of MPAs by 2012 including time/area closures for the protection of nursery grounds.
- The 2001 Reykjavik Declaration

#### **Regional fishery organizations and arrangements**

- WECAFC (Western Central Atlantic Fishery Commission)
- CARPAS (Regional Fisheries Advisory Commission for the Southwest Atlantic)
- (COPESCAL) Comisión de Pesca Continental para America Latina y el Caribe
- Oldepesca (Latin American Organization for Fisheries Development),
- OECS (Organization of Eastern Caribbean States),
- CARICOM (Caribbean Community and Common Market),
- ICAT,
- Comision Mixta Argentina -Uruguay (CMTFM),
- Permanent South Pacific Commission (CPPS).

### **Conservation of marine biodiversity**

Several international instruments exist that allow for the protection of biodiversity and the components of marine biodiversity in the region.

- The work plan for implementation of the Convention on Biological Diversity's (CBD) Jakarta Mandate
- Specially Protected Areas and Wildlife (SPA) protocol of the Cartagena Convention



## **Fishery Restrictions in the Wider Caribbean region.<sup>13</sup>**

There are two broad types of fishery management tools; input controls and output controls. Input controls limit the amount of effort commercial fishers put into their fishing activities, indirectly controlling the amount of fish caught. Input controls can include restrictions on the number of licences, the size and engine capacity of boats, the length and mesh size of nets, and the areas and times which can be worked. Input controls are used frequently in the Caribbean. One example of an input control is a no take zone.

Output controls directly limit the amount of fish that can be taken from the water. The first step in implementing an output control management regime is setting a Total Allowable Catch (TAC) or bag limit for each species. Once established, the TAC can be either fished on a competitive basis or divided up between the participants in the fishery so that all fishers have an individual quota. A TAC which is divided between the participants means that in any one year a commercial fisher is not able to catch more than their allocated weight of that species. Output controls are generally regarded as good mechanisms to control the total catch in single species, high value fisheries which are targeted using a single gear type (such as abalone and lobster). However they are usually seen as more expensive to implement.

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<sup>13</sup> In this section national waters are regarded as being under some level of control by national authorities, including coastal, territorial and Exclusive Economic Zone.

The United Nations Convention on the Law of the Sea (UNCLOS) defines maritime jurisdictional boundaries. These zones are defined by their distance from the land or baseline. The **Territorial Sea** is a belt of water not exceeding 12 nautical miles in width measured from the territorial sea baseline.

**Coastal Waters** (first 3 nautical miles). Normally under the control of states or regional authorities which have certain jurisdictional rights over the water column and the subjacent seabed.

The **Exclusive Economic Zone** (12-200 nautical miles) is an area beyond and adjacent to the territorial sea. The outer limit of the exclusive economic zone cannot exceed 200 nautical miles from the baseline. Nations have the right to the right to explore and exploit the sea bed and water column

### **No take zones are input controls.**

No take zones (NTZ) provide a way to protect critical habitats and ecosystems, and can allow for the maintenance of representative samples of natural habitats and biological diversity. There is now a wealth of data to demonstrate that NTZ may also be a useful tool that will lead to increased catches within the perimeter of the protected area, and in adjacent waters. They are a cost effective means to conserve and sustain marine resources. They are important when there is a paucity of data (biological etc). In this way they can act as a buffer against uncertainty. They may also:

1. Minimize the damage to habitats caused by fishing activities.
2. Protect biodiversity.
3. Eliminate user conflict.
4. Protect spawning aggregations
5. Protect nursery areas

They are also thought to benefit adjacent fisheries. It is thought that this occurs by net emigration of adults and juveniles across borders, ('spillover'), and export of pelagic eggs.

The benefits of MPAs to fisheries are not universally agreed upon by scientists. In particular they can not guarantee the protection of highly migratory species, for example tunas or whales. Also they may not benefit every type of fishery found outside of the protected area. This may be because due to spawning characteristics or early life history stages of the species (larval and settlement times etc.)

**Successful implementation:** The key to successful establishment of any protected area is to ensure stakeholders are a valued part of the decision-making process. It is also essential to conduct a wide array of research, monitoring, enforcement, and educational activities. Other factors include the need for adequate capacity for surveillance.

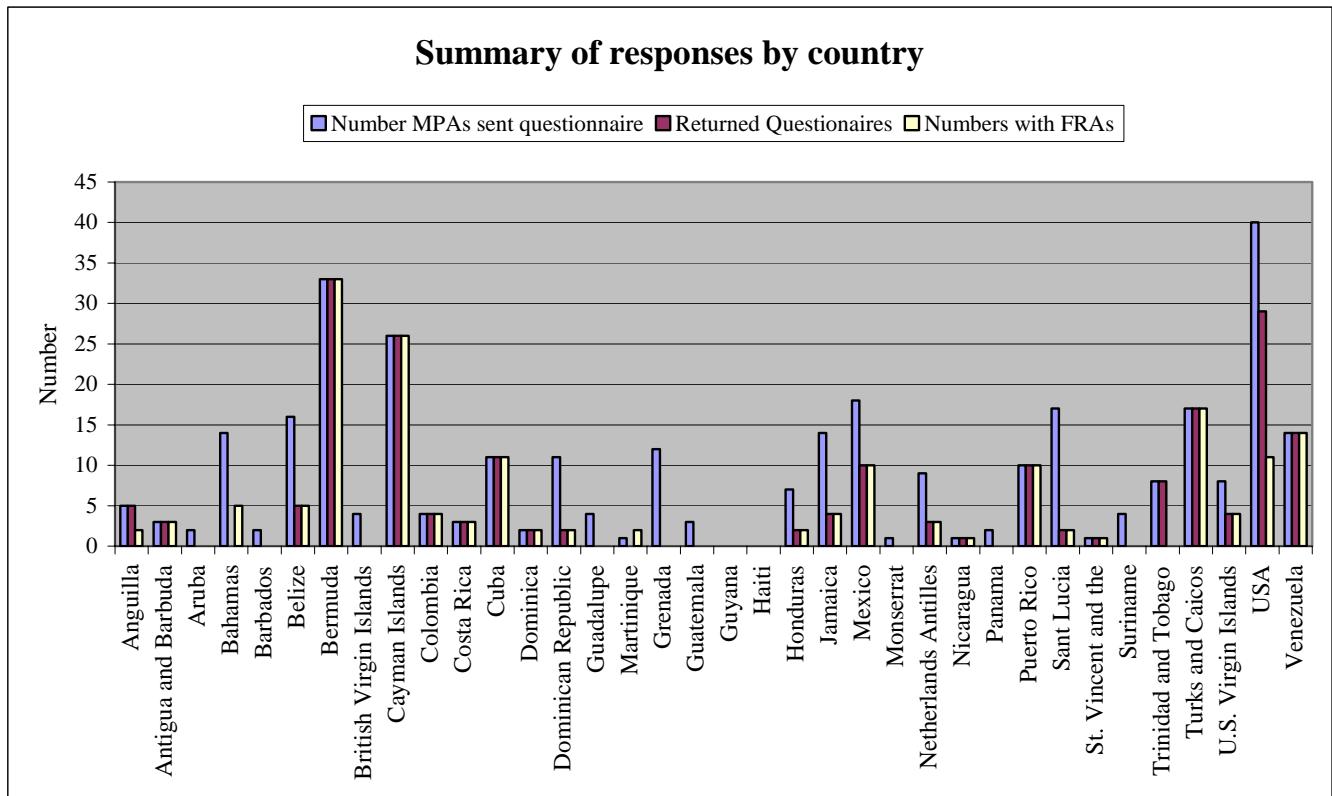
The Specially Protected Areas and Wildlife (SPA) protocol of the Cartagena Convention provides for a network of protected areas. In almost every Caribbean nation a number of ecologically important areas have been designated by national legislation as marine and coastal parks and protected areas.

## Overview of results

### Summary

The following section is an overview of the results from MPAs that exist at a local or site level (with a spectrum of different interventions), including no take, no entry, and catch and release zones.

327 questionnaires were sent out. Of the 173 site<sup>14</sup> managers responding (201 including each documented zone) around 5% were completed using official MPA websites (which the data analyst was directed to by management agencies). Summary graphs for all of the themes presented here can be found in Appendix 1.



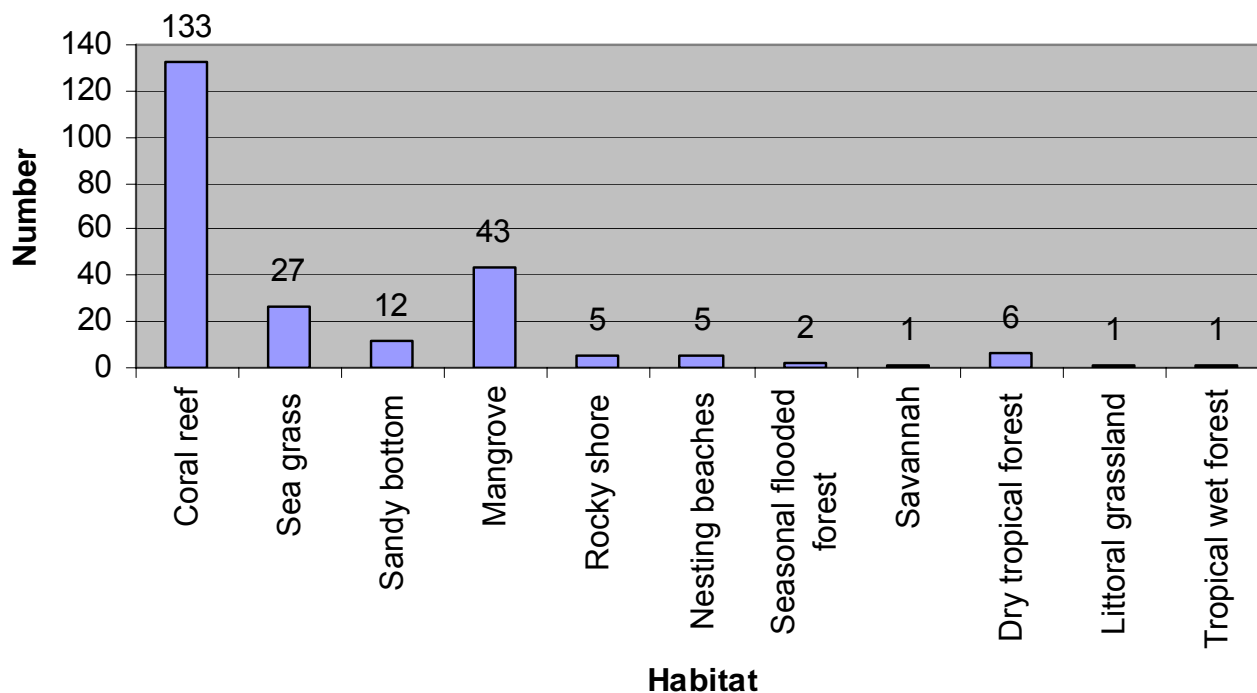
### Key findings

#### Habitats within the Fisheries Restricted Areas.

Of the 173 responses at least 77% of the MPAs contained coral reef, 25% mangrove and 16% seagrass (with 133, 43 and 27 responses respectively). Notable exceptions were Venezuela and Colombia. In Venezuela only 21% (3 of the 14), and none of the 4 Colombian MPAs reported coral reefs as the principle habitat type. For these two countries mangrove was the most frequent habitat with 93% (13 of the 14) in Venezuela and 100% (all four) of the MPAs in Colombia. Mexico was the most diverse with regard to habitat types (reporting 8 out of the reported 10 habitat types). (See Appendix 12 for details).

<sup>14</sup> Site refers to sub-national areas e.g. MPAs. This terminology is used as some times it maybe misleading to call an individual an FRA manager as this may imply that their primary role is a fishery manager. Also it is to avoid confusion when discussing areas that are not MPAs.

## Habitat occurrence within the MPAs for the entire region (No. Responses: 173)



### Management of the MPAs

58% (of 136 responses) indicated that the MPA was part of a network of reserves. Of the top five most commonly reported management objective categories for the MPAs, (from 163 responses) conserving individual habitats was the most common (58% of responses). The conservation of fisheries resources and the conservation of individual species were reported 52% and 41% times respectively. The protection of nursery and spawning grounds was reported 37% and 40% respectively. The promotion of tourism, and recreation were also important management objectives with 28% and 5% of responses. The latter is of interest especially when viewed in light of the response to the question on what conflicts that the MPA was intended to reduce. 56% (of the 141 responses) described a reduction in the conflicts between fishers and recreational users as the principal objective.

57% (of 161 responses) reported an IUCN designation. 53% and 40% of responses (92) recorded category IV and II designation respectively. Only 4% were for category VI, which means managed for sustainable resource extraction.

#### Protected areas are divided into six types, depending on their objectives:

Category I – **Protected area managed mainly for science or wilderness protection** (Strict Nature Reserve/Wilderness Area);

Category II – **Protected area managed mainly for ecosystem protection and recreation** (National Park);

Category III – **Protected area managed mainly for conservation of specific natural features** (Natural Monument);

Category IV – **Protected area managed mainly for conservation through management intervention** (Habitat/Species Management Area);

Category V – **Protected area managed mainly for landscape/seascape conservation and recreation** (Protected Landscape/Seascape);  
Category VI – **Protected area managed mainly for the sustainable use of natural ecosystems** (Managed Resource Protected Area). (IUCN, 1994)

Approximately 49% had no management plan (149 responses), with 63% (of 134 responses) recording the presence of a manager on site who is directly responsible for the MPA. Of the 139 sites that reported the use of indicators for monitoring 73% MPAs used ecological and biological indicators to monitor the area. Socio-economic and management effectiveness indicators were also used in 23% and 21% of the MPAs respectively. 79% of respondents (from 116) and 77% of respondents (from 121) were unsure of any type of change in the welfare of the fishers and fishery resources respectively since establishment. For the other responses on fishery resources 13% thought that there had been an increase, with 5% reporting a decrease and 4% responding no change. A total of 10% respondents thought that fishers welfare had increased, 5% thought they had decreased and 6% thought it had remained the same since implementation.

Due to the paucity of relevant data it is not possible to equate this information with other parameters. For example does the year of implementation (age of MPA) correlate with a change in resource or welfare).  
(See Appendices 13 –15)

### **Awareness programmes and stakeholder involvement**

Many MPAs had awareness programmes. 94% had a programme (of the 152 responses). There were 10 different recorded formats with 79% of sites detailing the use of brochures and pamphlets. Community meetings and outreach programmes comprised the next two most prevalent formats with nearly 33% and 26% reported programmes respectively. 70% (of the 143 responses) recorded both stakeholders and the general public as the key audiences. Nearly as many programmes targeted policy makers as they did children (approximately 50% for both). Very few programmes targeted tourists and staff (6% and 1% of responses respectively).

In most cases, 73%, the nature of the stakeholders involvement with the MPA was consultative (of the 141 responses). 100% of the stakeholders involved in Cuban MPAs had a delegated responsibility. Nearly 10% of the MPAs had no stakeholder involvement (see Appendix 1 for a full breakdown). For the 130 MPAs that involved stakeholders and provided feedback the most frequently reported stages for stakeholders involvement were at the initiation and enforcement stages (over 46% of responses). In just under 31% of MPAs, stakeholders were included in the designation and implementation stage, similarly for the stage. 24% and 12 % were involved in the monitoring and evaluation respectively.

53% of MPAs (of the 140 respondents) had capacity building projects that aim to make stakeholders more effectively involved in the above processes.

### **Monitoring, control and surveillance.**

#### **Monitoring**

From 138 responses 30 % collected no fishery data. 56% of respondents detailed the collection of biological data. Relatively few collected data on catch and effort (23% and 17% respectively). For the completed questionnaires no information on by-catch was recorded.

### Control

98% of MPAs had penalties to fishery infringements (149 from 151 responses). From 132 responses detailing the penalties the three most prevalent types of penalty were fines (100%), catch confiscation (93%) and vessel confiscation (56%). Other types of penalty were significantly less prevalent throughout the region. Imprisonment and gear confiscation was reported approximately 25% and 13% by respondents respectively. Other penalties included revoking of licenses, gear destruction, decommissioning and warnings.

### Surveillance

Of the 133 MPAs to respond to the question on types of surveillance patrol vessels logbooks and landing inspections were recorded in 43%, 20% and 31% of these responses.

### Temporal coverage

The number of wardens varied from site to site between 0 – 20, and the number of warden person days / year from 0 – 4000 (Florida Keys).

### Sharing of information:

Nearly all sites that responded recorded that they did not share any fisheries data with other sites on the same coastline or other countries.

### **Fishery restrictions**

Status of the MPA: No entry, no take, and catch and release.

Of the 173 returned questionnaires (detailing 201 sites) the majority of them could be assigned one of the above labels. 150 responses for the MPA status were recorded; of these 81% were no take, 11% no entry and 9% catch and release.

### **Gear, species and other restrictions over and above national legislation.**

The following data is for MPAs that were not no take, no entry or catch and release (approximately 50 sites).

In general terms the striking feature of the data, with regard to gear and species bans at a regional level, were the differences in the temporal nature of the bans. Of the 14 categories of gear bans all were predominantly all year bans. The majority of the species bans were predominantly all year bans apart from deep slope, and coastal and large pelagics.

At a regional level all categories of gear types (traps, dredges, seine, cast, gillnet, trolling; diving associated fishing activities) were banned with similar frequencies (between 20 and 30 records per gear type). However there was a lower frequency of hook and line, spear fishing, longline and vertical longline bans (between 5 and 10 for each gear type). Within the gear category under the 'other gear' category several other types were recorded. These were drift nets in all of the Puerto Rican MPAs, and in Parque Marino Nacional Arrecifes de Cozumel all destructive gears are banned. All nets are banned in Los Flamencos Fauna and Flora Sanctuary in Columbia.

There were 92 records of other restrictions. The key restrictions were quota or bag limits, minimum size of fish, mesh size and gender of species (with 37, 37, 24 and 14 records). Other restrictions included engine capacity, length and number of vessels, number of fishers per vessel and number of fishers.

## Fisheries restrictions in the Wider Caribbean

This section will present an overview of the main findings. Firstly, a novel approach for the rapid assessment of fishery interventions is presented

### An indicator approach to the analysis of management intervention.

Management measures are often multi-dimensional (incorporating gear, species and effort restrictions, all with potential temporal variations) relying on the complex interaction of different management elements (sometimes many different elements). To simplify discussions on levels of protection, indicators were developed for gear and species bans for every MPA. 'Other restrictions' were summarised in text. This approach is for the assessment and presentation of restrictions for local sites that were NOT, no-take, no-entry or catch and release.

#### Indicator-scoring methodology: gear and species bans

Indicators are normally used to simplify monitoring, evaluation and reporting. In many cases they are used to communicate relatively complex issues in simplified terms to policy makers or the public.

#### What is an indicator?

An indicator can be defined as (OECD 1993): A parameter or a value derived from parameters, which provides information about a phenomenon. The indicator has significance that extends beyond the properties directly associated with the parameter value. Indicators possess a synthetic meaning and are developed for a specific purpose.

**Why use an indicator-scoring methodology in this analysis?** Instead of discussing ALL of the multi-dimensional elements of the management measures, this approach **simply** describes the number, and potential impact, of gear and species bans on marine resources and biodiversity. The scoring methodology produces a species ban indicator (SBI) score and a gear ban indicator (GBI) score for bans over and above the national legislation. These can be used to make **rapid** and general assessments regarding the degree of protection afforded to any one area, after consideration of other restrictions (e.g. effort).

**What does a SBI or GBI score tell us?** For example, if there are very few national level species bans, and if a MPA in that country had a low SBI score then this may rapidly highlight potential gaps in the legislation for that particular MPA. When this approach identified such cases a detailed analysis of the actual species and gear bans was conducted. A high score tells us that there is a large number of separate bans on low impact gears, or several bans on more destructive / indiscriminate gear that may protect resources and biodiversity.

In other words this approach **aids** the analysis by drawing the attention of the scientist to particular sites to look at in more detail.

**Other restrictions:** Only species and gear indicators have been developed. 'Other restrictions' have not been included as it is very difficult within the constraints of this project to provide even a simplistic scoring system. For example it would be extremely difficult to ascertain the difference in the effect of a horsepower restriction over the reduction of a mesh size of wire traps of 2 inches, or against the number of fishers per vessel. All of these were responses but at present it is not possible to use these data (especially as little detail is available for these categories of restriction).

**Methodology:** All gears and species were grouped into major categories as defined in national management plans in the region. Each gear and species ban (seasonal and all year) was then placed into a matrix with a scale of 1 through to 4. For gear, 1 is the least severe and 4 the most severe. Placement of any one-gear type on the scale is considered in terms of impact on habitat, by-catch/target specificity. For species, 1 is the least vulnerable and 4 the most vulnerable. This approach is based on a highly definitive approach to the assigning of numerical values to commercial gear types (Morgan, Lance. E.<sup>15</sup>)

GEAR BAN	SCORE	RATIONAL
Dynamite Dredges Bottom trawls	4	1. Indiscriminate (both flora and fauna) 2. Wide area
Drift nets Gillnets Trammel	3	1. High by catch
Longlines (Vertical pelagic, bottom) Pots/Traps Spear guns Beach seine Cast net	2	1. Lower levels of by catch (also considering dimensions of gear).
Hook and line (and chumming) Trolling Mid water trawl Breathing gear	1	1. Lower by catch 2. Lower habitat impacts

Spear guns appear in category 2 as due to their ability to damage habitat compared to hook and line. Breathing apparatus has been added to the gear section (as opposed to the other / effort restrictions and to category 1, as it often appears as a 'gear restriction' with spear guns etc. and can greatly augment the degree of effort of these classes of grappling and wounding gear).

SPECIES BAN	SCORE	RATIONAL
Turtles Corals Threatened species	4	1. Threatened 2. Highly vulnerable to overexploitation
Conch Lobster Shrimp Urchin Large pelagics Marine Mammals Sharks	3	1. Highly vulnerable to overexploitation 2. Overexploited / recovering
Shallow shelf and reef fishes Deep slope fishes	2	1. Exploited / some associated species overexploited, 2. Vulnerable to overexploitation
Coastal pelagics	1	1. Under exploited / exploited

#### Notes on calculation

<sup>15</sup> Morgan, Lance. E. Shifting gear : addressing the collateral impacts of fishing methods in U.S. waters. Lance E. Morgan, Ratana Chuenpagdee.p. cm. — (Pew science series on conservation and the environment) Includes bibliographical references. ISBN 1-55963-659-9 (pbk.)



1) National level data: The first step was to assess the national level gear bans and then eliminate values for that gear from the site level data. This is to ensure that the indicators provide information on interventions over and above national legislation. For example, if site X records a restriction for an all year fishing ban on conch and lobster but no other interventions. It may be misleading to conclude that a ban on landing marine mammals does not exist and that this is a possible gap in the site level management plan. This is because there may be a national restriction on marine mammals that applies to the site. Similarly, it may also be misleading to say that site X has more interventions than site Y (that only has a ban on conch fishing). This is because national legislation may provide a ban on lobster fishing, and therefore both sites have a similar level of protection over and above national legislation.

On several occasions general gear / species restrictions are recorded in the plans. On these occasions a complete ban is not recorded as the details are not known and the restriction may be on gear construction (e.g. Costa Rica's plan mentions 'gear restrictions' for the demersal and pelagic demersal fisheries). Questionnaires would also include details of national legislation (although only interventions 'over and above' national legislation were requested). Therefore, for an analysis of site level GBI scores it was necessary to compare the site level plans and the national plans and then take away the GBI score from the site level from categories of gear that were the same as those detailed in the national management plan.

2) Potential problems with the gear indicator: The other main problem with this approach is that some gears are used to target particular species. They may be the only gear that fishers are allowed to use for the capture of those species. For example in many countries only the use of a noose/loop is allowed for the capture of lobsters. However species specific gear bans were not recorded for any of the relevant sites (not designated as a no take zone etc) and therefore this is not a problem for the calculations presented in the report.

In contrast, a blanket ban on all gears apart from e.g. rod and line would mean a high GBI score. In a couple of cases such legislation is detailed in no-take zones (such as Negril), or in MPAs where all other gears are explicitly banned gear by gear (Tortuguero National park in Costa Rica). Negril does not fall under the GBI scoring analysis as it is a NTZ, and all the gears that are banned in Tortuguero are scored and used the analysis. The main exceptions to this are found in Mexico (Parque Nacional Arrecife de Puerto Morelos, Parque Nacional Isla Contoy and Parque Marino Nacional Arrecifes de Cozumel). On these occasions one or two gear types are allowed and the others are banned (and combined with other restrictions). The presentation of a score under these circumstances may be misleading. For these reasons no scores are provided and a narrative is presented instead.

In Barbados the use of beach seines and cast nets are banned near coral reefs (national management plan). However, as corals were not recorded in the MPA these were not included in the scoring.

Different gears will have different impacts on different substrates. For example a seine net may have a much greater overall impact when used over a coral reef / seagrass bed than when used over a sandy bottom. The difference in mesh sizes within one gear type is not considered (e.g. mesh size of traps varying between 1.5 to 2 inches). The impacts would differ from set to set, or cast to cast and from site to site. Therefore a level of subjectivity in the assigning of GBI scores is inevitable.

For some countries there are many different categories of species that have specific protection at a national level. This may have been a problem if the same had happened at a site level and thus there may have been the danger of an overestimation of the SBI. However this was not the case for the NON-no take zones that were analysed.

### **Limitations to the analysis**

This analysis should not be the foundation for comments concerning the relative level of protection of biodiversity comparing one site with another. For example, if site A has a GBI score of 1 and site B a GBI score of 10, the following conclusions cannot be reached:

- Site A's resources/biodiversity is under 10 times more fishing pressure than site B. (Site A may not need any other gear interventions as there is relatively little effort directed there; high scoring gear types are not banned as there is no need for the bans in the areas as the relevant target species do not exist in the area; or other species, closed area etc. provide the necessary protection).
- Institutional arrangements are not adequate. (See the points given above. This can only be stated if the national legislation is considered and the ban would be relevant for the site e.g. the species for which there is no ban exists in the area or is vulnerable to overexploitation).

Also, if a site 'A' has a species management indicator (SBI) of 10 and site 'B' a score of 20 in the same country, the following conclusion cannot be reached:

- Site A has half of the necessary interventions (it is entirely possible that site A has fewer species associated with the MPA and therefore does need the same number / type of interventions).

These indicators should not be taken in isolation as each management plan uses different, gear, species and effort restrictions that can combine to present a comprehensive plan to protect any species or ecosystem. The 'Other' (including effort) restrictions are included below the indicator data and should be considered along with the GBI and SBI scores. It is also important to consider the MPAs management in light of the other information provided (particularly surveillance data). Ultimately the site level data should then be discussed with the national level interventions.

## Details of restrictions

These will be presented for each country at a range of geographical scales.

- 1) An overview of the national level restrictions are presented (all national level data comes from a range of sources (CARICOM Fisheries Unit<sup>16</sup>, FAO LEX, FAO Fisheries Country Profiles<sup>17</sup>) for the wider Caribbean.
- 2) National zoning is then described, if information was available. This is usually characterised by the demarcation of areas for the exclusive use of artisanal or industrial fishers.

These first two sections are included to provide a backdrop for the site level MPAs.

- 3) Site level restrictions that were collected from the questionnaire survey are then summarised. This presents a list of areas that are no take, no entry or catch and release. After which a list of other sites is introduced. This section presents a novel approach to simplify and facilitate analysis and communication of the restrictions at a site level (see below).

At the end of each country section an attempt is made to summarize the national and site level information and point to any legislative gaps.

Some restrictions are not recorded here. In particular information on licensing was not always available. For example in many countries (e.g. Jamaica) all shrimp fishers and vessels are required to register on an annual basis. This is an important element in any fishery management plan. Please refer to the relevant documents in the FAO LEX website<sup>18</sup> for further details.

The data is presented in alphabetical order. If no information was collected at a site level then only the national level data is shown.

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<sup>16</sup> Provided by Dr. Milton Haughton of the CFU.

<sup>17</sup> Country profiles. <http://www.fao.org/fi/fcp/fcp.asp>

<sup>18</sup> <http://faolex.fao.org/faolex/>

## ANGUILLA

### National legislation

Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Minimum-size (95mm carapace length) <input type="checkbox"/> Restrictions on taking berried females <input type="checkbox"/> Must be landed live
Target Fishes	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size restrictions- Minimum shell length (18 cm)
Target Fishes	<input type="checkbox"/> Turtle
Current Regulations	<input type="checkbox"/> Moratorium on fishing
Gear restrictions	<input type="checkbox"/> Minimum mesh size of wire fish traps is 1.5 inches <input type="checkbox"/> Gillnets are banned <input type="checkbox"/> Explosives or noxious substances banned

### Comments

#### General

A description for each of 5 parks was received from Anguilla.

#### Legislation

**National level:** There are restrictions for lobster, conch and turtles. There are also gear restrictions pertaining to mesh size of traps and a ban on gillnets.

**Site level:** None of the five parks appeared to adhere to the definition of a fishery restricted area. The relevant restrictions pertain to the parks where there is a prohibition on anchoring. However entry is still allowed and fishing there are no other fishery interventions.

NAME OF RESERVE	GBI score	SBI score
Sites	0	0

#### Summary and conclusion:

National level legislation provide for several gear and species-specific restrictions. However, there are no MPAs.

## ANTIGUA AND BARBUDA

### National Legislation

Target Fishes	<input type="checkbox"/> Shallow Shelf and Reef Fishes (species not specified)
Current Regulations	<input type="checkbox"/> Size restrictions on meshed gears (Traps and nets)
Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Minimum-size / weight limits; <input type="checkbox"/> Restrictions on fishing gear (hand, loop, pot or trap caught only) <input type="checkbox"/> Restrictions on taking berried females or moulting individuals; <input type="checkbox"/> Closed seasons; <input type="checkbox"/> Ban on landing dead lobsters <input type="checkbox"/> Ban on possession of moulting lobsters
Target Fishes	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )*
Current Regulations	<input type="checkbox"/> Size restrictions- Minimum shell length and meat weight; <input type="checkbox"/> Harvesting only flared lip conchs permitted.
Target Fishes	<input type="checkbox"/> Turtle
Current Regulations	<input type="checkbox"/> Closed season (1st March – 31st Aug) <input type="checkbox"/> Minimum size (4 species specified – Leatherback, Green, Hawksbill, Loggerhead) <input type="checkbox"/> Interfere with nesting sites prohibited
Target Species	<input type="checkbox"/> Coral and other marine fauna
Current Regulations	<input type="checkbox"/> None to be taken without written permission from the chief fisheries officer
Target Species	<input type="checkbox"/> Aquarium fish
Current Regulations	<input type="checkbox"/> None to be imported, sold or exported without written permission from the chief fisheries officer
Gear restrictions	<input type="checkbox"/> Spear guns – not to be used without written permission from the chief fisheries officer <input type="checkbox"/> Minimum mesh size of seine nets and mesh wire traps is 1.5 inches

**Penalties for infringements of national level interventions:** Up to a: \$5000 fine or 12 months in prison.

### Comments

#### General

A questionnaire for each of 3 restricted areas was received from Antigua and Barbuda. All three contain coral reef.

## Legislation

**National level:** There are restrictions for lobster, conch, aquarium fish, turtles and marine fauna. There are also gear restrictions pertaining to mesh size of traps and seines, and a further regulation on spearguns.

### Site level:

- 1) **Management:** All were initiated and are now managed by government organizations (only Cades Bay has a management plan). All three were established to conserve habitats and fisheries resources. The Cades Bay Marine Reserve is a multiple use management area, which has been zoned for use by fishers and recreational users. The objective of Cades Bay is to reduce conflicts between fishers and recreational users (divers etc.). Both Diamond Reef and Palaster Reef are among the first Fisheries Restricted areas established in Antigua and Barbuda. They are both at an early stage of management policy and institutional development. The management objectives for the site are to conserve and sustain fisheries resources and conserve individual habitats.
- 2) **Monitoring:** Ecological/biological indicators are used to monitor Cades Bay (catch, effort, and biological data). Fisheries resources and fishers welfare were described as remaining the same since implementation. Monitoring is not underway in the other two.
- 3) **Awareness programmes and stakeholder involvement:** There are no awareness programmes and stakeholders are involved in the implementation of Cades Bay in a consultative capacity.
- 4) **Surveillance and enforcement:** All year surveillance comprises of patrol vessels (coast guard and fisheries division) at all three sites. There are landings inspections for Cades Bay.
- 5) **Fishery management interventions:** All are no take and therefore constitute a high level of protection.

Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
Cades Bay Marine Reserve		X	
Palaster Reef		X	
Diamond Reef		X	

### Summary and conclusion:

All are no take and therefore constitute a high level of protection. Only one area has a management plan and there appears to be limited stakeholder involvement in all of the areas.

## BAHAMAS

### National legislation

Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Minimum-size limits (5.5 inch tail) <input type="checkbox"/> Closed seasons (April 1 – July 31); <input type="checkbox"/> Only to be taken for family consumption in the vicinity of New Providence or any Family Island. <input type="checkbox"/> Gear restrictions (dimensions)
Target Fishes	<input type="checkbox"/> Scale fish
Current Regulations	<input type="checkbox"/> Catch bone fish with nets, or buy / sell them. <input type="checkbox"/> Catch, buy / sell grouper and stone fish under three pounds. <input type="checkbox"/> Restrictions on export
Target Fishes	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )*
Current Regulations	<input type="checkbox"/> Size restrictions- Minimum shell length and meat weight; <input type="checkbox"/> Harvesting only flared lip conchs permitted.
Target Fishes	<input type="checkbox"/> Sponges
Current Regulations	<input type="checkbox"/> Size restrictions (wool – 5.5 inches, reef 1 inch, grass – 5.5 inches, hard head- 1 inch)
Target Fishes	<input type="checkbox"/> Marine mammals
Current Regulations	<input type="checkbox"/> No person to interfere with marine mammals within EEZ (unless with written permission of Minister)
Target Fishes	<input type="checkbox"/> Stone crab
Current Regulations	<input type="checkbox"/> Closed season 1 <sup>st</sup> June – 15 <sup>th</sup> October (or possess crab during these dates) <input type="checkbox"/> Minimum size (claw – 4 inches).
Target Fishes	<input type="checkbox"/> Turtle
Current Regulations	<input type="checkbox"/> Closed season (1 <sup>st</sup> April – 31 <sup>st</sup> July) <input type="checkbox"/> No capture of turtles on any beach and no harvesting or possession of eggs <input type="checkbox"/> Complete ban on Hawksbill (minimum size restrictions for Green 24 inches, loggerhead 30 inches).
Target Fishes	<input type="checkbox"/> Coral
Current Regulations	<input type="checkbox"/> Not to be uprooted or destroyed without permission of Minister <input type="checkbox"/> Sell coral without a license
Current Gear Regulations	<input type="checkbox"/> Ban on use of explosives or noxious substances <input type="checkbox"/> Restrictions on use of spear guns (including no tournaments) <input type="checkbox"/> Gill, drag, cast, seine nets only (unless for cultured, 'small species', goggle-eye, or members of herring or silverside families). Mesh size 2 inches minimum. <input type="checkbox"/> Wire mesh trap mesh size restrictions (1.5 inch hexagonal, 2 inches for welded or woven).

## Comments

### General

Data was collected for 5 restricted areas. All are no take.

### Legislation

**National level:** There are restrictions for lobster, conch, scalefish, marine mammals, crab, turtles and marine fauna. There are also gear restrictions pertaining to four different types of nets, and further regulations on spearguns and E/NS fishing.

### Site level:

- 1) **Management:** All were established in 1990. Exuma Cays Land Sea Park (of which Exuma Keys is a part) was established in 1958.
- 2) **Monitoring:** No data available
- 3) **Awareness programmes and stakeholder involvement:** No data available
- 4) **Surveillance and enforcement:** No data available
- 5) **Fishery management interventions:** All are no take and therefore constitute a high level of protection.

Site level interventions: No take status

NAME	NO ENTRY	NO TAKE <sup>19</sup>	CATCH AND RELEASE
North Bimini		X	
Berry Islands		X	
South Eleuthera		X	
Exuma Cays		X	
Northern Abaco Cays		X	

### Summary and conclusion:

As all areas are no take the legislation may therefore be adequate.

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<sup>19</sup> The information for the existence of these no take areas are derived from Appeldoorn and Linderman



## BARBADOS

### National level legislation

Target Fishes Shallow Shelf and Reef Fishes	e.g. parrotfish, surgeonfish, grunts
Current Regulations	<input type="checkbox"/> Minimum trap mesh size <input type="checkbox"/> Escape panels in traps <input type="checkbox"/> Traps carry identification <input type="checkbox"/> Explosives and noxious substances not permitted <input type="checkbox"/> Trammel nets prohibited <input type="checkbox"/> Marine protected areas <input type="checkbox"/> Closed areas and seasons
Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> ) and spotted
Current Regulations	<input type="checkbox"/> Prohibit harvest of berried lobsters or removal of eggs <input type="checkbox"/> Marine protected areas <input type="checkbox"/> Closed areas and seasons
Target Fishes Deep slope fishes,	<input type="checkbox"/> e.g. snappers, groupers
Current Regulations	<input type="checkbox"/> Minimum trap mesh size (3.18cm) <input type="checkbox"/> Escape panels in traps <input type="checkbox"/> Traps carry identification <input type="checkbox"/> Marine protected areas <input type="checkbox"/> Closed areas and seasons.
Target Fishes Coastal pelagics,	<input type="checkbox"/> e.g. herrings, jacks, small tunas
Current Regulations	<input type="checkbox"/> Minimum mesh size for seine nets (3.81cm) <input type="checkbox"/> Closed areas and seasons <input type="checkbox"/> Habitat protection <input type="checkbox"/> Prohibit seining and cast-netting near reefs <input type="checkbox"/> Marine protected areas <input type="checkbox"/> Prohibition on landing all tunas less than 3.2 kg.
Target Fishes Large pelagics,	<input type="checkbox"/> e.g. dolphin, tunas, kingfish, swordfish, shark,
Current Regulations	<input type="checkbox"/> Observe international management measures <input type="checkbox"/> Promote establishment of a regional fisheries management organization <input type="checkbox"/> Cooperate and collaborate with international stock assessments
Flyingfish	
Current Regulations	<input type="checkbox"/> Marine protected areas <input type="checkbox"/> Cooperate and collaborate with regional stock assessments

	<input type="checkbox"/> Promote co-management <input type="checkbox"/> Maximum gillnet length of 2.5 km (but no local fishery is developed and no international fishery is licensed) <input type="checkbox"/> Investigate option of vessel licensing to reduce entry.
Sea urchins	Sea egg
Current Regulations	<input type="checkbox"/> Use of SCUBA for harvesting is prohibited <input type="checkbox"/> Closed seasons and areas
Sea urchins	White sea egg ( <i>Tripnuestes ventricosus</i> )
Current Regulations	<input type="checkbox"/> Harvesting moratorium to rebuild stocks <input type="checkbox"/> Co-management
Marine ornamentals	<input type="checkbox"/> Flora and Fauna
Current Regulations	<input type="checkbox"/> Chief fisheries officer permission is required.
Turtles	<input type="checkbox"/> e.g. loggerhead, hawksbill, leatherback
Current Regulations	<input type="checkbox"/> Indefinite prohibition of harvesting and selling eggs and animals

**Penalties for infringement:** \$50,000 Bds or up to 2 years imprisonment.

## Comments

### General

Data was collected for 1 restricted area.

### Legislation

**National level:** There are seasonal and permanent bans for lobster, conch, urchins, turtles and flying fish. Regulations also exist for fish throughout the water column. There are bans on the use of trammel nets and E/NS fishing.

### Site level:

- 1) **Management:** No data available
- 2) **Monitoring:** No data available
- 3) **Awareness programmes and stakeholder involvement:** No data available
- 4) **Surveillance and enforcement:** No data available
- 5) **Fishery management interventions:**

Site level interventions:

NAME OF RESERVE	GBI score	SBI score
Barbados Marine Reserve	5	0

### Summary and conclusion:

Although few bans and regulations exist at a site level, the major fish resources and turtles are covered through national level restrictions. No protection for marine mammals was recorded.

## BELIZE

### National level legislation

Target Species	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Minimum-size limits (i.e., Minimum carapace length is 3 inches, Minimum tail weight is 4 ounces) <input type="checkbox"/> Closed season is February 15th-June 14th <input type="checkbox"/> Taking berried females or moulting individuals is prohibited; <input type="checkbox"/> Ban on landing dead lobsters; <input type="checkbox"/> Use of spearguns, Hookah, and SCUBA is prohibited.; <input type="checkbox"/> No fishing is allowed in marine reserves. <input type="checkbox"/> No lobster fishing in fore reef
Target Species	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Gear restrictions - Fishing with SCUBA and Hookah is illegal. <input type="checkbox"/> Size restrictions (Shell length should exceed 7 inches, Market clean weight should exceed 3 ounces (85 g), <input type="checkbox"/> Closed season is from July 1st -September 30th. <input type="checkbox"/> Closed areas- No fishing is allowed in marine reserves. <input type="checkbox"/> Exports controlled under CITES. <input type="checkbox"/> Ban sale of "out-of-season" and "undersize" conch to hotels/restaurants.
Target Species	<input type="checkbox"/> Marine ornamentals
Current Regulations	<input type="checkbox"/> Areas for sustainable fisheries have been defined
Target Species	<input type="checkbox"/> Shrimp ( <i>Penaeus</i> sp.)
Current Regulations	<input type="checkbox"/> The joint venture agreements set out certain licensing conditions including a limit on the number of foreign crew. <input type="checkbox"/> Closed season - four (April 15 <sup>th</sup> – August 14th) months.
Target Species	<input type="checkbox"/> Turtles
Current Regulations	<p>Turtles of the following description should not be disturbed:</p> <input type="checkbox"/> Green turtle ( <i>Chelonia midas</i> ) curved carapace length greater than 60 cm (24 inches) <input type="checkbox"/> Loggerhead turtle ( <i>Caretta caretta</i> ) curved carapace length greater than 60 cm (24 inches). <input type="checkbox"/> No person shall buy, sell, or have in his possession any articles made of turtle shell. <input type="checkbox"/> No person should interfere with any turtle nest or take any turtle found on land. <input type="checkbox"/> Closed season is April 1st- October 31st, inclusive in any year. <input type="checkbox"/> Hawksbill turtle ( <i>Eretmochelys imbricata</i> ) it is illegal to fish, sell, purchase, or have in your possession any article of this turtle.
	<input type="checkbox"/> Coral

Target Species	
Current Regulations	<input type="checkbox"/> Illegal to take or possess corals (except black coral, order <i>Antipatharia</i> , with a license)
Current Gear Regulations	<input type="checkbox"/> Ban on use of explosives or noxious substances <input type="checkbox"/> Net construction and mesh size law (and placement restrictions: One hundred yard from the reef or the fore reef, at river mouths, a half mile in any community, in a channel) <input type="checkbox"/> Provisions also may be made for species, temporal and spatial regulations (e.g. nursery areas) <input type="checkbox"/> No setting of traps or nets on the reef or the fore reef <input type="checkbox"/> SCUBA equipment is prohibited in any type of fishery

**Penalties for infringements of national level interventions:** Infringements include fines (not more than \$1000, and a provision to fine by individual fish landed illegally), imprisonment (not more than 6 months) and gear confiscation  
Need for fishing licences (personal and boat licenses for commercial fishing).

### Comments

#### General

Data was collected for 4 restricted areas. All four contain coral reefs. Sea grasses, mangrove and sandy flats are also found in this area.

#### Legislation overview

**National level:** There are seasonal bans for lobster, conch and shrimp. There are bans on the use of E/NS.

#### Site level:

- 1) **Management:** From the responses to this section, government and non-governmental organisations were equally involved in the initiation of the areas (and local stakeholders). Glover's Reef is part of a network of reserves. A responsible individual (e.g. a manager) is on site on Glover's Reef. The management objectives for the sites included to conserve and sustain fisheries resources, promote tourism and conserve individual habitats. The objective of the sites (not Half Moon) is to reduce conflicts between fishers and recreational users.
- 2) **Monitoring:** Fisheries resources were recorded as increasing in Hol Chan and Glover's Reef. In Hol Chan fishers welfare were described as increasing since implementation. It is not known if the resources / welfare changed in the other two sites. Ecological/biological indicators are used to monitor these sites. Catch and effort data in Glovers and biological and positional data in Blue Hole. Socio economic indicators were also used in Hol Chan and Blue Hole.
- 3) **Awareness programmes and stakeholder involvement:** These comprise of classes/training, brochures /pamphlets and outreach programmes. Stakeholders are involved in the initiation, designation, evaluation and implementation of Glovers Reef in a consultative capacity. In Half Moon and Blue Hole stakeholders are involved in the monitoring, enforcement, evaluation and implementation in a consultative capacity. In Hol Chan stakeholders are involved in the evaluation and implementation in a consultative capacity.

- 4) **Surveillance and enforcement:** Patrol vessels, vessel boarding, landing inspections and are used. This is delivered through 2 – 3 wardens working 365 days a year. Penalties exist for infringements
- 5) **Fishery management interventions:**

Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
Glover's Reef Marine Reserve - Wilderness Zone	X		
Glover's Reef Marine Reserve - Spawning Aggregation Site		X	
Glover's Reef Marine Reserve - Conservation Zone			X
Half Moon Caye Natural Monument		X	

Site level interventions:

	GBI SCORE	SBI SCORE
Blue Hole Natural Monument	0	0
Glover's Reef Marine Reserve - General Use Zone <sup>20</sup>	8	0
Hol Chan Marine Reserve	0	0

**Summary and conclusion:**

Although few bans and regulations exist at a site level, the major fish resources are covered through national level restrictions. No regulations were found for other fish species.

<sup>20</sup> The area of the reserve in this zone is 27,098 ha

## BERMUDA

### National level legislation

Target Species	<input type="checkbox"/> Spiny lobster <sup>21</sup> ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Minimum-size limits (carapace length of 3 5/8 inches; second tail segment (the segment nearest the carapace and having two large spots) of 1 3/8 inches; tail weight 12 ounces); <input type="checkbox"/> Closed season Taking berried females or moulting individuals is prohibited; <input type="checkbox"/> Using any gear type other than that for which the fisher is licensed: commercial-standard traps only, recreational-lobster noose only; <input type="checkbox"/> All lobsters must be landed whole <input type="checkbox"/> Recreational lobster divers may only take two lobsters per day <input type="checkbox"/> Area restrictions apply to both commercial and recreational fishers, however, former spatial separation between these two user groups is no longer maintained. <input type="checkbox"/> Imported lobsters are inspected for compliance with regulations.
Target Species	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Total ban since 1978.
Target Species	<input type="checkbox"/> Marine turtle
Current Regulations	<input type="checkbox"/> Taking of turtles on any beach or foreshore is illegal.
Target Species	<input type="checkbox"/> (a) <i>Mycteroperca interstitialis</i> , which includes Monkey rockfish, Flag rockfish and Salmon rockfish; and <input type="checkbox"/> (b) <i>Mycteroperca bonaci</i> , which includes Black rockfish, Runner rockfish and Black grouper,
Current Regulations	<input type="checkbox"/> In possession of more than one individual.
Target Species	<input type="checkbox"/> Red hinds ( <i>Epinephelus guttatus</i> )
Current Regulations	<input type="checkbox"/> In possession of more than ten individuals between 1st May and to the 31st August
Target Species	<input type="checkbox"/> Lane snapper, Silk snapper Whitewater snapper ( <i>Lutjanus synagris</i> )
Current Regulations	<input type="checkbox"/> It is illegal for any person, other than a registered fisherman, to take or be in possession of, on a vessel which is not a licensed, more than thirty fish during any continuous period of twenty-four hours
Tuna and Bill fish	<input type="checkbox"/> Yellowfin tuna ( <i>Thunnus albacares</i> ) and bigeye tuna

<sup>21</sup> The information for the Spiny Lobster has been extracted from: Trot, T., Luckhurst, B. & Medley P. 2003. Report of the Second Workshop on the Management of Caribbean Spiny Lobster Fisheries in the Wecafc Area Havana, Cuba, 30 September - 4 October 2002 Western Central Atlantic Fishery Commission. FAO Fisheries Report/FAO Informe de Pesca. No. 715. Rome, Roma, FAO. 2003. 273p.  
[http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/DOCREP/006/Y4931B/Y4931B00.HTM](http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/006/Y4931B/Y4931B00.HTM)  
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Current Regulations	<p>(<i>Thunnus obesus</i>) a weight of 7 lbs. (3.2 kgs) and bluefin tuna (<i>Thunnus thynnus</i>) a weight of 30 kgs (66 lbs) or 115 cm (45 ins) fork length and</p> <input type="checkbox"/> Swordfish ( <i>Xiphias gladius</i> ) a weight of 25 kgs (55 lbs) or 125 cm (49 inches) fork length measured from the lower jaw.
Other species Regulations	<input type="checkbox"/> Black rockfish ( <i>Mycteroperca bonaci</i> ) - 75 cm (30 ins) fork length <input type="checkbox"/> Monkey rockfish ( <i>Mycteroperca interstitialis</i> ) - 50 cm (20 ins) fork length <input type="checkbox"/> Red hind ( <i>Epinephelus guttatus</i> ) - 35 cm (14 ins) fork length <input type="checkbox"/> Hogfish ( <i>Lachnolaimus maximus</i> ) - 35 cm (14 ins) fork length <input type="checkbox"/> Yellowtail snapper ( <i>Ocyurus chrysurus</i> ) - 30 cm (12 ins) fork length <input type="checkbox"/> Lane snapper ( <i>Lutjanus synagris</i> ) - 25 cm (10 ins) fork length
Target Species	<input type="checkbox"/> Bonefish ( <i>Albula vulpes</i> ), pompano ( <i>Trachinotus glaucus</i> )
Current Gear Regulations	<input type="checkbox"/> It is illegal to take any bonefish or any pompano with gear other than on a hook and line
Gear  Current Regulations	<input type="checkbox"/> Use of, or possession of gillnets <input type="checkbox"/> Restriction on the use of cast nets (spatial) and bait nets <input type="checkbox"/> Use of any net to catch yellow tail, hogfish, or any fish of the family Serranidae (including rockfish, hind and grouper); <input type="checkbox"/> It is illegal to: <p>(a) use a fishing net with meshes measuring less than 1/8 inch (3.2mm) when measured diagonally at full stretch; or</p> <p>(b) use a seine with meshes measuring less than 1/2 inch (13mm) when measured diagonally at full stretch; or</p> <p>(c) use a trawl with meshes measuring less than 3 inches (76mm) when measured diagonally at full stretch; or</p> <p>(d) not be a registered fisherman operating from a licensed fishing vessel, using or has in his vessel or on the shore-line any fishing net other than a cast net or a bait net not exceeding 75 feet (23 m) in length and 9 feet (2.7m) deep,</p> <input type="checkbox"/> Use a spear gun to take fish or lobster <input type="checkbox"/> Use of fixed fishing gear (e.g. traps) to take fish <input type="checkbox"/> Use of explosive or poisonous substances <input type="checkbox"/> Use of dredge and trawl is illegal (unless licensed)

**Penalties for infringements:** Imprisonment for up to one year or a fine of up to \$5000, or both.

### Comments

#### General

Data was collected for 33 restricted areas. 32 of which contained coral reef. All are no take.

### Legislation

**National level:** There are bans for lobster (seasonal) and conch (all year).

**Site level:**

- 1) **Management:** Many of the sites were created to protect wrecks for diving. All were initiated and are now managed by government organizations. 32 do not have management plans. The management objectives for the sites included the promotion of tourism and conserve individual habitats. At South Western Protected Area, North Eastern Protected Area and Eastern Protected Area the objectives were to conserve and sustain fisheries resources and conserve individual species (ecological/biological indicators are used to monitor these sites). The objective of most of the sites is to reduce conflicts between fishers and recreational users.
- 2) **Monitoring:** Data is not collected from the sites
- 3) **Awareness programmes and stakeholder involvement:** There are no programmes. Stakeholders are involved in a consultative capacity.
- 4) **Surveillance and enforcement:** Patrol vessels and landing inspections are used in South Western Protected Area, North Eastern Protected Area and Eastern Protected Area. This is delivered through a maximum of 5 wardens working 365 days a year. Penalties exist for infringements.
- 5) **Fishery management interventions:** All are no take and therefore constitute a high level of protection.

Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
Montana (wreck)		X	
Hog Breaker		X	
Hermes and Minnie Bressleur (wrecks)		X	
Airplane (wreck)		X	
Xing Da (wreck))		X	
Walsingham Marine Reserve <sup>22</sup>		X	
Vixen (wreck)		X	
The Cathedral		X	
Taunton (wreck)		X	
Tarpon Hole		X	
South Western Protected Area <sup>23</sup>		X	
South West Breaker Area		X	
Snake Pit		X	
Pelinaion and Rita Zovetta (wrecks)		X	
North Rock		X	
North Carolina (wreck)		X	
North Eastern Protected Area <sup>24</sup>		X	
North East Breaker		X	
Mills Breaker		X	
Marie Celeste (wreck)		X	

<sup>22</sup> The Walsingham Marine Reserve was established to protect an important inshore nursery area comprised of sea grasses and adjacent mangroves. It is a permanent no-take zone.

<sup>23</sup> The South Western Protected Area is seasonally closed to all fishing activities from May 1 - August 31 each year. The basis of the area closure is the presence of a red hind spawning aggregation site but other species are known to spawn in this same area as well.

<sup>24</sup> The North Eastern Protected Area is seasonally closed to all fishing activities from May 1 - August 31 each year. The basis of the area closure is the presence of a red hind spawning aggregation site but other species are known to spawn in this same area as well



NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
L'Herminie (wreck)		X	
Lartington (wreck)		X	
Kate (Wreck )		X	
Eastern Protected Area <sup>25</sup>		X	
Eastern Blue Cut		X	
Darlington (wreck)		X	
Cristobal Colon (wreck))		X	
Constellation (wreck)		X	
Commissioner' s Point Area		X	
Blanche King (wreck)		X	
Aristo (wreck)		X	
Madiana		X	
Caraquet (wreck)		X	

**Summary and conclusion:**

As all areas are no take, the legislation therefore may be adequate to protect the resources.

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<sup>25</sup> The Eastern Protected Area is seasonally closed to all fishing activities from May 1 - August 31 each year. The basis of the area closure is the presence of a red hind spawning aggregation site but other species are known to spawn in this same area as well.

## BRITISH VIRGIN ISLANDS

National level legislation

Target Species	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> No berried females to be caught, sold, possessed, exported <input type="checkbox"/> Berried individuals caught as by-catch to be returned to the sea immediately <input type="checkbox"/> Minimum size / weight for possession or sale - for carapace length -3.5 inches, weight - 1 pound  (Derogations for approved farms)
Gear restrictions	<input type="checkbox"/> Spear guns – not to be used without written permission from the chief fisheries officer <input type="checkbox"/> Minimum mesh size of wire mesh fish pots and traps is 1.5 inches

Other restrictions include the need for a license to operate and catch marine resources

**Penalties for infringements of national level interventions:** An infringement of the above may result in a fine of no more than \$250.

## COLOMBIA

National level legislation

Target Species	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )°
Current Regulations	<input type="checkbox"/> Quota limit
Target Species	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size restrictions concerning the minimum lip size (7 mm), meat weight and shell length (24 cm) <input type="checkbox"/> Closed season from 1Jun-31 Oct <input type="checkbox"/> Limited entry <input type="checkbox"/> Gear restriction: no scuba, no hookah <input type="checkbox"/> Closed areas <input type="checkbox"/> Harvest quota limit <input type="checkbox"/> Export quota
Target Species	<input type="checkbox"/> Pelagic fisheries
Current Regulations	<input type="checkbox"/> Harvest quota limit
Target Species	<input type="checkbox"/> Demersal fisheries
Current Regulations	<input type="checkbox"/> Harvest quota limit

### National zoning

Trawling is prohibited within 6 miles of the coast in most of the Caribbean to reduce conflicts between industrial and artisanal fisheries.

### Comments

#### General

Data was collected for 4 restricted areas. All contained mangroves

### Legislation

**National level:** There is a ban for conch (seasonal). Quotas and other restrictions exist for lobster, pelagic and demersal resources.

### Site level:

- 1) **Management:** All were initiated and are now managed by government organizations. 3 (all of the responses) did not have management plans. The objective of most of the sites is to reduce conflicts between commercial fishers. The authority for all 4 sites is provided through legislation. Providence McBean Lagoon National Park has an IUCN category designation (II) which is part of a network of reserves (ecological/biological indicators are used to monitor this site). A responsible individual (e.g. a manager) is on site in Via Parque and Providence McBean Lagoon.
- 2) **Monitoring:** Data is not collected from the sites
- 3) **Awareness programmes and stakeholder involvement:** Stakeholders are involved in initiation, enforcement and implementation in a consultative and collaborative capacity. There are capacity building programmes to increase effective stakeholder involvement in all of the sites. Classes, brochures and community meetings are used as part of awareness programmes.
- 4) **Surveillance and enforcement:** 1 – 3 wardens. All year coverage.
- 5) **Fishery management interventions:**

Site level legislation: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
El Corchal El Mono Hernandez Fauna and Flora Sacntuary <sup>26</sup>		X	

Site level legislation

	GBI score	SBI score
Via Parque Isla de Salamanca	4	0
Providence McBean Lagoon National Park	25	11
Los Flamencos Fauna and Flora Sacntuary	15	3

- **Effort restrictions:** Restrictions exist for length and engine capacity of fishing vessels. Restrictions on mesh size and minimum size of species exist.

**Summary and conclusion:**

El Cochal is a no take area. The other 3 areas have a ban on trawling. However Providence has several other gear bans, including dredging, gillnets, traps, seine nets and longlines (and vertical longlines) and spear guns. At a national level there is a ban (seasonal) on conch. Via Parque had no further species bans. There were shrimp bans in Los Flamencos (all year) and Providence (seasonal). There were further bans for lobster and shallow shelf and reef fishes in Providence.

The effort restrictions may further facilitate protection of the resources. One ‘output’ management intervention exists (minimum size of species). Output restrictions are harder to implement.

There was a high degree of protection for Providence (high GBI and SBI scores) and a much lower level for Via Parque, however the local level interventions are further augmented by some national level interventions. No interventions for threatened or vulnerable species, and marine mammals were recorded.

<sup>26</sup> Marine turtles fishing is banned all year. The use of nets on rivers and cienagas mouths is also forbidden in the area

## COSTA RICA

### National level legislation

Target Species	<input type="checkbox"/> Pelagic and Demersal Artisanal Fisheries
Current Regulations	<input type="checkbox"/> Closed areas <input type="checkbox"/> Gear restrictions

### National zoning<sup>27</sup>

- The territorial sea, in the Caribbean coast can only be exploited, by small-scale artisanal fisheries.

The government of Costa Rica has classified the fishing fleet in categories according to their autonomy:

1. Small scale artisanal fishery.
2. Medium scale artisanal fishery.
3. Advanced artisanal fishery.
4. The shrimp fleet includes either coastal or deep shrimp fishing (2 % of the fishing fleet)
5. Industrial fishery includes all the vessels that catch tuna and sardines. (0.1 % of the fishing fleet)

### Comments

#### General

Data was collected for 3 restricted areas. Corals, seagrasses, mangroves, sandy flats and nesting beaches are found in the areas.

### Legislation

**National level:** Restrictions exist for pelagic and demersal resources.

#### Site level:

- 1) **Management:** All were initiated by government departments, and are currently managed by a mixture of government and shared management systems. All have management plans. The authority for each is provided through legislation. All are part of a network of reserves. For each area a responsible individual (e.g. a manager) is on site. The management objectives were to conserve and sustain fisheries resources and conserve individual species. In Tortuguero fishers welfare were described as increasing since implementation. It is not known if the resources / welfare changed in the other two sites.
- 2) **Monitoring:** No fisheries data is collected.
- 3) **Awareness programmes and stakeholder involvement:** Stakeholders are involved in initiation, monitoring, enforcement, implementation and evaluation in a collaborative and delegated capacity. There are capacity building programmes to increase effective stakeholder involvement in all of the sites. Classes and brochures are used as part of the awareness programmes.
- 4) **Surveillance and enforcement:** 2 – 4 wardens for each site.
- 5) **Fishery management interventions:**

<sup>27</sup> FAO 2004 <http://www.fao.org/fi/fcp/es/cr/body.htm>

#### Site level legislation

	<b>GBI score</b>	<b>SBI score</b>
Tortuguero National Park <sup>28</sup>	28	5
Wildlife National Refuge Gandoca-Manzanillo management plan marine sector <sup>29</sup>	28	5
Cahuita National Park <sup>30</sup>	22	6

- **Effort restrictions:** Restrictions exist for minimum size of species and also bag limits.

#### **Summary and conclusion:**

Few restrictions were recorded for resources at a national level. However, a large number of gear bans existed for all three sites (GBI score 22-28). Species bans for conch exist in all three sites, while seasonal restrictions for shallow shelf fishes exist in Tortuguero and the Wildlife National Refuge. There is an all year ban for lobster in Cahuita National Park.

The effort restrictions may further facilitate protection of the resources. Two 'output' management intervention exists (minimum size of species and bag limits). Output restrictions are harder to implement.

No restrictions were recorded for vulnerable species (e.g. turtles) or the nesting beaches, or destructive fishing practices.

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<sup>28</sup> Only domestic fishing using fishing rods and line allowed. Observation: 90% of the community has changed from fisheries to tourism activities. There are only 50 persons still practicing fishing activities for domestic consumption

<sup>29</sup> Fishing is only allowed with rod and handline

<sup>30</sup> Fishing with fishing rod and hooks is allowed as well as lobster extraction

## CUBA

### National level legislation

Target Species	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Closed season; <input type="checkbox"/> Minimum size limits <input type="checkbox"/> Landing of berried females <input type="checkbox"/> Fishing is prohibit in nursery areas <input type="checkbox"/> Limited access to the fishery <input type="checkbox"/> Fisheries areas division among the industries
Target Species	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size restrictions concerning the minimum lip size (5 mm) and shell length (20 cm) <input type="checkbox"/> Closed season from 1May-30 Sept <input type="checkbox"/> Gear restriction: no scuba, no hookah <input type="checkbox"/> Closed areas <input type="checkbox"/> Harvest quota limit <input type="checkbox"/> Export quota

### National zoning

According to the Cuban Fishing Regulation all citizens can fish from the shore anywhere using hook and line, with the exception of those areas under special management.

The government through the National Fishing Regulations (decreto-ley 164 reglamento de pesca) has zoned fisheries areas according to their economical fishing interests:

- areas in which commercial fisheries have a preference and are mainly on the submarine shelf, down to the isobar 200m;
- areas with less economic importance were subsistence fishing and recreational fishing has priority;
- closed areas were all fisheries are prohibit and have been created to protect natural resources.

### Comments

#### General

Data was collected for 11 restricted areas. The principal habitat types were coral reef (8 areas), seagrasses (1 area), mangroves (2 areas).

#### Legislation

**National level:** There are bans (seasonal) for lobster and conch. Quotas and other restrictions (minimum size) also exist.

#### Site level:

- 1) **Management:** All have management plans. The authority for each is mostly provided through formal agreements. 6 have an IUCN category II designation and 5 a category IV designation. For each area, a responsible individual (e.g. a manager) is on site. The management objectives were to conserve and sustain fisheries resources, conserve individual habitats, protect spawning grounds, protect nursery grounds and conserve individual species. The objective of most of the sites is to reduce conflicts between fishers and recreational users, and between commercial fishers in Cayos de Ana Maria.
- 2) **Monitoring:** Fisheries resources were thought to have increased in 10 of the sites since implementation. Fishers welfare was described as decreasing

since implementation (in PN Guanahabibes, Cayos de Ana María, Rincón de Guanabo and Río Máximo). It is not known if the resources / welfare changed in the other sites. Ecological/biological indicators are used to monitor these sites (catch, effort, positional and biological data).

- 3) **Awareness programmes and stakeholder involvement:** Stakeholders are involved in the initiation, monitoring, implementation and enforcement in a delegated capacity. All have capacity building programmes to increase stakeholder involvement. Awareness programmes utilise brochures and community meetings.
- 4) **Surveillance and enforcement:** Patrol vessels and landing inspections are used. This is delivered through 3– 18 wardens working 365 days a year. Penalties exist for infringements.
- 5) **Fishery management interventions:**

Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
Ciénaga de Zapata national Park		X	X
RF Las Picuas- Cayos del Cristo		X	
Las Ioras		X	
RF Llanillo- Pajonal- Fragoso		X	
Jardines de la Reina National Park		X	X
PN Guanahabibes		X	X
Punta Francés National Park		X	
Los Caimanes National Park		X	X
Cayos de Ana María		X	X
Rincón de Guanabo		X	
Río Máximo		X	

**Summary and conclusion:**

All sites have a no take status, 5 allow catch and release.



## CAYMAN

### National level legislation

Target Species	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Closed season; <input type="checkbox"/> Gear restrictions: no scuba <input type="checkbox"/> Closed areas <input type="checkbox"/> Harvest quota of 15 ind/ person, or 20 ind/ boat

### Comments

#### General

Data was collected for 28 restricted areas. The principal habitat types were coral reef (27 areas) and seagrass (1 area).

#### Legislation

**National level:** There is a ban for conch (seasonal). Quotas and species specific gear restrictions exist for lobster (no SCUBA) also exist. No other national level restrictions were recorded.

#### Site level:

- 1) **Management:** None of the sites have management plans. Cayman Islands Marine Park System: Environmental Zone was designated an IUCN category Ib, 11 category II and 14 category IV IUCN designated areas. All are part of a network of reserves, except for Spanish Bay Reef Marine Park Zone. For each area, a responsible individual (e.g. a manager) is on site (except for Spanish Bay). The management objectives were to conserve and sustain fisheries resources, conserve individual habitats, protect spawning grounds, protect nursery grounds and conserve individual species. The objective of most of the sites is to reduce conflicts between fishers and recreational users.
- 2) **Monitoring:** Biological fisheries data is collected from all of the sites. From several of the sites specific monitoring programmes exist for conch, lobster and grouper; all three species have declined.
- 3) **Awareness programmes and stakeholder involvement:** Stakeholders are involved in the initiation, designation and enforcement in a consultative and delegated capacity. 27 sites have capacity building programmes to increase effective stakeholder involvement. Outreach initiatives and brochures are used as part of the awareness programmes.
- 4) **Surveillance and enforcement:** 8 wardens provide all year surveillance.
- 5) **Fishery management interventions:**

Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
West End Marine Park Zone		X	
7-Mile Beach Marine Park Zone		X	
Cayman Kai Marine Park Zone		X	
Cayman Islands Marine Park System: Environmental Zone <sup>31</sup>	X		

<sup>31</sup> Recorded as a no entry but there also the following notes were recorded: '5 mph access through area by boat but no in-water activity. Seasonal ban for *P. argus*, complete ban on all others. All year bans on Goliath grouper, tilefish, filefish, angel fish, Echinoderms. Turtles licensed. *Cittarium pica*, Caribbean top shell'

Dick Sessinger Bay Marine Park Zone		X	
Hawksbill Bay Marine Park Zone		X	
George Town Marine Park Zone		X	
Spanish Bay Reef Marine Park Zone		X	
NW Point Marine Park Zone		X	
Preston Bay Marine Park Zone		X	
Bloody Bay-Jacksons Marine Park Zone		X	
Spanish Bay Reef Marine Park Zone		X	

#### Site level interventions

CAYMAN <sup>32</sup>	GBI score	SBI score
West Bay Cemetary Replenishment Zone	20	12
Barkers Replenishment Zone	20	12
Colliers Replenishment Zone	20	12
Dennis Point Replenishment Zone	20	12
Gun Bay Replenishment Zone	20	12
East End	20	12
NE Bay Replenishment Zone	20	12
Cayman Islands Marine Park System: No Diving Zone	2	9
North Sound Replenishment Zone	20	12
Cayman Islands Marine Park System: Open Zone	2	9
Snipe Point Replenishment Zone	20	12
South Hole Sound Replenishment Zone	20	12
South Sound Replenishment Zone	20	12
Spotts Replenishment Zone	20	12
Treasure Island Replenishment Zone	20	12
Frank Sound Replenishment Zone	20	12

- **Effort restrictions:** Restrictions exist for minimum size of species and also bag limits. There are also mesh size restrictions for Cayman Islands Marine Park System: No Diving Zone and the Open Zone.

#### Summary and conclusion:

Although there are few national level restrictions the sites presented here are either no entry, no take or have high levels of species and gear bans (nearly all had a GBI of 19 and a SBI of 9).

There are all year species bans for turtles, conch, the Caribbean top shell and lobster. The are gear bans on trawling, dredging, gillnets, cast nets, traps, seine nets, spear guns and SCUBA.

Two 'output' management interventions exist (minimum size of species and bag limits). Output restrictions are harder to implement.

<sup>32</sup> 18 areas in the Caymans have specific monitoring programmes exist for conch, lobster and grouper; all three species have declined.

## DOMINICA

### National level legislation

Target Fishes Coastal Pelagics	<input type="checkbox"/> Jacks ( <i>Carangidae</i> ) <input type="checkbox"/> Mackerels ( <i>Scomberomorus</i> spp.) <input type="checkbox"/> Ballyhoo ( <i>Hemiramphus</i> spp.), <input type="checkbox"/> Robins or scads ( <i>Decapterus</i> spp.) <input type="checkbox"/> Small tunas and the young of large tuna such as yellowfin may also be caught. <input type="checkbox"/> Sardines ( <i>Sardinella</i> spp.)
Current Regulations	<input type="checkbox"/> Minimum mesh size for beach seines. <input type="checkbox"/> Trammel nets have also been banned and exchanged for legal nets
Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<p>The Fishery Division has adopted the following conservation measures as specified in the draft Regulations (1987):</p> <input type="checkbox"/> Minimum-size limits; <input type="checkbox"/> Restrictions on fishing gear, (e.g., use of SCUBA, spearguns, loops); <input type="checkbox"/> Restrictions on taking berried females or moulting individuals; <input type="checkbox"/> Closed seasons; <input type="checkbox"/> Ban on landing dead lobsters
Target Fishes	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Closed season <input type="checkbox"/> Size restrictions <input type="checkbox"/> Minimum shell length and meat weight. <input type="checkbox"/> Harvesting only flared lip conchs permitted. <input type="checkbox"/> Use of SCUBA.
Current Regulations	<input type="checkbox"/> Ban on use of explosives or noxious substances <input type="checkbox"/> Provisions made for other species and gear restrictions (not available)

### Comments

#### General

Data was collected for 2 restricted areas. The principal habitat type was coral reef.

#### Legislation

**National level:** There are bans for conch and lobster (seasonal). Other bans exist including E/NS, trammel nets, SCUBA and spear guns, and a minimum mesh size restriction for shallow shelf fish.

#### Site level:

- 1) **Management:** Both sites were initiated and managed by government organisations with a management plan. The authority for both is provided through legislation. One had a category II and one a category V IUCN designation. The management objectives were to protect biodiversity. In

Cabrits another recorded objective was to promote the development of new alternative productive activities.

- 2) **Monitoring:** No data available with regard to fisheries data collection.
- 3) **Awareness programmes and stakeholder involvement:** There is an awareness programme for Soufriere. Community meetings and brochures are used as part of the awareness programme.
- 4) **Surveillance and enforcement:** No data.
- 5) **Fishery management interventions:**

Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
Soufriere-Scottshead Marine Reserve <sup>33</sup>		X	

Site level interventions

	GBI score	SBI score
Cabrits National Park	0	0

- **Other restrictions:** Minimum size of species

**Summary and conclusion:**

National level interventions provide protection for the major commercial species. Soufriere is a no take MPA, Cabrits on the other hand has minimal additional regulations. There appears to be few regulations to protect vulnerable species at a national and local level.

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<sup>33</sup> The information from this survey has been extracted from: Characterization of Caribbean Marine Protected Areas: An Analysis of Ecological, Organizational, and Socio-Economic Factors. Caribbean Natural Resources Institute. (Canari). Canari Technical Report N. 287. July 2001

## DOMINICAN REPUBLIC

### National level legislation

Target Species	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Closed season; <input type="checkbox"/> Minimum-size limits <input type="checkbox"/> Capture of berried females
Target Species	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size restrictions: well formed and shell length (25 cm) <input type="checkbox"/> Closed season from 1Jul-31 Oct <input type="checkbox"/> Closed areas
Target Species	<input type="checkbox"/> Shrimp
Current Regulations	<input type="checkbox"/> Closed season;
Target Species	<input type="checkbox"/> <i>Serranidae</i> spp
Current Regulations	<input type="checkbox"/> Capture is prohibit during spawning season
Target Species	<input type="checkbox"/> Barracuda ( <i>Sphyraena barracuda</i> ), sennet, picúa ( <i>Sphyraena picudilla</i> ), almaco jack, medregal ( <i>Seriola rivoliva</i> ) and African Pampano, peje rey ( <i>Alectis crinitus</i> ).
Current Regulations	<input type="checkbox"/> Trade is prohibit all year around
Other bans	<input type="checkbox"/> Trawling gears are restricted in the estuarine areas all over the country. <sup>34</sup>

### Comments

#### General

Data was collected for 2 restricted areas. The principal habitat type was seagrass.

#### Legislation

**National level:** There are bans for the conch, lobster and shrimp fisheries (seasonal). Other restrictions exist (minimum species size).

#### Site level:

- 1) **Management:** Both sites were initiated by government departments. An NGO is involved in the management through a mixed planning arrangement. A management plan exists for both sites. The authority for both is provided through legislation. A responsible individual (e.g. a manager) is on site. The management objectives were to conserve and sustain fisheries resources, protect spawning grounds, protect nursery grounds and conserve individual species.
- 2) **Monitoring:** Catch and biological data is recorded in Canal de Catuano. Fisheries resources were thought to have increased in Canal de Catuano since implementation.
- 3) **Awareness programmes and stakeholder involvement:** The Jaragua associated site has a capacity building programme to increase effective stakeholder involvement. Community meetings, classes / training and brochures are used as part of the awareness programme.

<sup>34</sup>Información sobre la Ordenación Pesquera de la República Dominicana (Oct. 2001). <http://www.fao.org/fi/fcp/es/dom/body.htm>

- 4) **Surveillance and enforcement:** Patrol vessels and landing inspections are used. This is delivered through 20 wardens in Canal de Catuano and 22 Jaragua associated site working 365 days a year. Penalties exist for infringements.
- 5) **Fishery management interventions:**

Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
Canal de Catuano		X	
This MPA does not have a specific name. It belongs to Parque Nacional Jaragua. Southwest coast of Isla Beata, from the tide line up to 50m depth.		X	

**Summary and conclusion:**

There are management restrictions for the key commercial species at a national level. The two sites are no take zones. No restrictions were recorded for vulnerable or threatened species, or destructive fishing practices.

## GRENADA

### National level legislation

Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Minimum-size limits (3.7 inch carapace length); <input type="checkbox"/> Restrictions on fishing gear (only to be caught using hand, loop, trap or pot); <input type="checkbox"/> Restrictions on taking berried females or moulting individuals; <input type="checkbox"/> Closed seasons;
Target Fishes	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size restrictions -Minimum shell length and meat weight; -Harvesting only flared lip conchs permitted. <input type="checkbox"/> Closed seasons (Provisions are in the regulations but closed seasons have yet to be declared.)
Target Species	<input type="checkbox"/> Turtle
Current Regulations	<input type="checkbox"/> Fishing for some species of turtles is banned <input type="checkbox"/> Minimum /maximum size and weight for harvestable species
Target Species	<input type="checkbox"/> Sea urchins
Current Regulations	<input type="checkbox"/> Minimum size (3.5 inches diameter) <input type="checkbox"/> Provision for closed season
Target Species	<input type="checkbox"/> Oysters
Current Regulations	<input type="checkbox"/> To be caught only with permission of the chief fisheries officer
Target Species	<input type="checkbox"/> Coral
Current Regulations	<input type="checkbox"/> To be taken only with permission of the chief fisheries officer <input type="checkbox"/> Various activities restricted in the vicinity of coral reefs (water skiing, removal of plants)
Target Species	<input type="checkbox"/> Aquarium fish
Current Regulations	<input type="checkbox"/> None to be imported, sold or exported without written permission from the chief fisheries officer
Current Beach Seine <sup>35</sup> Regulations	<input type="checkbox"/> Minimum mesh size <input type="checkbox"/> To be used only with permission of the chief fisheries officer
Current SCUBA and Hookah Regulations	<input type="checkbox"/> To be used under license for fishing only with permission of the chief fisheries officer
Current Spear guns Regulations	<input type="checkbox"/> No non-nationals to use spear guns <input type="checkbox"/> No one to use a spear gun with hookah and SCUBA

<sup>35</sup> Also, The beach seine inshore pelagic fishery. This fishery involves about 55 vessels in the 26 to 30 foot [8-9m] size range. Vessel crews harvest mainly scads (90%), rainbow runners and other carangids, and small tunas in shallow bays along the leeward coastline. The fishery historically maintains a Territorial Use Rights in Fisheries (TURF) system for sharing fishing opportunity within the community of net crews, and this is the fishery that "seeded" other fisheries in Grenada. It now accounts for about 15 - 20% of normal annual landings. Licensing of nets applies, with restrictions on net mesh sizes. In this fishery, production has been reliable and robust over the years and the TURF System is as vibrantly applicable as in decades past (Form the FAO Country Profiles).

**Penalties for infringements of national level interventions:** Infringements may lead up to a \$5000 fine or up to 2 years in prison



## GUADALEUPE

National level legislation

Target Species	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> ) ■
Current Regulations	<input type="checkbox"/> Size restrictions 250 g cleaned <input type="checkbox"/> Closed season from 1apr.-31 Ag <input type="checkbox"/> Limited entry: only to professional fishers and registered vessels <input type="checkbox"/> Gear restriction: no scuba, no hookah <input type="checkbox"/> Closed areas

## GUATEMALA

National level legislation

Target Species	<input type="checkbox"/> Queen conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Only subsistence fishing
Target Species	<input type="checkbox"/> Shrimp
Current Regulations	<input type="checkbox"/> Closed season from 1st Apr.-15 <sup>th</sup> May

## GUYANA

National level legislation

Target Fishes  Shallow Shelf Fishes	<input type="checkbox"/> Snook ( <i>Centropomous sp.</i> , <input type="checkbox"/> Grey Snapper <input type="checkbox"/> Sea Trout <input type="checkbox"/> Catfishes <input type="checkbox"/> Butterfish <input type="checkbox"/> Croaker <input type="checkbox"/> Pagee <input type="checkbox"/> Bangamary <input type="checkbox"/> Gillbacker <input type="checkbox"/> Tarpon
Current Regulations	<input type="checkbox"/> All vessels and crew must be registered and licensed; <input type="checkbox"/> Chinese seine operators are required to have fish pen permits; <input type="checkbox"/> Placement of one pin seine in relation to another in a beach area is controlled.
Target Fishes	<input type="checkbox"/> Snappers ( <i>Lutjanus sp.</i> ) <input type="checkbox"/> Groupers ( <i>Epinephellis sp.</i> )
Current Regulations	<input type="checkbox"/> All vessels and crew must be registered and licensed; <input type="checkbox"/> Transhipments at sea are illegal.

## HAITI

National level legislation

Target Species	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size restrictions: well formed lip <input type="checkbox"/> Gear restriction: no scuba, no hookah

## HONDURAS

### National level legislation

Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Quota limit <input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Restrictions on fishing gear; <input type="checkbox"/> Closed seasons; <input type="checkbox"/> Restrictions on taking berried females
Target Species	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size restrictions: shell length (22 cm) <input type="checkbox"/> Closed season from 15 May – 15 Sept <input type="checkbox"/> Limited entry <input type="checkbox"/> Gear restriction: no hookah <input type="checkbox"/> Closed areas
Target Species	<input type="checkbox"/> Concha Reina, ( <i>Cassis madagascariensis</i> ) <sup>36</sup>
Current Regulations	<input type="checkbox"/> Size restrictions: shell length (15 cm) <input type="checkbox"/> Closed season from Sept – march <input type="checkbox"/> Limited entry <input type="checkbox"/> Quota of 12,000 specimens per year per person (there are only 3 person involved in this fishery)
Target Fishes	<input type="checkbox"/> Shrimp
Current Regulations	<input type="checkbox"/> Closed seasons
Target Species	<input type="checkbox"/> Finfish including groupers and snappers
Current Regulations	<input type="checkbox"/> Closed areas <input type="checkbox"/> Gear restriction

### National zoning

Artisanal fishing occurs along all the Caribbean coastal line and has been restricted (hook and line can be used) within the following protected areas: Parque Nacional Janeth Kawas, Parque Nacional Punta Izopo, Refugio de Vida Silvestre Cuero y Salado, Reserva Marina Cayos Cochinos, Parque Nacional Capiro, Calentura y Guaimoreto, and la Biosfera del Rio Plátano. In the Mosquitia Lagoons National Park some gears are allowed. Fishing is prohibit in all coastal lagoons

### Comments

#### General

Data was collected for 2 principal restricted areas. Further information was collected for zones. The principal habitat types were coral reef and seasonal flooded forest.

### Legislation

**National level:** There are bans for conch, shrimp and lobster (seasonal). Quotas and other restrictions (minimum size) also exist.

There is a clear division between artisanal and commercial fisheries regarding effort, gears and regulations. Artisanal fishing occurring along the Caribbean coastal line and has been forbidden within the following protected areas: Parque Nacional Janeth Kawas, Parque Nacional Punta Izopo, Refugio de Vida Silvestre Cuero y Salado,

<sup>36</sup> Información sobre la Ordenación Pesquera de la República de Honduras (March 2002) <http://www.fao.org/fi/fcp/es/HND/body.htm>

Reserva Marina Cayos Cochinos, Parque Nacional Capiro, Calentura y Guaimoreto, and la Biosfera del Rio Plátano. In the Mosquitia Lagoons National Park some gears are allowed and fishing is prohibited in all coastal lagoons (FAO Country Profile).

**Site level:**

- 1) **Management:** An NGO and private company initiated the sites, both are currently managed by an NGO. A management plan exists for both sites. The authority for both is provided through legislation. Blanca Jeannette Kawas National Park has an IUCN category designation (II). The management objectives were to conserve and sustain fisheries resources and conserve individual habitats. The objective of the sites is to reduce conflicts between fishers and recreational users (not Blanca Jeanette).
- 2) **Monitoring:** Fisheries resources were thought to have increased in Monumento Natural Marino Archipiélago Cayos Cochinos since implementation. Fishers welfare was described as increasing in all sites since implementation. It is not known if the resources / welfare changed in the other sites. Ecological/biological ,socioeconomic and management effectiveness indicators are used to monitor these sites. Catch data is recoded in Blanca Jeanette, biological data in the other sites.
- 3) **Awareness programmes and stakeholder involvement:** Stakeholders are involved in the initiation in a consultative and collaborative capacity, in the Monumento Natural Marino Archipiélago Cayos Cochinos. Stakeholders are involved in the initiation, monitoring, enforcement, implementation and evaluation in a collaborative capacity, in Blanca Jeanette. Both sites have capacity building programmes to increase effective stakeholder involvement. Community meetings, classes / training and brochures are used as part of the awareness programme.
- 4) **Surveillance and enforcement:** Patrol vessels, boardings and logbooks are used. This is delivered through 5 wardens (10 guards and community members in Blanca Jeanette) working all year. Penalties exist for infringements.
- 5) **Fishery management interventions:**

Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
Monumento Natural Marino Archipiélago Cayos Cochinos		X	
Monumento Natural Marino Archipiélago Cayos Cochinos	X		

Site level interventions

	GBI score	SBI score
Monumento Natural Marino Archipiélago Cayos Cochinos	29	7
Blanca Jeannette Kawas National Park <sup>37</sup>	0	0

- **Effort restrictions:** Mesh size restriction

<sup>37</sup> It is envisaged that provisions for bans on number, catch size and fishing seasons for each species that inhabits the park will be made

**Summary and conclusion:**

Monumento Natural Marino Archipiélago Cayos Cochinos is zoned with a no entry, no take and another area with many gear and species bans (GBI score of 29). There are gear bans on trawling, dredging, gillnets, cast nets, traps, seine nets, trolling, hook and line, long line (and vertical longline), and SCUBA and spear gun. Currently there are no bans in the Blanca Jeannette Kawas National Park.

No restrictions were recorded for vulnerable and threatened species, or destructive fishing practices.

## JAMAICA

### National level legislation

Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Minimum-size limits (carapace 7.62 cm or 3 inches); <input type="checkbox"/> Restrictions on fishing gear (industrial only); <input type="checkbox"/> Restrictions on taking berried females; <input type="checkbox"/> Closed seasons April 1 - June 30; <input type="checkbox"/> Fishing is not allowed in fish sanctuaries
Target Fishes	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Exports controlled under CITES <input type="checkbox"/> Limited entry (industrial fishers only) <input type="checkbox"/> Closed seasons (August 1 - November 30)
Target Fishes	<input type="checkbox"/> Hinds ( <i>Serranidae</i> ) <input type="checkbox"/> Parrotfishes ( <i>Scaridae</i> ) <input type="checkbox"/> Squirrelfishes ( <i>Holocentridae</i> ) <input type="checkbox"/> Grunts ( <i>Pamadosydae</i> ) <input type="checkbox"/> Surgeonfishes ( <i>Acanthuridae</i> ) <input type="checkbox"/> Triggerfishes ( <i>Balistidae</i> ) <input type="checkbox"/> Butterflyfishes ( <i>Chaetodontidae</i> )
Shallow Shelf and Reef Fishes	
Current Regulations	<input type="checkbox"/> Fishing is not allowed in fish sanctuaries; <input type="checkbox"/> The use of dynamite, poisons and other noxious substances is prohibited; <input type="checkbox"/> Mesh size restriction on beach seines (not fish pots);
Target Fishes	<input type="checkbox"/> Scaled Sardine ( <i>Harengula jaguana</i> ) <input type="checkbox"/> Red ear Sardine ( <i>Harengula humeralis</i> ) <input type="checkbox"/> Anchovies ( <i>Engraulidae</i> ) <input type="checkbox"/> Ballyhoo ( <i>Hemiramphus spp.</i> ), <input type="checkbox"/> Thread Herring ( <i>Opisthonema oglinum</i> ) (referred to locally as the 'herring sprat')
Coastal Pelagics	
Current Regulations	<input type="checkbox"/> Fishing is not allowed in fish sanctuaries; <input type="checkbox"/> The use of dynamite, poisons and other noxious substances is prohibited; <input type="checkbox"/> Mesh size restriction on beach seines
Gear regulations	<input type="checkbox"/> Beach seine construction regulations <input type="checkbox"/> Hawaiian sling ban <input type="checkbox"/> SCUBA and Hookah

### Comments

#### General

Data was collected for restricted areas. The principal habitat types was coral reef sea grass, mangrove and rocky shore.

#### Legislation

**National level:** There are bans for lobster and conch (seasonal). There is a minimum size for lobster (not for conch), and limited entry of industrial fishers into the conch fishery. There is a ban on the use of E/NS in the shallow shelf and pelagic fisheries (and restrictions on, Hawaiian sling, SCUBA/Hookah and beach seine mesh size).

#### Site level:

- 1) **Management:** The sites were initiated through local stakeholders and NGO. Currently managed through the NGO. Both have management plans and management authority is provided through legislation and a formal

agreement. A responsible individual (e.g. a manager) is on site in Discovery Bay. The management objectives were to conserve and sustain fisheries resources, protect spawning grounds and protect nursery grounds.

- 2) **Monitoring:** Fisheries resources and fishers welfare were thought to have increased in Discovery bay Fisheries Reserve (not known in Negril) since implementation. Ecological/biological indicators are used to monitor these sites.
- 3) **Awareness programmes and stakeholder involvement:** Discovery Bay - stakeholders are involved in the initiation, designation, monitoring, enforcement, implementation and evaluation in a delegated capacity. Negril - stakeholders are involved in the initiation, designation, monitoring, enforcement and implementation in a delegated consultative. Both sites have capacity building programmes to increase effective stakeholder involvement. Community meetings and brochures are used as part of the awareness programme in Discovery Bay, and there is an environmental education programme for Negril.
- 4) **Surveillance and enforcement:** Patrol vessels are used in both sites. This is delivered through 3 wardens working 260 days a year in Discovery, and 4 wardens working 365 days a year in Negril. Penalties exist for infringements.
- 5) **Fishery management interventions:**

Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
Discovery bay Fisheries Reserve <sup>38</sup>		X	
Negril Marine Park <sup>39</sup> ,		X	

#### Summary and conclusion:

Both site are no take zones. However, recreational hook and line are permitted from the shore in Discovery Bay.

## MARTINIQUE

National level legislation

Target Species	Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size restrictions: formed lip and 250g cleaned meat

<sup>38</sup> Only recreational hook and line are permitted from the shore -all other methods /collection of bait banned

<sup>39</sup> Some areas are no -take areas, in other areas fishing is allowed Most of the information for this questionnaire was extracted from: The Impact Of Marine Protected Areas On Poorer Communities Living In And Around Them: Institutional Opportunities And Constraints Appendix 5 - Case Study Of Negril Marine Park, Jamaica 2002 DFID project

## MEXICO

### National level legislation<sup>40</sup>

Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Minimum-size limits;
Target Species	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size restrictions concerning the shell length (20 cm) <input type="checkbox"/> Closed season <input type="checkbox"/> Limited entry <input type="checkbox"/> Gear restriction: no scuba, no hookah <input type="checkbox"/> Closed areas <input type="checkbox"/> Harvest quota limit
Target Species	<input type="checkbox"/> Flathead mullet, Mugil ( <i>Mugil cephalus</i> )
Current Regulations	<input type="checkbox"/> Minimum size limit (30 cm) <input type="checkbox"/> Closed season (31 Dec- Feb 28)
Target Species	<input type="checkbox"/> Octopus ( <i>Octopus maya</i> )
Current Regulations	<input type="checkbox"/> Minimum size limit (cloak 110 mm ) <input type="checkbox"/> Closed season <input type="checkbox"/> Harvest quota limit <input type="checkbox"/> Gear restriction
Target Species	<input type="checkbox"/> Grouper, Mero ( <i>Epinephelus morio</i> )
Current Regulations	<input type="checkbox"/> Minimum size limit (30 cm) <input type="checkbox"/> Closed season (15 Feb- 15 March in 2003) <input type="checkbox"/> Harvest quota limit <input type="checkbox"/> Gear restriction
Target Species	<input type="checkbox"/> Shrimp <i>Farfantepenaeus aztecus</i> <i>Litopenaeus setiferus</i> <i>F. duorarum</i> <i>F. brasiliensis</i> <i>Xiphopenaeus kroyeri</i> <i>Sicyonia brevirostris</i>
Current Regulations	<input type="checkbox"/> Closed season <input type="checkbox"/> Closed areas

### National zoning

Artisanal fishery in the Gulf of Mexico and the Caribbean Sea is an important part of the fishing sector. The catch for some species (e.g. shrimp) is comparable to the industrial fishery. Therefore there are strong pressures on the resources and also competition between industrial and artisanal fisheries. There are seasonal bans, closed areas and gear restriction for both fisheries.

The Mexican National Fishing Regulation set the framework for the different fishing activities in the country. However details of these were not found.

### Comments

#### General

<sup>40</sup> Much of the species restrictions come from La Secretaria de Agricultura Ganadería, Desarrollo Rural, Pesca Y Alimentación. Instituto Nacional De La Pesca. <http://inp.semarnat.gob.mx/Dictámenes/Dictámenes.htm>

Data was collected for 10 principal restricted areas. Further information was collected for zones. The principal habitat types were coral, seagrass, mangrove, sandy flat, rocky shore, nesting beaches, seasonal flooded forest and savannah. Mexico had the widest variety of habitats recorded by the respondents.

### **Legislation**

**National level:** There are bans (seasonal) for conch, shrimp, grouper, octopus and mullet. Quotas and other restrictions (e.g. minimum size for lobster) also exist.

### **Site level:**

- 1) **Management:** Government organizations, NGOs, a private company, research organization and research organisation were involved in the initiation of the sites. Government organizations were involved in the management of all 10 sites. 8 have management plans. All have management authority provided through legislation. 4 have an IUCN category designation (II). Most are part of a network of reserves. A responsible individual (e.g. a manager) is on site at Área de Protección de Flora y Fauna Laguna de Términos, Biosphere reserve Ría Celestún and Parque Nacional Sistema Arrecifal Veracruzano. For Biosphere reserve Ría Celestún, Reserva de la Biosfera Ría Lagartos and Parque Nacional Sistema Arrecifal Veracruzano the management objectives included, to conserve and sustain fisheries resources, conserve individual habitats, conserve individual species, promote tourism, protect spawning grounds, protect nursery grounds, research and biodiversity protection. The objective of the sites is to reduce conflicts between fishers and recreational users, recreational and commercial fishers (Parque Nacional Sistema Arrecifal Veracruzano, Biosphere reserve Ría Celestún and Reserva de la Biosfera Ría Lagartos only).
- 2) **Monitoring:** Fisheries resources were thought to have decreased in Parque Nacional Arrecife de Puerto Morelos, Reserva de la Biosfera Ría Lagartos, Parque Nacional Isla Contoy and Biosphere reserve Ría Celestún since implementation. Changes in resources are not known for other parks. In Reserva de la Biosfera Ría Lagartos, Parque Marino Nacional Arrecifes de Cozumel, Parque Nacional Arrecife de Puerto Morelos and Parque Nacional Isla Contoy fishers welfare were described as increasing since implementation. Details are not recorded for the other sites. Ecological/biological (catch and effort data), socioeconomic and management indicators are used to monitor some of these sites.
- 3) **Awareness programmes and stakeholder involvement:** Stakeholders are involved in a wide range of stages including initiation, designation, monitoring, enforcement, implementation and evaluation in a consultative, collaborative and delegated capacity. This is particularly true of Parque Nacional Arrecife de Puerto Morelos, Parque Nacional Sistema Arrecifal Veracruzano and Reserva de la Biosfera Ría Lagartos. All have awareness programmes with a mixture of formats. All have capacity building programmes to increase the effective participation of stakeholders.
- 4) **Surveillance and enforcement:** Patrol vessels, logbooks, boardings and landing inspections are used in Biosphere reserve Ría Celestún and Parque Nacional Sistema Arrecifal Veracruzano. This is delivered through 20 – 4 wardens. Penalties exist for infringements. Landing inspections are used in Reserva de la Biosfera Sian Ka'an, Parque Marino Nacional Arrecifes de Cozumel and Parque Marino Nacional Arrecifes de Cozumel. 13 wardens work in Sian Ka'an. Penalties exist for infringements.
- 5) **Fishery management interventions:**



Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
Área de Protección de Flora y Fauna Laguna de Términos		X	
Reserva de la Biosfera Sian Ka'an			X
Parque Nacional Arrecife de Puerto Morelos	X		
Parque Nacional Arrecife de Puerto Morelos		X	
Parque Nacional Arrecife de Puerto Morelos			X
Parque Marino Nacional Arrecifes de Cozumel		X	
Parque Marino Nacional Arrecifes de Cozumel			X
Parque Nacional Isla Contoy	X		
Parque Nacional Isla Contoy		X	
Reserva De La Biosfera Banco Chinchorro <sup>41</sup>	X		

Site level interventions:

	GBI score	SBI score
Parque Marino Nacional Costa Occidental de Isla Mujeres, Punta Cancun y Punta Nizuc <sup>42</sup>	2	0
Reserva de la Biosfera Ría Lagartos	0	0
Parque Nacional Arrecife de Puerto Morelos <sup>43</sup>		See foot notes
Parque Nacional Isla Contoy <sup>44</sup>		See foot notes
Biosphere reserve Ría Celestún	16	7
Parque Marino Nacional Arrecifes de Cozumel <sup>45</sup>		See foot notes
Parque Nacional Sistema Arrecifal Veracruzano	0	0

- **Other restrictions:** Parque Nacional Isla Contoy: number of fishers, number of fishers / vessel, number of vessels, length of vessels, engine capacity of vessel, quota / bag limit, mesh size, mesh size and species gender. Biosphere reserve Ría Celestún: mesh size, species gender minimum size of species and by-catch restrictions.

<sup>41</sup> The reserve is a no entry area for fishers not associated to cooperative There are quotas for *Strombus gigas*

<sup>42</sup> Fishing restrictions: Commercial fishing is only allowed for licensed lobster fishers. Domestic fishing only with lines and hooks from the coast

<sup>43</sup> Domestic fishing can only be done with manual nets and lines that are used by only one fisherman. Commercial fishing can only target authorised species, with the gear permitted by regulation and a license. Harpoon fishing can only be carried out in specified areas and without compressed air tanks (only free diving).

<sup>44</sup> \* Any fishing activities are prohibited with the exception of lobster (*Panulirus argus*) and balau (*Hemiramphus* sp) in the park. Fishing for research purposes is allowed, the times of the day for fishing are also restricted.

<sup>45</sup> \*\* Parque Marino Nacional Arrecifes de Cozumel: Any gear or methods that damages the marine fauna or any activity that damages marine ecosystems is forbidden

**Summary and conclusion:**

For the non no take, no entry and catch and release zones, interventions for conch and shrimp (and the other species mentioned) are covered under national legislation. Parque Nacional Isla Contoy has further bans for marine mammals and coastal pelagics. There is a mixture of gear bans for the MPAs including traps, seine, trawl, cast and gill nets, hook and line, long line and spearguns.

Generally there are few recorded restrictions for threatened species (e.g. turtles), or destructive fishing practices (e.g. E/NS fishing). However please see the footnote for Parque Marino Nacional Arrecifes de Cozumel where no destructive practices are allowed.

## MONSERRAT

### National level legislation

Target Fishes Shallow Shelf and Reef Fishes	<input type="checkbox"/> Hinds ( <i>Serranidae</i> ) <input type="checkbox"/> Parrotfishes ( <i>Scaridae</i> ) <input type="checkbox"/> Squirrelfishes ( <i>Holocentridae</i> ) <input type="checkbox"/> Grunts ( <i>Pamadosydae</i> ) <input type="checkbox"/> Surgeonfishes ( <i>Acanthuridae</i> ) <input type="checkbox"/> Triggerfishes ( <i>Balistidae</i> )
Current Regulations	<input type="checkbox"/> The use of dynamite, poisons and other noxious substances is prohibited;
Target Fishes Marine turtles	<input type="checkbox"/> Leatherback ( <i>Dermochelys coriacea</i> ) <input type="checkbox"/> Green ( <i>Chelonia mydas</i> ) <input type="checkbox"/> Hawksbill ( <i>Eretmochelys imbricata</i> ) <input type="checkbox"/> Loggerhead ( <i>Caretta caretta</i> )
Current Regulations	<input type="checkbox"/> Closed season <input type="checkbox"/> Minimum size/weight limit
Target Species	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> ) ■
Current Regulations	<input type="checkbox"/> No harvest since 1996

## NETHERLANDS ANTILLES

### National level legislation

Target Fishes	<input type="checkbox"/> Queen conch ( <i>Strombus gigas</i> ) ■
Current Regulations	<input type="checkbox"/> Harvest is banned in Aruba <input type="checkbox"/> Size restrictions concerning meat weight and shell length (18 cm) <input type="checkbox"/> Gear restriction: no hookah

### Comments

#### General

Data was collected for 1 restricted area. The principal habitat type was coral reef.

#### Legislation

**National level:** There are bans for conch (all year) and turtles (seasonal). There is also a ban on the use of E/NS.

#### Site level:

- 1) **Management:** A government department initiated the site, while a NGO manages it. It has a management plan. The authority of this plan is provided through legislation. The management objectives included, to conserve and sustain fisheries resources, conserve individual habitats, and conserve individual species.
- 2) **Monitoring:** Ecological/biological indicators (catch and effort data) are used to monitor these sites.
- 3) **Awareness programmes and stakeholder involvement:** Stakeholders are involved in a wide range of stages including initiation, monitoring, enforcement and implementation in a delegated capacity. The site has an awareness programme that utilises an outreach campaign. There is a capacity building programme to increase the effective participation of stakeholders.
- 4) **Surveillance and enforcement:** 1 warden. Coverage is all year. Penalties exist for infringements.
- 5) **Fishery management interventions:**

#### Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
St. Eustatius.		X	

#### Summary and conclusion:

The MPA has a no take status.

## NICARAGUA

### National level legislation

Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Annual quotas <input type="checkbox"/> Closed seasons; <input type="checkbox"/> Restrictions on taking berried females;
Target Species	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size restrictions: shell length (20 cm) <input type="checkbox"/> Harvest quota limit <input type="checkbox"/> Export quota
Target Fishes	<input type="checkbox"/> Shrimp
Current Regulations	<input type="checkbox"/> Closed seasons <input type="checkbox"/> Closed areas <input type="checkbox"/> Gear restrictions <input type="checkbox"/> Harvest quota limit
Target Fishes	<input type="checkbox"/> Sharks
Current Regulations	<input type="checkbox"/> Landing of shark fin is prohibit
Target Fishes	<input type="checkbox"/> Green Turtle ( <i>Chelonia mydas</i> )
Current Regulations	<input type="checkbox"/> Closed seasons <input type="checkbox"/> Limit size restrictions <input type="checkbox"/> Only allowed for subsistence

### National zoning<sup>46</sup>

Measures for fisheries management in the Caribbean coast include:

Declared areas of the Caribbean littoral zone exclusively for artisanal fishing activities, those areas include the Laguna de Perlas and the mouth of Rio Grande.

The Nicaraguan law has also established a 3 miles zone (from the shore) for exclusive use by artisanal fishers. Industrial fishing is prohibited within 3 miles from the shoreline to avoid conflicts with artisanal fisheries. However, there are gear and motor restrictions as well as concessions to industrial fisheries. Trawling is strictly prohibited within 3 miles of the coast and in the lagoons.

### Comments

#### General

Data was collected for 1 restricted area. The principal habitat type is coral reef.

#### Legislation

**National level:** There are seasonal bans for lobster, shrimp and turtle. There is a complete ban on the landing of sharks. Quotas and other restrictions (minimum size) also exist.

#### Site level:

- 1) **Management:** The site was initiated by a government organisation. It has a management plan, the authority of which is provided through legislation. The management objectives is to conserve individual habitats. The objective of the sites is to reduce conflicts between fishers and recreational users.

<sup>46</sup> FAO 2002. <http://www.fao.org/fi/fcp/es/NIC/profile.htm>

- 2) **Monitoring:** Fisheries resources were thought to have decreased in Reserva natural cayos miskitos since implementation. Management effectiveness indicators are used to monitor this site.
- 3) **Awareness programmes and stakeholder involvement:** Stakeholders are involved in initiation, enforcement and implementation in a delegated capacity. There is no awareness or capacity building programme.
- 4) **Surveillance and enforcement:** Patrol vessels are used. Seasonal coverage (180 days a year). Penalties exist for infringements.
- 5) **Fishery management interventions:**

#### Site level interventions

	GBI score	SBI score
Reserva natural cayos miskitos	0	0

- **Effort restriction:** Minimum size of species.

#### Summary and conclusion:

Although there are few restrictions at a local level, there are restrictions for the main commercial species and vulnerable species (shark and turtle). Some of the national restrictions (e.g. lobster ban) have not been enforced due to the lack of alternative for employment for local artisanal divers

## PANAMA

#### National level legislation

Target Species	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Gear restrictions: No SCUBA
Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Size limit. <input type="checkbox"/> Gear restrictions <input type="checkbox"/> Fishing of Egg-bearing berried female lobsters
Target Species	<input type="checkbox"/> Shrimp
Current Regulations	<input type="checkbox"/> Closed season <input type="checkbox"/> Closed areas <input type="checkbox"/> Gear restrictions

## PUERTO RICO

Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Size limit: The minimum carapace length should be 3.5 inches. <input type="checkbox"/> Lobsters must remain whole for landing at shore side. <input type="checkbox"/> Gear restrictions: Spears, hooks or any other piercing devices are prohibited. Use of poisons or explosives is prohibited. Buoy, boat and trap identification and marking according to regulations are required. Self-destruct panel and door fastenings on traps are required. Pulling of another person's legally, marked traps or pots without owner's permission is illegal, except by authorized officers. <input type="checkbox"/> Egg-bearing berried female lobsters may not be retained aboard the vessel. Berried female lobsters may be kept in pots or traps until the eggs are shed.
Target Fishes	<input type="checkbox"/> Queen conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size limit: The possession of undersized queen conch less than nine (9) inches total length or less than 3/8 inch lip thickness measured at the thickest point of the lip is prohibited. All species in the fisheries management unit must be landed still attached to the shell <input type="checkbox"/> Closed seasons; From July 1st through September 30th of each consecutive year. <input type="checkbox"/> Quota and Bag limit: Daily limit for non-commercial fishers is three (3) queen conch per day, not to exceed twelve (12) per boat. Licensed commercial fishers may land one hundred and fifty (150) queen conch per day for the first year, one hundred (100) for the second year, and seventy five (75) the third year. <input type="checkbox"/> Gear restrictions: Harvest of queen conch in the EEZ using HOOKAH gear is prohibited
Target Fishes	<input type="checkbox"/> Mutton snapper <i>Lutjanus analis</i>
Current Regulations	<input type="checkbox"/> Size limit: Any size during closed season and in closed areas <input type="checkbox"/> Closed seasons; From March 1st to June 30th every year in closed area <input type="checkbox"/> Quota and Bag limit: <input type="checkbox"/> Gear restrictions: Fishing in any form is prohibited during closed season. Use of poisons, drugs and other chemicals and explosives is prohibited. <input type="checkbox"/> Fishing for aquarium trade is prohibited.
Target Fishes	<input type="checkbox"/> Yellow snapper <i>Ocyurus chrysurus</i>
Current Regulations	<input type="checkbox"/> Size limit: Twelve (12) inches total size. The yellowtail snapper must remain whole for landing at shoreline. <input type="checkbox"/> Gear restrictions: Use of poisons, drugs and other chemicals and explosives is prohibited.
Target Fishes	<input type="checkbox"/> Nassau grouper <i>Epinephelus striatus</i>
Current Regulations	<input type="checkbox"/> Fishing for this species is totally prohibited.
Target Fishes	<input type="checkbox"/> Red hind <i>Epinephelus gutatus</i>

Current Regulations	<input type="checkbox"/> Gear restrictions: Use of poisons, drugs and other chemicals and explosives is prohibited. Fishing for this species is totally prohibited during closed seasons <input type="checkbox"/> Size limit: Any size during closed season and in closed areas. <input type="checkbox"/> Closed seasons From December 1 <sup>st</sup> to February 28 <sup>th</sup> every year in designated areas <input type="checkbox"/> Fishing for aquarium trade is prohibited.
Target Fishes	<input type="checkbox"/> Seahorses and butterfly fishes
Current Regulations	<input type="checkbox"/> Fishing for aquarium trade is prohibited. <input type="checkbox"/> Gear restrictions: Fishing gears for any other species used for aquarium trade are limited to hand-held dip nets and slurp guns. Use of poisons, drugs, or other chemicals and explosives to harvest any species for the aquarium trade within the reef fish management area is PROHIBITED
Target Fishes	<input type="checkbox"/> Goliath fish <i>Epinephelus itajara</i>
Current Regulations	<input type="checkbox"/> Fishing for this species is totally prohibited.
Target Fishes	<input type="checkbox"/> Corals and Reef Associated Plants and Invertebrates
Current Regulations	<input type="checkbox"/> Use of chemicals, plants or plant-derived toxins and explosives to harvest coral is prohibited.

## Comments

### General

Data was collected for 11 restricted areas in total. The principal habitat types were coral reefs, seagrasses and mangroves.

### Legislation

**National level:** There are bans for conch (seasonal) and several threatened species (see Appendix 9 for details of threatened species in the Caribbean) and vulnerable habitats. Quotas and other restrictions (minimum size) also exist.

### Site level:

- 1) **Management:** The initiating and managing authorities were all government organisation. 2 had a management plan. The authority for the 9 sites was provided through legislation. 6 had an IUCN category designation (IV). A responsible individual (e.g. a manager) is on site at Reserva Nacional de Investigación Marina Punta de Jobos. The management objectives were biodiversity protection and coral reef protection. The objective of Canal de Luis Peña de Isla de Culebra Natural Reserve was to protect 'bird islands from human disturbance.
- 2) **Monitoring:** Ecological/biological indicators are used to monitor most of these sites. However no fisheries data is collected.
- 3) **Awareness programmes and stakeholder involvement:** In Reserva Nacional de Investigación Marina Punta de Jobos stakeholders are involved in monitoring, enforcement, evaluation and implementation in a consultative and collaborative capacity. 2 sites have an awareness programme. Canal de Luis Peña de Isla de Culebra Natural Reserve utilises an environmental education programme, and Reserva Nacional de Investigación Marina Punta de Jobos also has an outreach programme, brochure and pages on the internet. There is a capacity building programme to increase the effective participation of stakeholders in 2 sites.



4) **Surveillance and enforcement:** 2 Wardens / staff in Canal de Luis Peña de Isla de Culebra Natural Reserve

5) **Fishery management interventions:**

Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
Reserva Natural Punta Petrona		X	
Isla Desecho		X	
Reserva Natural Arrecifes de la Cordillera <sup>47</sup>		X	
Reserva Natural Caja de Muertos		X	
Reserva Nacional de Investigación Marina Punta de Jobs <sup>48</sup>			X

Site level interventions<sup>49</sup>:

	GBI score	SBI score
Tourmaline Reef Natural Reserve	7	9
La Parguera Natural Reserve <sup>50</sup>	7	9
Isla de Mona Reserve	7	4
Canal de Luis Peña de Isla de Culebra Natural Reserve	7	4
Guanica Natural Reserve	7	9
Reserva Natural Boquerón	7	9

- **Effort restrictions:** Bag limits, mesh size, species gender and minimum size of species

### Summary and conclusion:

There are 4 no take zones and 1 catch and release zone.

The national level conch and threatened species bans are complimented with deep slope, coastal and large pelagics interventions at a local level. There are also bans on drift nets and trawls in the MPAs.

<sup>47</sup> This area provides critical habitat for commercially important marine species and is a foraging area for sea turtles.

<sup>48</sup> Traditional artisanal hook and line fishing is permitted at all times in the Reserve's designated Conservation Sectors. Traditional shellfish harvesting of mangrove oysters is permitted within the Reserve.

<sup>49</sup> *Gecarcinus ruricola*, *G. lateralis*, *Ucides cordatus*, *Goneopsis cruentatus*, permanent ban

<sup>50</sup> According to the Puerto Rican fisheries regulation, fishing is only allowed in a particular area within the park and only for consumption not for ornamental fishing

## ST. KITTS AND NEVIS

### National level legislation

Target Fishes Lobster	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Minimum-size limits (9.5 cm or 3.75 inches carapace); <input type="checkbox"/> Restrictions on fishing gear; <input type="checkbox"/> Prohibition on taking berried females or moulting individuals; <input type="checkbox"/> Closed seasons; <input type="checkbox"/> Ban on landing lobsters which are not whole; <input type="checkbox"/> Prohibition on use of spearguns; <input type="checkbox"/> Prohibition on use of SCUBA; <input type="checkbox"/> Requirement for marking of traps.
Target Fishes <b>Queen Conch</b>	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size restrictions -Minimum shell length (18cm) and cleaned meat weight (225 g); -Harvesting only flared lip conchs permitted.
Target Fishes Shallow Shelf and Reef Fishes	<input type="checkbox"/> Hinds ( <i>Serranidae</i> ) <input type="checkbox"/> Parrotfishes ( <i>Scaridae</i> ) <input type="checkbox"/> Squirrelfishes ( <i>Holocentridae</i> ) <input type="checkbox"/> Grunts ( <i>Pamadosydae</i> ) <input type="checkbox"/> Surgeonfishes ( <i>Acanthuridae</i> ) <input type="checkbox"/> Triggerfishes ( <i>Balistidae</i> )
Current Regulations	<input type="checkbox"/> The use of dynamite, poisons and other noxious substances, and trammel nets is prohibited; <input type="checkbox"/> Size restrictions on meshed gears
Target Fishes Deep Slope Fishes	<input type="checkbox"/> Snappers ( <i>Lutjanidae</i> ) <input type="checkbox"/> Grouper ( <i>Serranidae</i> ) <input type="checkbox"/> Jacks ( <i>Carangidae</i> ) <input type="checkbox"/> Miscellaneous reef fishes on offshore coralline banks
Current Regulations	<input type="checkbox"/> Mesh size restriction will apply on traps; otherwise no specific regulations for this fishery.
Target Fishes Coastal Pelagics	<input type="checkbox"/> Jacks ( <i>Carangidae</i> ) <input type="checkbox"/> Herrings ( <i>Clupeidae</i> ) <input type="checkbox"/> Silversides ( <i>Atherinidae</i> ) <input type="checkbox"/> Anchovies ( <i>Engraulidae</i> ) <input type="checkbox"/> Ballyhoo ( <i>Hemiramphus</i> spp.), <input type="checkbox"/> Robins or scads ( <i>Decapterus</i> spp.) <input type="checkbox"/> Needlefishes ( <i>Belonidae</i> ) <input type="checkbox"/> Small tunas and the young of large tuna such as yellowfin, may also be caught.
Current	<input type="checkbox"/> Minimum mesh size for beach seine and 'ballyhoo' nets (draft regs awaiting approval of minister (1997))

Regulations	<input type="checkbox"/> Trammel (tangle) nets are prohibited. <input type="checkbox"/> The use of Ballahoo nets is restricted.
Target Fishes  Marine turtles	<input type="checkbox"/> Leatherback ( <i>Dermochelys coriacea</i> ) <input type="checkbox"/> Green ( <i>Chelonia mydas</i> ) <input type="checkbox"/> Hawksbill ( <i>Eretmochelys imbricata</i> ) <input type="checkbox"/> Loggerhead ( <i>Caretta caretta</i> )
Current Regulations	<input type="checkbox"/> Closed season (28 <sup>th</sup> Feb – 1 <sup>st</sup> Oct) <input type="checkbox"/> Minimum weight limit Leatherback (158.18kg), Green (81.66 kg) Hawksbill (38.6 kg) <input type="checkbox"/> Loggerhead (72.59 kg) <input type="checkbox"/> Taking eggs or disturbing nests is prohibited <input type="checkbox"/> Setting nets within 300 yds shore to catch turtles
Target Fishes Marine turtles	<input type="checkbox"/> Aquarium fish CHECK
Current Regulations	<input type="checkbox"/> No person to sell, import or export marine aquarium fish without written permission of Chief Fisheries Officer.
Target Fishes	<input type="checkbox"/> Corals, sponges, marine algae and seastars
Current Regulations	<input type="checkbox"/> No person to collect without written permission of Chief Fisheries Officer
Current Gear Regulations	<input type="checkbox"/> Restrictions on mesh size for seine (one inch square) and ballyhoo nets (less than one half of an inch). <input type="checkbox"/> Consent of Chief Fisheries Officer needed to use a fish attracting device. <input type="checkbox"/> Restrictions on minimum mesh size of fish trap or pot (2 inches) <input type="checkbox"/> Fishing with SCUBA or hookah is prohibited. <input type="checkbox"/> Consent of Chief Fisheries Officer needed to use a spear gun.

## ST. LUCIA

### National level legislation

Target Fishes Shallow Shelf and Reef Fishes	<input type="checkbox"/> Hinds ( <i>Serranidae</i> ) <input type="checkbox"/> Parrotfishes ( <i>Scaridae</i> ) <input type="checkbox"/> Squirrelfishes ( <i>Holocentridae</i> ) <input type="checkbox"/> Grunts ( <i>Pamadosydae</i> ) <input type="checkbox"/> Surgeonfishes ( <i>Acanthuridae</i> ) <input type="checkbox"/> Triggerfishes ( <i>Balistidae</i> )
Current Regulations	<input type="checkbox"/> The use of dynamite, poisons and other noxious substances, and trammel nets is prohibited; <input type="checkbox"/> The use of spearguns is restricted. <input type="checkbox"/> Size restrictions on meshed gears <input type="checkbox"/> Use of SCUBA fishing is prohibited <input type="checkbox"/> Trammel nets are illegal <input type="checkbox"/> Catching of aquarium fish is regulated <input type="checkbox"/> Some coral reef areas are closed to fishing (marine reserves) <input type="checkbox"/> Some types of fishing gear are restricted in coral reef areas.
Target Fishes Deep Slope and Bank Fishes	<input type="checkbox"/> Snappers ( <i>Lutjanidae</i> ) <input type="checkbox"/> Grouper ( <i>Serranidae</i> )
Current Regulations	<input type="checkbox"/> Mesh size restriction will apply on traps; otherwise no specific regulations for this fishery.
Target Fishes Coastal Pelagics	<input type="checkbox"/> Jacks ( <i>Carangidae</i> ) <input type="checkbox"/> Herrings ( <i>Clupeidae</i> ) <input type="checkbox"/> Silversides ( <i>Atherinidae</i> ) <input type="checkbox"/> Anchovies ( <i>Engraulidae</i> ) <input type="checkbox"/> Ballyhoo ( <i>Hemiramphus</i> spp.), <input type="checkbox"/> Robins or scads ( <i>Decapterus</i> spp.) <input type="checkbox"/> Small tunas and the young of large tuna such as yellowfin may also be caught.
Current Regulations	<input type="checkbox"/> Minimum mesh size for seines, fillet and cast nets <input type="checkbox"/> Trammel nets are banned. <input type="checkbox"/> Soak time of nets restricted
Target Fishes Lobster	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Minimum-size limits; <input type="checkbox"/> Restrictions on fishing gear; <input type="checkbox"/> Restrictions on taking berried females or moulting individuals; <input type="checkbox"/> Closed seasons; <input type="checkbox"/> Prohibition on use of spearguns; <input type="checkbox"/> Prohibition on use of SCUBA;
Target Fishes	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Exports controlled under CITES <input type="checkbox"/> Only whole animals to be landed and exported (policy not a legal requirement) <input type="checkbox"/> Size restrictions

	<ul style="list-style-type: none"> <li>-Minimum shell length and meat weight;</li> <li>-Harvesting only flared lip conchs permitted.</li> <li><input type="checkbox"/> Closed seasons (Provisions are in the regulations but closed seasons have yet to be declared.)</li> </ul>
Target Fishes	<input type="checkbox"/> White urchin ( <i>Tiypneustes ventricosus</i> )
Current Regulations	<ul style="list-style-type: none"> <li><input type="checkbox"/> Harvesting permits required</li> <li><input type="checkbox"/> Closed seasons and zones</li> <li><input type="checkbox"/> Minimum size</li> <li><input type="checkbox"/> Co-management arrangements</li> </ul>
Target species	<input type="checkbox"/> Seamoss ( <i>Rhodophyta</i> )
Current Regulations	<input type="checkbox"/> Harvesting permits required
Target Fishes	<input type="checkbox"/> Flying fish (four winged, <i>Hirundichthys affinis</i> and the guineaman <i>Cypselurus cyanopterus</i> )
Current Regulations	<input type="checkbox"/> Mesh size restriction on fillet nets
Target Fishes Marine turtles	<ul style="list-style-type: none"> <li><input type="checkbox"/> Leatherback (<i>Dermochelys coriacea</i>)</li> <li><input type="checkbox"/> Green (<i>Chelonia mydas</i>)</li> <li><input type="checkbox"/> Hawksbill (<i>Eretmochelys imbricata</i>)</li> <li><input type="checkbox"/> Loggerhead (<i>Caretta caretta</i>)</li> </ul>
Current Regulations	<ul style="list-style-type: none"> <li><input type="checkbox"/> Closed season</li> <li><input type="checkbox"/> Minimum weight limit</li> <li><input type="checkbox"/> Taking eggs or disturbing nests is prohibited</li> <li><input type="checkbox"/> Trade of turtles and their products are prohibited</li> </ul>
Target Fishes Marine turtles	<input type="checkbox"/> Aquarium fish
Current Regulations	<input type="checkbox"/> No import or export without permission from Chief Fisheries Officer
Target Fishes Marine turtles	<input type="checkbox"/> Marine mammals
Current Regulations	<input type="checkbox"/> No one to kill damage or fish for marine mammals in any harbour or bay of St. Lucia.
Current Gear Regulations for St. Lucia	<ul style="list-style-type: none"> <li><input type="checkbox"/> Restrictions on mesh size for cast (25.4 mm), beach seine (31.75 mm), flying fish gill net (19.05 mm) trawl and bottom gillnet (76.2 mm).</li> <li><input type="checkbox"/> Ban on use of trammel net without consent of Chief Fisheries Officer.</li> <li><input type="checkbox"/> Restrictions on minimum mesh size of fish trap or pot (38.1 mm)</li> <li><input type="checkbox"/> Consent of Chief Fisheries Officer needed to operate SCUBA or hookah diving facility.</li> <li><input type="checkbox"/> Consent of Chief Fisheries Officer needed to use a spear gun.</li> </ul>

**Penalties for infringements:** Infringements may lead to fines of no more than \$5000. Rewards are offered to those providing evidence against persons carrying out these infringements.

### Comments

#### General

Data was collected for 6 sepreate MPAs within two parks. The principal habitat type was coral reef.

## Legislation

**National level:** There are bans for the major commercial fish species, threatened species, vulnerable species and habitats, and restrictions on the aquarium fishery.

### Site level:

- 1) **Management:** The initiating and managing authorities involved government organisation and an NGO. Soufriere has a management plan. The authority for the 2 MPAs is provided through legislation and also a formal agreement in the case of Soufriere. Both are part of a network of reserves. A responsible individual (e.g. a manager) is based at both sites.
- 2) **Monitoring:** Fisheries resources were thought to have increased in Soufriere since implementation (not known for Marias Islands).
- 3) **Awareness programmes and stakeholder involvement:** Soufriere - stakeholders are involved in the initiation, designation, monitoring, enforcement, implementation and evaluation in a consultative and collaborative capacity. Stakeholders are not involved in Marias Islands. Soufriere has an awareness programme. This utilizes an outreach programme, classes / training and a brochure. There is a capacity building programme to increase the effective participation of stakeholders in Soufriere.
- 4) **Surveillance and enforcement:** Patrol vessels and logbooks are used in Soufriere. This is delivered through 4 wardens (Assistance is also received from the Marine Police, District Police and Department of Fisheries when needed). Penalties exist for infringements.
- 5) **Fishery management interventions:**

Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
The Maria Islands Marine Reserve. <sup>51</sup>		X	
Soufriere Marine Management Area - Marine Sanctuary <sup>52</sup>	X	X	
Soufriere Marine Management Area - Marine Reserve		X	

<sup>51</sup> Although the Maria Islands Marine Reserve was established in 1980 through legal instruments. There have never been resources dedicated towards its actual establishment, i.e. physical demarcation as well as for monitoring, etc. Occasional monitoring activity is undertaken by the Fisheries Department and CANARI in relationship to specific resources. There is need for investment towards consolidating the establishment and monitoring of the Reserve.

<sup>52</sup> There is one 'no entry' zone, which has been set-aside as a Sanctuary. Only authorised research is allowed in this area (a control site).

Site level interventions:

NAME	GBI score	SBI score
Soufriere Marine Management Area - Marine Reserve with restricted take	3	0
Soufriere Marine Management Area - Fishing Priority Area <sup>53</sup>	3	0
Soufriere Marine Management Area - Multiple Use Area	3	0

- **Effort restrictions:** There is also a restriction on the number of fishers.

**Summary and conclusion:**

There are 5 MPA in the Soufriere Marine Management Area (although there are nine zones in total). There are 3 no take zones, 1 in Maria Islands and 2 in Soufriere. For the other areas of Soufriere, which are non-no take, there are few species and gear restrictions at a site level (GBI 3, and SBI 0 for each MPA). However, there are bans (seasonal and all year) for most of the species categories at a national level. There are also national level bans (seasonal and all year) on the use of seine, trammel, cast and gillnets, E/NS, SCUBA and spear guns.

The national level conch and threatened species bans are complimented with deep slope, coastal and large pelagics interventions at a local level.

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<sup>53</sup> See the area's profile for further information. Traps and hook and line are primarily used in this area. Permits were given to a set number of older fishermen, who depend on pot (trap) fishing for a living (see SMMA). Gillnets were banned in the SMMA in 1998. Trammel nets were banned in Saint Lucia in 1994 Scuba diving (Not allowed in Saint Lucia for fishing, except for conch via permit due to depth limitations. Grappling and wounding gear (Recreational spear fishing has been phased out in Saint Lucia). Unless there is a moratorium (e.g. on sea turtles), all species are allowed, as long as size limits are abided by, permits are obtained for relevant fisheries (e.g. white sea urchins and conch although not generally applicable to Soufriere) and there is adherence to any other specific regulations. There are fishery restrictions on the number and category of fishers in this area, where priority was given to a set number of older fishermen dependent on trap fishing for a living. Permits are non-transferable. Some infringement occurs. In these areas, precedence is given to fishing over all other activities

## SAINT VINCENT AND THE GRENADINES

### National level legislation

Target Fishes Shallow Shelf and Reef Fishes	<input type="checkbox"/> Hinds ( <i>Serranidae</i> ) <input type="checkbox"/> Parrotfishes ( <i>Scaridae</i> ) <input type="checkbox"/> Squirrelfishes ( <i>Holocentridae</i> ) <input type="checkbox"/> Grunts ( <i>Pamadosyidae</i> ) <input type="checkbox"/> Surgeonfishes ( <i>Acanthuridae</i> ) <input type="checkbox"/> Triggerfishes ( <i>Balistidae</i> )
Current Regulations	<input type="checkbox"/> The use of dynamite, poisons and other noxious substances, and trammel nets is prohibited; <input type="checkbox"/> The use of spearguns is restricted.
Target Fishes Deep Slope Fishes	<input type="checkbox"/> Snappers ( <i>Lutjanidae</i> ) <input type="checkbox"/> Grouper ( <i>Serranidae</i> )
Current Regulations	<input type="checkbox"/> Mesh size restriction will apply on traps; otherwise no specific regulations for this fishery.
Target Fishes Coastal Pelagics	<input type="checkbox"/> Jacks ( <i>Carangidae</i> ) <input type="checkbox"/> Herrings ( <i>Clupeidae</i> ) <input type="checkbox"/> Silversides ( <i>Atherinidae</i> ) <input type="checkbox"/> Anchovies ( <i>Engraulidae</i> ) <input type="checkbox"/> Ballyhoo ( <i>Hemiramphus spp.</i> ), <input type="checkbox"/> Robins or scads ( <i>Decapterus spp.</i> ) <input type="checkbox"/> Small tunas and the young of large tuna such as yellowfin may also be caught.
Current Regulations	<input type="checkbox"/> Size restriction on meshed gear. <input type="checkbox"/> Trammel (tangle) nets are prohibited. <input type="checkbox"/> The use of Ballahoo nets is restricted.
Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Minimum-size limits (9 inches total length, carapace length 95 mm, or 3.5 inches; minimum weight of 1.5 pounds (680 g) <input type="checkbox"/> Restrictions on fishing gear; <input type="checkbox"/> Restrictions on taking berried females or moulting individuals; <input type="checkbox"/> Closed seasons. (1 <sup>st</sup> April to 31 <sup>st</sup> October)
Target Fishes	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size restrictions -Minimum shell length (18 cm or 7 inches) and cleaned meat weight (8 ounces or 225 g); -Harvesting only flared lip conchs permitted. <input type="checkbox"/> Closed seasons (Provisions are in the regulations but closed seasons have yet to be declared.)
Target Fishes  Marine turtles	<input type="checkbox"/> Leatherback ( <i>Dermochelys coriacea</i> ) <input type="checkbox"/> Green ( <i>Chelonia mydas</i> ) <input type="checkbox"/> Hawksbill ( <i>Eretmochelys imbricata</i> )



	<input type="checkbox"/> Loggerhead ( <i>Caretta caretta</i> )
Current Regulations	<input type="checkbox"/> Closed season (1 <sup>st</sup> March – 31 <sup>st</sup> July) <input type="checkbox"/> Minimum size and shell length limit <input type="checkbox"/> Taking eggs or disturbing nests is prohibited
Target Fishes Marine turtles	<input type="checkbox"/> Aquarium fish CHECK
Current Regulations	<input type="checkbox"/> No person to sell, import or export marine aquarium fish without written permission of Chief Fisheries Officer.
Target Fishes	<input type="checkbox"/> Corals, sponges, marine algae and seastars
Current Regulations	<input type="checkbox"/> No person to collect without written permission of Chief Fisheries Officer
Current Gear Regulations	<input type="checkbox"/> Restrictions on mesh size of nets (one inch square) and ballyhoo nets (less than one half of an inch). <input type="checkbox"/> Ballyhoo nets not to drawn onto land (or floating construction) <input type="checkbox"/> Ban on spear gun (Consent of Minister needed to use a spear gun needed) to fish <input type="checkbox"/> Restrictions on minimum mesh size of fish trap or pot (2 inches) <input type="checkbox"/> Consent of Chief Fisheries Officer needed to operate SCUBA or hookah diving facility. <input type="checkbox"/> Tangle nets are banned

### Comments

#### General

Data was collected for 1 restricted area. The principal habitat type was coral reef.

#### Legislation

**National level:** There are seasonal bans for conch and lobster. There is a ban on E/NS, trammel nets. Also there were restrictions on the use of spearguns, and meshed gears. There are other restrictions including minimum size for lobster, conch, and threatened species and habitats.

#### Site level:

- 1) **Management:** The initiating authority was a government organisation. Tobago Cays has a management plan and an IUCN category designation (IV).
- 2) **Monitoring:** No fisheries data is collected.
- 3) **Awareness programmes and stakeholder involvement:** Tobago Cays has an awareness programme. This utilizes an outreach programme.
- 4) **Surveillance and enforcement:** No data available.
- 5) **Fishery management interventions:**

	GBI score	SBI score
Tobago Cays Marine Park	0	0

#### Summary and conclusion:

No species or gear bans at a site level were recorded. There are few national level restrictions. No restrictions were recorded for vulnerable flora and fauna.

## TURKS AND CAICOS

Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Minimum-size limits (3.57 inch from front notch to rear edge of carapace), weight (minimum tail weight 7 ounces) <input type="checkbox"/> Closed seasons (April 1 – July 31); <input type="checkbox"/> No egg bearing moulting individuals to be taken <input type="checkbox"/> Must be landed whole <input type="checkbox"/> Can not be caught using a wounding device
Target Fishes	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )*
Current Regulations	<input type="checkbox"/> Size restrictions concerning flared lip, meat weight (8 ounces) and shell length (7 inches)
Target Fishes	<input type="checkbox"/> Sponges
Current Regulations	<input type="checkbox"/> Size restrictions (wool – 5.5 inches, reef - 3 inches, grass - 5.5 inches, hard head - reef - 3 inches)
Target Fishes	<input type="checkbox"/> Marine mammals
Current Regulations	<input type="checkbox"/> No person to interfere with marine mammals within EEZ (unless with written permission of Minister)
Target Fishes	<input type="checkbox"/> Turtle
Current Regulations	<input type="checkbox"/> Minimum weight for all (20 pounds), also size restrictions for hawksbill and green (20 inches shell length) <input type="checkbox"/> Take turtles on a beach, or take / be in possession of eggs).
Current Gear Regulations	<input type="checkbox"/> Ban on use of explosives (including bang sticks) or noxious substances <input type="checkbox"/> No breathing gear apart from snorkel to be used (subject to license) <input type="checkbox"/> No use of trap in Bell sound area bounded to the North by a line from Horse Key to Sail Rock point <input type="checkbox"/> Prohibition on use of spear guns and Hawaiian slings (also, ban on possession of spear gun within fifty feet of a tidal water) <input type="checkbox"/> No fish attracting devices to be used <input type="checkbox"/> Wire mesh trap mesh size restrictions (1.5 inch hexagonal, 1 inch by 2 inches for welded or woven).

The details of the many different types of licenses required for different activities may be found at: <http://faolex.fao.org/docs/pdf/tci14804.pdf>

### Comments

#### General

Data was collected for 17 restricted areas. The principal habitat type was coral reef in each area.

#### Legislation

**National level:** There are bans for lobster (seasonal) and marine mammals. There are size restrictions on turtles, sponges and conch. There was a ban on E/NS, breathing gear (except snorkels), spear guns and FADs. There were other restrictions including mesh size restrictions for traps.

**Site level:**

- 1) **Management:** The initiating authority for each site was an NGO. All are now managed by a government organisation. All have a management plan and the management authority is provided through legislation. All have an IUCN category designation (IV) except for East Harbour Lobster and Conch Reserve which has no category designation. All are part of a network of reserves. A responsible individual (e.g. a manager) is based at each site. The management objectives included, to conserve and sustain fisheries resources, conserve individual habitats, conserve individual species, promote tourism and protect nursery grounds.
- 2) **Monitoring:** Biological fisheries data is collected in each site. Also management effectiveness, ecological and socioeconomic and indicators are used to monitor these sites. Fish resources were thought to have remained the same in each of the sites (although this is not known for sure).
- 3) **Awareness programmes and stakeholder involvement:** Stakeholders are involved a consultative capacity. There are awareness programmes for all of the sites. This utilizes brochures and community meetings.
- 4) **Surveillance and enforcement:** Patrol vessels, landings inspection, boardings and logbooks are used. This is delivered through 10 enforcement officers from the Department of Environment and Coastal Resources (coverage is for 260 days a year). Penalties exist for infringements.
- 5) **Fishery management interventions:**

Site level interventions: No take status<sup>54</sup>

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
Admiral Cockburn Land and Sea National Park		X	
Bell Sound Nature Reserve		X	
Chalk Sound National Park		X	
Columbus Landfall Marine National Park		X	
East bay Islands national Park		X	
Fort George Land and Sea National Park		X	
Grand Turk Cays Land and Sea National Park		X	
Lake Catherine Nature Reserve		X	
North, middle and East Caicos Nature Reserve		X	
North West Point Marine National Park		X	
Princess Alexandra nature Reserve_Little Water, Donna and Mangrove Cays		X	
South Creek National Park		X	
Vine Point (Man O'quote War Bush) and Ocean Hole Nature Reserve		X	
West Caicos Marine National Park		X	
Pigeon Pond and Frenchman'quote s Creek Nature Reserve		X	
Princess Alexandra Land and Sea National Park		X	

<sup>54</sup> All Protected Areas in the Turks and Caicos Islands are categorized as Parks and are considered no-take zones for marine species such as lobster and conch. However, the use of hand-line from the shore, to catch fish species such as snapper and grunts for personal consumption is accommodated. Also scuba and snorkel gear can be used in the FRA, but only for watersport activities.

Site level interventions:

	<b>GBI score</b>	<b>SBI score</b>
East Harbour Lobster and Conch Reserve <sup>55</sup>	22	14

**Summary and conclusion:**

Most of the sites are no take and therefore constitute a high degree of restriction. East Harbour Lobster and Conch Reserve has a high level of restrictions with regards to gear (GBI 22) and fishing is only allowed for personal consumption.

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<sup>55</sup> Fishermen are allowed to take up to 10 lbs. of seafood (excluding conch) for personal consumption. The use of hand-line is acceptable for personal consumption.

## TRINIDAD AND TOBAGO

### National level legislation

Target Fishes Coastal Pelagics	<input type="checkbox"/> Carite ( <i>Scomberomorus brasiliensis</i> ) <input type="checkbox"/> King fish ( <i>Scomberomorus cavalla</i> ) <input type="checkbox"/> Several species of shark <input type="checkbox"/> Cavalli ( <i>Caraanx hippos</i> ) <input type="checkbox"/> Tarpon ( <i>Megalops atlanticus</i> )
Current Regulations	<input type="checkbox"/> Largely unmanaged but some size and fishing gear restrictions exist as per the Fisheries Act of 1916.
Target Fishes Shrimp	<input type="checkbox"/> Red-spotted Shrimp ( <i>Penaeus brasiliensis</i> ) <input type="checkbox"/> Brown shrimp ( <i>P. subtilis</i> ) <input type="checkbox"/> Pink shrimp ( <i>P. notialis</i> ) <input type="checkbox"/> White shrimp ( <i>P. shmitti</i> ) <input type="checkbox"/> Seabob ( <i>Xiphopenaeus kroyeri</i> )
Current Regulations	<input type="checkbox"/> Limited entry policy (through limiting entrants to the national semi-industrial and industrial fleets). <input type="checkbox"/> Depth and area restrictions <input type="checkbox"/> Seasonal and temporal restrictions <input type="checkbox"/> Mesh size restriction (3.5 cm minimum) <input type="checkbox"/> Mandatory use of TED in national semi-industrial and industrial fleets
Other Current Gear Regulations	<input type="checkbox"/> Trawling: area and depth restrictions, cod end mesh size restriction, limited entry, TEDs to be used

## USA

National level legislation

Some of the relevant regulations are listed below.

Target Fishes	<input type="checkbox"/> Queen conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Harvest banned since 1985
Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>P. argus</i> )
Current Regulations	<input type="checkbox"/> Size limit: 3" carapace (head) 5 1/2" tail <input type="checkbox"/> Trip limit/ bag limit: Trap Fishery – None. Bully Net – 250 lobster vessel limit. <input type="checkbox"/> Closed season: April 1 - Aug. 5 RS, <input type="checkbox"/> Gear restriction and other: Allowable gear: by diving, traps, hand-held net, hoop net (diameter no larger than 10'), or bully net (diameter no larger than 3'). <input type="checkbox"/> Commercial dive permit required to harvest spiny lobster for commercial purposes by diving
Target Fishes	<input type="checkbox"/> Sea bass - black
Current Regulations	<input type="checkbox"/> Minimum-size limits <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Black drum ( <i>Pogonias cromis</i> )
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Trip limit/bag limit <input type="checkbox"/> Must remain in whole condition until landed ashore <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Crabs (blue crab, blue land crab)
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Closed season <input type="checkbox"/> Gear restriction <input type="checkbox"/> There are restrictions on recreational fishing
Reef associated species	
Target Fishes	<input type="checkbox"/> Ballyhoos (Common halfbeak) <i>Hyporhamphus unifasciatus</i> ....
Current Regulations	<input type="checkbox"/> Gear restriction
Target Fishes	<input type="checkbox"/> Cobia <i>Rachycentron canadum</i>
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Trip limit/bag limit <input type="checkbox"/> Must remain in whole condition until landed ashore <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Groupers
Current Regulations	<input type="checkbox"/> Minimum-size limits <input type="checkbox"/> Closed seasons <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Hogfish <i>Bodianus pulchellus</i>
Current Regulations	<input type="checkbox"/> Minimum-size limits <input type="checkbox"/> Must remain in whole condition until landed ashore <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Jacks

Current Regulations	<input type="checkbox"/> Minimum-size limits <input type="checkbox"/> Closed seasons
Target Fishes	<input type="checkbox"/> Mackerel king <i>Scomberomorus cavalla</i>
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Closed season <input type="checkbox"/> Trip limit/ bag limit <input type="checkbox"/> Gear restrictions <input type="checkbox"/> Must remain in whole condition until landed ashore <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Spanish mackerel
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Closed season <input type="checkbox"/> Trip limit/ bag limit <input type="checkbox"/> Gear restrictions <input type="checkbox"/> Must remain in whole condition until landed ashore
Target Fishes	<input type="checkbox"/> Snappers
Current Regulations	<input type="checkbox"/> Minimum-size limits <input type="checkbox"/> Remain in whole condition until landed ashore <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> <i>Trachinotus blochii</i>
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Gear restrictions <input type="checkbox"/> Must remain in whole condition until landed ashore <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> African pompano
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Gear restrictions <input type="checkbox"/> Must remain in whole condition until landed ashore <input type="checkbox"/> Trip limit/ bag limit <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Sheepshead
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Gear restrictions <input type="checkbox"/> Must remain in whole condition until landed ashore <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Red porgy -Atlantic
Current Regulations	<input type="checkbox"/> Minimum-size limits <input type="checkbox"/> Quotas <input type="checkbox"/> Closed seasons <input type="checkbox"/> Remain in whole condition until landed ashore <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Tiggerfish - grey
Current Regulations	<input type="checkbox"/> Minimum-size limits
PELAGIC	
Target Fishes	<input type="checkbox"/> Bluefish <i>Pomatomus saltatrix</i>
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Trip limit/bag limit <input type="checkbox"/> Gear restriction <input type="checkbox"/> Must remain in whole condition until landed ashore
Target Fishes	<input type="checkbox"/> Blueback <i>Alosa aestivalis</i>
Current	<input type="checkbox"/> Gear restriction

Regulations	
Target Fishes	<input type="checkbox"/> Shad
Current Regulations	<input type="checkbox"/> Gear restriction <input type="checkbox"/> Trip limit/ bag limit <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Amberjack <i>Seriola</i> spp
Current Regulations	<input type="checkbox"/> Must remain in whole condition until landed ashore <input type="checkbox"/> Restrictions for recreational fishing
Target Fishes	<input type="checkbox"/> Swordfish <i>Xiphias gladius</i>
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Gear restriction <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Tripletail <i>Lobotes surinamensis</i>
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Gear restriction <input type="checkbox"/> Must remain in whole condition until landed ashore <input type="checkbox"/> There are restrictions on recreational fishing
Demersal	
Target Fishes	<input type="checkbox"/> Flounders
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Gear restriction <input type="checkbox"/> Must remain in whole condition until landed ashore <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Spotted seatrout <i>Cynoscion nebulosus</i>
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Gear restriction <input type="checkbox"/> Bag limit/ boat limit <input type="checkbox"/> Closed season <input type="checkbox"/> Must remain in whole condition until landed ashore <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Wreck fish
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Gear restriction <input type="checkbox"/> Must remain in whole condition until landed ashore
Other Species	
Target Fishes	<input type="checkbox"/> Sharks
Current Regulations	<input type="checkbox"/> Bag limit/ boat limit <input type="checkbox"/> Gear restriction <input type="checkbox"/> Closed season <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Oysters
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Gear restriction <input type="checkbox"/> Bag limit/ boat limit <input type="checkbox"/> Regional closed season <input type="checkbox"/> Must remain in whole condition until landed ashore <input type="checkbox"/> There are restrictions on recreational fishing
Target Fishes	<input type="checkbox"/> Dolphin <input type="checkbox"/> There are restrictions on recreational fishing
Current Regulations	<input type="checkbox"/> Minimum-size limit <input type="checkbox"/> Gear restriction <input type="checkbox"/> Must remain in whole condition until landed ashore <input type="checkbox"/> Bag limit/ boat limit



Target Fishes	<input type="checkbox"/> Marine flora
Current Regulations	<input type="checkbox"/> Removal or destruction of seagrasses from state parks is forbidden.

## Comments

### General

Data was collected for 6 restricted areas (see footnote for Florida Keys divisions). The habitats included coral reefs (7 sites), seagrass (5 sites), mangroves (5 sites), sandy flats (5 sites) and rocky shores (5 sites).

### Legislation

**National level:** There are bans for lobster (seasonal), conch (complete) and many other seasonal bans. There are also bans and restrictions for many threatened and vulnerable species and gear types.

**Site level:** It was not possible to include all the data collected for the USA. Some sites were not initiated for the management of fisheries resources. These sites are not presented as part of the results in this document.

- 1) **Management:** The initiating authority for all sites was a government organisation. All are now managed by a government organisation and have management plans. The management authority is provided through legislation. 4 have an IUCN category designation. 2 designated category IV and 2 designated as category II. A responsible individual (e.g. a manager) is based at each site except for Dry Tortugas National Park. The management objectives included, to conserve and sustain fisheries resources, conserve individual habitats, conserve individual species, promote tourism, protect spawning grounds, protect nursery grounds, research and biodiversity protection. In Florida Keys and Dry Tortugas the objective of the site is to reduce conflicts between fishers and recreational users.
- 2) **Monitoring:** Ecological, management effectiveness, ecological and socioeconomic indicators are used to monitor Dry Tortugas. Ecological and socioeconomic indicators are used to monitor Florida Keys. Ecological / biological indicators are used to monitor Apalachicola and Crocodile Sanctuary. Fisheries resources were thought to have decreased in John Pennekamp Coral Reef State Park since implementation. Not known for other sites.
- 3) **Awareness programmes and stakeholder involvement:** Stakeholders are involved in initiation, designation, monitoring, enforcement, evaluation and implementation in a consultative and collaborative (Biscayne) capacity. Most did not have a capacity building programme. There are awareness programmes utilize classes, outreach programmes, environmental education programmes, brochures, surveys, stakeholder committees and community meetings.
- 4) **Surveillance and enforcement:** In the Florida Keys patrol vessels, landings inspection, boardings and logbooks are used. This is delivered through 15 – 20 wardens (coverage is 365 days a year). Penalties exist for infringements. In Dry Tortugas landings inspection, boardings and logbooks are used. This is delivered through 5 rangers. Penalties exist for infringements. In the Apalachicola National Estuarine Research Reserve landings inspections. The Florida Wildlife Conservation Commission has officers who work regionally, but none that are specifically assigned to ANERR. Penalties exist for infringements. In the John Pennekamp Coral Reef State Park approximately 2 wardens provide coverage. Penalties exist for infringements.

5) **Fishery management interventions:**

Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
Florida Keys National Marine Sanctuary <sup>56</sup>		X	
Dry Tortugas National Park (FL) Research Natural Area (RNA) <sup>57</sup>		X	
Crocodile Sanctuary of Everglades National Park	X		
Apalachicola National Estuarine Research Reserve (ANERR)		X	
John Pennekamp Coral Reef State Park Lobstering Exclusion Zones)		X	

- **Effort restrictions:** Bag limits and minimum size of species

Site level interventions:

	GBI score	SBI score
Biscayne National Park <sup>58</sup>	0	5

**Summary and conclusion:**

Most of the MPAs presented here are no take zones. Biscayne has no gear and few species bans (lobster and shrimp) however there are many species and gear specific interventions over and above the site level regulations.

<sup>56</sup> Multiple-use zoning; 24 no-take zones encompassing ~6% of total MPA area.

<sup>57</sup> No take, no fishing gears, only educational/snorkel/SCUBA for observation is planned

<sup>58</sup> The information presented has been taken from the Biscayne National Park webpage. Sport fishing is allowed, the regulations that apply are the same than any other part of the State.

## US VIRGIN ISLANDS

### National level legislation

Target Fishes	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Size limit: The minimum carapace length should be 3.5 inches. <input type="checkbox"/> Lobsters must remain whole for landing at shore side. <input type="checkbox"/> Gear restrictions: Spears, hooks or any other piercing devices are prohibited. Use of poisons or explosives is prohibited. Buoy, boat and trap identification and marking according to regulations are required. Self-destruct panel and door fastenings on traps are required. Pulling of another person's legally, marked traps or pots without owner's permission is illegal, except by authorized officers. <input type="checkbox"/> Egg-bearing berried female lobsters may not be retained aboard the vessel. Berried female lobsters may be kept in pots or traps until the eggs are shed.
Target Fishes	<input type="checkbox"/> Queen conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size limit: The possession of undersized queen conch less than nine (9) inches total length or less than 3/8 inch lip thickness measured at the thickest point of the lip is prohibited. <input type="checkbox"/> Closed seasons; From July 1st through September 30th of each consecutive year. <input type="checkbox"/> Quota and Bag limit: Daily limit for non-commercial fishers is three (3) queen conch per day, not to exceed twelve (12) per boat. Licensed commercial fishers may land one hundred and fifty (150) queen conch per day for the first year, one hundred (100) for the second year, and seventy five (75) the third year. <input type="checkbox"/> Gear restrictions: Harvest of queen conch in the EEZ using HOOKAH gear is prohibited
Target Fishes	<input type="checkbox"/> Mutton snapper <i>Lutjanus analis</i>
Current Regulations	<input type="checkbox"/> Size limit: Any size during closed season and in closed areas <input type="checkbox"/> Closed seasons; From March 1st to June 30th every year in closed area <input type="checkbox"/> Gear restrictions: Fishing in any form is prohibited during closed season. Use of poisons, drugs and other chemicals and explosives is prohibited. <ul style="list-style-type: none"> <li>• In Saint Thomas and Saint John Minimum size of wire mesh openings in newly constructed traps must be 1.5" (as the smallest mesh size) if hexagonal, and 2" if rectangular or square. From January 1st, 1998, not newly constructed traps must conform to the foregoing requirements.</li> <li>• In Saint Croix: Minimum size of wire mesh openings in newly constructed traps must be 1.5" (as the smallest mesh size) if hexagonal, rectangular, or square. From</li> </ul>

	<p>January 1st, 1998, not newly constructed traps must conform to the foregoing requirements</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Fishing for aquarium trade is prohibited.</li> </ul>
Target Fishes	Yellow snapper <i>Ocyurus chrysurus</i>
Current Regulations	<ul style="list-style-type: none"> <li><input type="checkbox"/> Size limit: Twelve (12) inches total size. The yellowtail snapper must remain whole for landing at shoreline.</li> <li><input type="checkbox"/> Gear restrictions: Use of poisons, drugs and other chemicals and explosives is prohibited.</li> </ul>
Target Fishes	Nassau grouper <i>Epinephelus striatus</i>
Current Regulations	<ul style="list-style-type: none"> <li><input type="checkbox"/> Fishing for this species is totally prohibited.</li> </ul>
Target Fishes	Red hind <i>Epinephelus gutatus</i>
Current Regulations	<ul style="list-style-type: none"> <li><input type="checkbox"/> Gear restrictions: Use of poisons, drugs and other chemicals and explosives is prohibited. Fishing for this species is totally prohibited during closed seasons</li> <li><input type="checkbox"/> Size limit: Any size during closed season and in closed areas.</li> <li><input type="checkbox"/> Closed seasons From December 1<sup>st</sup> to February 28<sup>th</sup> every year in designated areas</li> <li><input type="checkbox"/> Fishing for aquarium trade is prohibited.</li> </ul>
Target Fishes	Seahorses and butterflyfishes
Current Regulations	<ul style="list-style-type: none"> <li><input type="checkbox"/> Fishing for aquarium trade is prohibited.</li> <li><input type="checkbox"/> Gear restrictions: Fishing gears for any other species used for aquarium trade are limited to hand-held dip nets and slurp guns. Use of poisons, drugs, or other chemicals and explosives to harvest any species for the aquarium trade within the reef fish management area is PROHIBITED</li> </ul>
Target Fishes	<input type="checkbox"/> Goliath fish <i>Epinephelus itajara</i>
Current Regulations	<ul style="list-style-type: none"> <li><input type="checkbox"/> Fishing for this species is totally prohibited.</li> </ul>
Target Fishes	<input type="checkbox"/> Corals and Reef Associated Plants and Invertebrates
Current Regulations	<ul style="list-style-type: none"> <li><input type="checkbox"/> Use of chemicals, plants or plant-derived toxins and explosives to harvest coral is prohibited.</li> </ul>

### National zoning

Historically fishing has been very important for most of the towns included within the boundaries of the National Parks. Therefore special fishing zones have been established within the parks were only artisanal fishing (with gear restrictions) is permitted.

Also, apart from some listed species, the government has restricted all fishery resources within 6 miles from the coastline for artisanal exploitation.

### Comments

#### General

Data was collected for 4 restricted areas. The principal habitat types were coral reefs, seagrasses and mangroves.

## Legislation

**National level:** There are bans for conch (seasonal) and several threatened species (see Appendix 9 for details of threatened species in the Caribbean) and vulnerable habitats. Quotas and other restrictions (minimum size) also exist.

### Site level:

- 1) **Management:** The initiating and managing authorities were government organisations. The authority for the 4 sites is provided through legislation. 14 sites have an IUCN designation. 8 have a category designation of II, 2 category III, and 4 category IV. A responsible individual (e.g. a manager) is based at Cas Cay/Mangrove Lagoon Marine Reserve and Wildlife Sanctuary and St. James Marine Reserve and Wildlife Sanctuary.
- 2) **Monitoring:** Ecological / biological indicators are used to monitor all of the sites (except compass point). However no fisheries data is collected.
- 3) **Awareness programmes and stakeholder involvement:** In Hind Bank Marine Conservation District stakeholders are involved in consultative capacity. Of the three responses, all three had capacity building programmes. These programmes utilised, classes, brochures, outreach programmes, community meetings and educational programmes.
- 4) **Surveillance and enforcement:** No surveillance coverage. However penalties exist for infringement.
- 5) **Fishery management interventions:**

Site level interventions: No take status

NAME <sup>59</sup>	NO ENTRY	NO TAKE	CATCH AND RELEASE
Cas Cay/Mangrove Lagoon Marine Reserve and Wildlife Sanctuary		X	
St. James Marine Reserve and Wildlife Sanctuary		X	
Hind Bank Marine Conservation District		X	
Compass Point Pond Marine Reserve and Sanctuary		X	

### Summary and conclusion:

All sites are no take and therefore constitute a high level of protection. Several of the parks are affected by illegal fishing by fishers that use restricted gears.

<sup>59</sup> Only cast nets, for the capture of baitfish, with a restricted mesh size may be used only within 50ft of the shoreline, except for Cow and Calf rocks. Hook and line angling by permit only

## VENEZUELA

### National level legislation

Target Species	<input type="checkbox"/> Spiny lobster ( <i>Panulirus argus</i> )
Current Regulations	<input type="checkbox"/> Closed season; <input type="checkbox"/> Non transferable annual fishing permits <input type="checkbox"/> Limited number of fishing gear <input type="checkbox"/> Minimum-size limits <input type="checkbox"/> Minimum-weight limit <input type="checkbox"/> Capture of berried females <input type="checkbox"/> Restriction on fishing gears <input type="checkbox"/> Only authorised transports are allowed to carry captured lobsters
Target Species	<input type="checkbox"/> Queen Conch ( <i>Strombus gigas</i> )
Current Regulations	<input type="checkbox"/> Size restrictions concerning the minimum lip size (5 mm), meat weight and shell length (20 cm) <input type="checkbox"/> Closed season from 1Jul-31 Sept <input type="checkbox"/> Gear restriction: no scuba, no hookah <input type="checkbox"/> Closed areas <input type="checkbox"/> Harvest quota limit

### Comments

#### General

Data was collected for 14 restricted areas. The principal habitat types were coral reefs (3 sites), seagrasses (3 sites), sandy flat (1 site), nesting beaches (3 sites), dry forest (5 sites) and mangroves (13 sites).

#### Legislation

**National level:** There are seasonal bans for conch and lobster. Other restrictions for conch and lobster (minimum size) also exist.

#### Site level:

- 1) **Management:** The initiating and managing authorities for all sites were government organisations. 8 have management plans. The authority for 12 sites is provided through legislation. A responsible individual (e.g. a manager) is based at San Esteban National Park and Laguna de La Restinga National Park. Several sites recorded management objectives, this included The management objectives cited include, to conserve and sustain fisheries resources, promote tourism, protect spawning grounds, protect nursery grounds and biodiversity protection.
- 2) **Monitoring:** Fisheries resources were thought to have decreased in Laguna de Tacarigua National Park since implementation. Not known for other sites. Management effectiveness indicators are used to monitor Refugio de Fauna Cuare, and ecological and socioeconomic indicators are used to monitor Refugio de Fauna Cuare and Los Roques Archipelago National Park.
- 3) **Awareness programmes and stakeholder involvement:** In Refugio de Fauna Cuare stakeholders are involved in collaborative capacity. There are no awareness or capacity building programmes.
- 4) **Surveillance and enforcement:** No data available.
- 5) **Fishery management interventions:**

Site level interventions: No take status

NAME	NO ENTRY	NO TAKE	CATCH AND RELEASE
Refugio de Fauna Cuare		X	
Los Roques Archipelago National Park <sup>60</sup>	X		
Los Roques Archipelago National Park		X	
Las Tetas de Maria Guevara National Monument		X	
Laguna de las Marites National Monument		X	
Médanos del Coro National Park		X	
Laguna de Tacarigua National Park	X		
Laguna de Tacarigua National Park		X	
Refugio de Fauna Isla Aves <sup>61</sup>		X	
Refugio de Fauna Ciénaga Los Olivitos		X	
Mochima National Park <sup>62</sup>	X		
Mochima National Park		X	
Mochima National Park			X
Laguna de La Restinga National Park	X		
Laguna de La Restinga National Park		X	
San Esteban National Park		X	
Reserva de Fauna Silvestre Ciénagas de Juan Manuel, Aguas Blancas y Aguas Negras		X	

Site level interventions:

	GBI score	SBI score
Laguna de Tacarigua National Park	18	0
Morrocoy National Park	2	0
Laguna de La Restinga National Park	29	3
Turuépano National Park	0	0

**Summary and conclusion:**

Although there are few restrictions at a national level (conch and lobster restrictions only) all of the sites were either no entry, no take, catch and release or had a high level of gear bans with the exception of Turuépano National Park and Morrocoy National Park (GBI 0 and 2 respectively). There were no recorded restrictions of vulnerable species or bans on destructive gears at a site or national level.

<sup>60</sup> Fishing restrictions: recreational fishing is only allowed with fishing rod. Since the management plan was created in 1991, fishing is strictly regulated by the Autonomous Fisheries Service (SARPA), a part of the Ministry of the Environment. Research has been produced on lobster fisheries.

<sup>61</sup> For all refugio, and the reserva de fauna: Commercial fishery is prohibited; sports and artisanal fisheries are restricted. Fishing to control species expansion is allowed.

<sup>62</sup> Integral protection zone is a no-entry area; there are no-take areas but in most of the parks artisanal fishing is allowed but regulated and access by drag fishing boats is allowed within certain limits.

## Discussion

Many defined areas exist in the Wider Caribbean at a range of spatial scales that can benefit fisheries resources, fishers and biodiversity. This section will discuss the restrictions at the full range of spatial scales explored in the project.

### National level:

There are a wide variety of management interventions at a national level which apply throughout the whole country. These primarily target conch, lobster and shallow shelf resources. The number and extent of these species, gear and other effort restrictions varies widely through out the region. For example there are few restrictions in the Caymans and Costa Rica, but many highly defined restrictions in Bermuda. The nature of these restrictions vary (either input or output) in the region with many countries employing output and technical measures that are costly and labour intensive (e.g. quotas, minimum species / mesh size). A list of the lobster and conch minimum sizes, and species bans are summarised in Appendix 4.

No bans or other restrictions were recorded for lobster in Barbados, Costa Rica, Cayman, Guadalupe, Guatemala, Guyana, Haiti, Martinique, Monserrat, Trinidad and Tobago; and conch in BVI, Costa Rica, Guyana and Trinidad and Tobago.

Although bans (seasonal and all year) and restrictions are present for many vulnerable species of marine flora and fauna these are not found in every country. For example, bans exist for sharks in Nicaragua and the USA. However, no other shark fishery bans were recorded for other countries. The Turks and Caicos, Bahamas and the Netherlands Antilles had bans for marine mammals, however no other national bans were recorded. Bans (seasonal and all year) for marine turtles were recorded for Anguilla, Antigua and Barbuda, Bahamas, Grenada, Monserrat, Nicaragua, St. Kitts and Nevis, St. Lucia. No other national level bans for turtles were recorded. Bans on corals and other marine flora were recorded in Antigua and Barbuda, Bahamas, Grenada, St. Kitts and Nevis. Bans on targetting fish for aquarium trade were recorded in Antigua and Barbuda, Bahamas, Grenada, and St. Kitts and Nevis (see Appendix 6 for a full list of species bans).

13 of the 35 countries have bans on the use of fishing activities involving explosive or noxious substances (see Appendix 7). Other gear types that are highly damaging to the marine environment are not provided for e.g. drift nets

Zoning for artisanal and industrial fisheries.

In many countries there are conflicts between the artisanal and industrial fishery sectors. Some countries have implemented zoning that demarcates discrete areas that can only be targeted by artisanal fishers. For example, 6 miles from the coast in Colombia, and the whole territorial sea in Costa Rica and Nicaragua. It was also noted that in these countries and Venezuela, Cuba, Mexico and Honduras also provided derogations for artisanal fishers in most coastal areas and protected areas.

### Site level:

**Management** Nearly two thirds of the sites (from 134 responses) had a manager on site. This leaves approximately one third of sites with no responsible person based on site. The majority of sites were managed to protect individual species and habitats. This was reflected in the IUCN category designation (most designated as category II and IV – protected for ecosystem conservation / recreation, and habitat/species management respectively). This result is also coherent with the finding that most of



the sites were implemented with the aim to reduce the conflicts between fishers and recreational users.

Nearly 49 % (of 149 responses) recorded no management plan. This is the basis from which sustainable management and enforcement of conservation measures may take place. This may be because in some cases the management of sites are dictated through national plans, however this may be that many stakeholders feel excluded from the management process.

### **Monitoring:**

Information is critical for any management programme. A baseline description provides a base for considering change, while monitoring provides repeated quantitative assessment of parameters likely to highlight change. It is useful to consider two broad arenas of monitoring – ecological and socio-economic.

Typically, detailed ecological information about the marine realm is scarce and often anecdotal. Improving on such information is often highly costly. Quite often anecdotal and local knowledge will provide a critical basis for planning and for establishing monitoring techniques. Following development of base-line knowledge, monitoring approaches must be tailored towards specific points of interest or concern, but may include: repeat habitat mapping; assessment of numbers or biomass of key species; assessment of juveniles; spawning aggregations; migratory species; invasive species or pathogens. Physical parameters may include water quality indicators, temperature, currents, nutrients, dissolved oxygen, key pollutants.

Socio-economic monitoring is necessary to understand the uses and potential pressures on restricted areas and particularly to observe trends that may, over time, lead to problems. Some of this monitoring may take place outside of the restricted area, in the adjacent communities and fishing ports, but it is also important to find geospatial variation in uses and impacts within a site. Typical data may include: local population size and demographic trends; fishing methods, locations and catch details; tourist activities and numbers; economic parameters associated with fishing, tourism and other activities.

Discussion: 138 MPAs collected relevant fisheries data. However no site collected data on by-catch, a major pressure on global and regional marine biodiversity. One of the major problems cited is the low taxonomic resolution in data recording (e.g. catch may be grouped as snappers, but this does not distinguish between shallow and deep water species). The vast majority of sites were unable to state whether there had been any change in fisher's welfare or if there had been a change in resources. Many sites did collect some ecological and biological data. The need for this data has been recognised by many researchers and policy advisors. Such data would then provide a basis for communicating the beneficial properties of the many different types of interventions that are provided for (including no take areas).

However, for the responses that provided details of the change in resources or welfare, more than twice the MPAs detailed increases.

### **Awareness programmes and stakeholder involvement:**

First and foremost in any restricted area establishment and management process, it is important to involve and integrate the adjacent community. Although historically the declaration of sites has often left out local peoples, it is now widely recognised that involvement of such people can yield dividends. Such involvement includes processes of transparency and even co-operation with key stakeholders in the

management processes, but it also involves outreach and education to inform and involve a broader suite of users of MPAs.

A wide array of stakeholders, often over large geographical areas, may be linked to any one marine protected area. Direct stakeholders include fishers, recreational users (for swimming, diving, boating, fishing or scenic values), industry (maritime transport and non-living resource extraction) and those with direct interests in biodiversity. Indirect stakeholders are those who impact the ocean as well as those who rely on the ocean or its ecosystems for services such as food (consumers), water purification, climatic controls, or protection from storm damage (coastal communities living near coral reefs, mangroves, seagrasses). There are often conflicts between these stakeholders associated with both access and exploitation.

Collaborative management, or co-management, where local stakeholders participate meaningfully in decision-making and benefit sharing associated with a protected area is an ideal goal for many MPAs and MPAs. The rationale for promoting collaborative management is that equitable, effective and responsive management is more likely when local resource users have shared or exclusive rights to make decisions and benefit from resource use.

In reality co-management may be undertaken over a range of management functions ranging from initiation and designation through to implementation (including monitoring, enforcement and evaluation). Similarly, the level of involvement of stakeholders ranges across a spectrum, including: 1) No stakeholder involvement (government / state control); 2) Consultative (Stakeholders consulted but government makes decisions); 3) Collaborative (Stakeholders make some decisions); 4) Delegated (Government lets organized stakeholders make decisions). At the far end of this spectrum, one powerful means of community empowerment in the marine environment has been the provision of ownership of resources or even of geographic areas to adjacent communities.

### **Territorial Use Rights in Fisheries (TURFs)**

Private ownership (and the establishment of private reserves) in the marine realm is almost unheard of, however partial ownership or recognition of stewardship is not unusual. From a fisheries perspective this ownership can take the form of resource ownership<sup>63</sup>, but from a protected areas perspective the establishment of TURFs or other forms of direct ownerships are particularly interesting. Problems of over-exploitation can be far more effectively handled if the user community is small and subject to socio-cultural as well as legal controls – limits to use can be set by the adjacent community and these can be adequately enforced. Such areas are not MPAs. However in many cases the levels of control arising from such changes in ownership can provide important and unprecedented levels of protection. The owners of such areas may also chose to establish protected areas within their TURF, giving partial or complete protection. Such approaches are widely found in traditional societies, but are also being established in formal legal regimes.

Discussion: Nearly all the MPAs had awareness programmes (95% of 152 responses) predominantly using brochures and targeting stakeholders, general public, children and policy makers.

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<sup>63</sup> Individual transferable quotas are one such tool, effectively giving ownership to a certain amount of a particular fishery stock. Such ITQs may then be fished, or the quota itself may be bought and sold.

It was not possible within this project to thoroughly define the exact composition of each stakeholder group. Of the 141 responses, under 10% detailed no stakeholder involvement, 73% consultative and only 12% collaborative. Of these, only 42% involved stakeholders in both the initiation and enforcement of the areas. Approximately half had capacity building projects to increase the effective participation of stakeholders.

In certain areas stakeholders violently rejected the implementation of new restricted areas as they had not been included in the early stages of development.

The one detailed example of a TURF was recorded in Grenadian beach seine inshore pelagic fishery.

#### **Surveillance and enforcement:**

While community involvement and education may reduce levels of infringement, further efforts are required to ensure full compliance. Marine areas are beset with challenges when it comes to field-based management. Access to marine areas is costly, requiring boats, engines, navigational equipment and other resources. Impacts on the benthos and in the water column are not immediately detectable. Boundaries cannot be easily marked.

Because of the considerable benefits to resources users, including many fishers, it is possible, more than in many terrestrial parks, to engender considerable community support for protected areas. The same community can often be used to regulate the protected area, or to pass on information regarding infringements. Other approaches to ensuring compliance often take advantage of existing authority patrols such as coast-guards.

In terms of applying punitive measures it can be valuable to take a soft approach to first offenders, however other cases have shown that strict and rapid enforcement at an early stage can be invaluable in establishing a clear base-line. If it is relevant the designation or utilisation of customary leaders and procedures in enforcement processes can be of considerable value.

Discussion: Most of the MPAs recorded the presence of some form of surveillance regime and penalties for infringements. 93% (of 139 responses) of the surveillance regimes had all year coverage. Fines, catch and vessel confiscation were the three most frequently imposed fines (100%, 93% and 56% respectively). However in many areas it appeared that these services were involved in the surveillance of very large areas of water, including the territorial waters as well as local sites. The number of wardens was generally below 5 (normally less) and only rarely was significantly more (20 in USA). Surveillance capacity in the Caribbean can be characterised by limited personnel and hardware resources operating over large areas.

Of the 128 responses only 24% shared relevant fisheries data with other areas within the same coastline/country, and only 21% shared data with other areas in other countries. The sharing of data at any geographical data may facilitate management and conservation plans. Currently there appears to be no co-ordination of relevant fisheries data to aid in surveillance and management.

#### **Fishery restrictions:**

Discussion: The data describes many different types of MPAs at a sub-national level. 152 sites were recorded as no take (122 sites), no entry (17), and catch and release (13). Approximately 50 other sites are described that were NOT no take, no entry or catch and release. All year species and gear bans dominated these areas. Generally,

for MPAs that exist in countries that have few species and gear restrictions many bans were present (e.g. the Cayman Islands).

**Gear:** As stated, for sites that exist in countries that have few national level interventions, many gear bans were present. This was particularly true of Columbia, Costa Rica (GBI scores of 26, 26, and 21), the Cayman Islands (most had GBI scores of 19).

There were between 21 and 31 recorded bans (seasonal and all year) over and above national legislation for trolling and all nets (apart from drift and trammel nets). Similarly the use of scuba and free diving for fishing purposes was banned in 38 separate MPAs. The most frequently reported gear bans were trawls, gillnets and traps (31, 29 and 25 recorded bans). There were between 5 and 8 recorded bans for hook and line and longlining (vertical and horizontal). However there were no bans on the use of explosive or noxious substances for fishing activities over and above national legislation at a site level. Most sites in Costa Rica, Columbia, the Caymans, Honduras and some areas of Mexico and Venezuela there are bans on the use of traps, trawls, dredges, seines, cast and gill nets.

Generally, bans included many different gear types. However in some areas few gear types are banned. For example in Puerto Rico only trawl and drift nets are banned, where as in the fishing zone of Soufriere (St. Lucia) only gillnets are banned. However, the Soufriere zone is part of a larger multiple use marine protected area, and the Puerto Rican MPAs have further restrictions that provide protection over and above national legislation.

**Species:** The most frequently cited species bans at a site level were lobster, shallow shelf fishes, conch and turtles (between 16 and 20 records). There were nearly three times as many bans for these species compared to other species categories. On many occasions there were complimentary sets of restrictions between the national and local level. For example in the Bahamas, Belize, Netherlands Antilles and Nicaragua there were a relatively high number of species bans at a national level, while at the local level there were no bans.

About two thirds of the countries which had MPAs, and allowed fishing, utilised species restrictions. However two countries used restrictions with higher frequency. These countries were the Cayman Islands and Puerto Rico where the bans were consistent in each MPA. In the Cayman Islands there are few national level bans but every site employed bans on lobster, shallow shelf fish and turtles. In the Puerto Rican MPAs there are bans for deep slope, coastal and pelagic fisheries. These compliment the national level restrictions for threatened and vulnerable species.

**Other restrictions:** Many other restrictions were recorded throughout the Caribbean. Few of these were input restrictions. Generally, output restrictions are easily defined, but more labour intensive to monitor and enforce (including catch limit, minimum species size and species gender).

## Conclusions:

### Protection of species

**Legislative priorities at a site level:** Some MPAs may seem to have few restrictions in place to achieve their management objectives. For example, the fishing areas in Soufriere, Hol Chan and the Blue Hole (Belize), and the Biscayne National Park (USA). However many of these areas are part of a multiple use MPA, some of the other zones having more stringent measures in place. These areas may also be covered by national legislation that protects marine resources and biodiversity with a multitude of gear, species and other restrictions (e.g. Blue Hole and Biscayne National Park).

However for the national and site level analysis some MPAs appear to have few species and gear restrictions in place.

Country	MPA	Legislative priority areas
Venezuela	Turuépano National Park and Morrocoy National Park	All commercial species (not conch and lobster). Threatened and vulnerable species.
Honduras	Blanca Jeannette Kawas National Park <sup>64</sup>	All threatened and vulnerable species
Dominica	Cabrits National Park	All threatened and vulnerable species
Columbia	Via Parque Isla de Salamanca	All threatened and vulnerable species

### Taxonomic specific priorities:

Some taxa appeared to have little to no protection under national and local legislation. Chief amongst these were:

- 1) Sharks: Two bans at a national level (Nicaragua and USA) and 6 at a site level (4 in Puerto Rico, 1 in Turks and Caicos and 1 in Mexico). No other seasonal or all year bans were recorded. This group of species are extremely vulnerable to overexploitation. Shark fishing / finning occurs in the region (e.g. sharks are landed in Costa Rica and Belize).
- 2) Corals: From the data collected there appears to be some geo-legislative gaps in the protection of sensitive habitats (e.g. coral reefs). Appendix 3 details the national legislation that protects corals from the use of explosives or noxious substances, and from extraction. It also presents sites for which coral was the principal habitat type that are NOT no take, no entry, and catch and release only. From this data it can be seen that some parks are not covered by such legislation.

### Data collection and surveillance

- 1) Few sites share fisheries or surveillance data with other neighbouring parks or different islands. The archipelagic nature of many countries in the region increases the problems of data collection and surveillance. A co-ordinated effort to share data at a national and international level would enhance any conservation effort.
- 2) Surveillance capacity is very low, except in a handful of sites.
- 3) From the data collected in this project only a limited amount of areas in the wider Caribbean have legislation that targets the use of explosive and

<sup>64</sup> It is envisaged that provisions for bans on number, catch size and fishing seasons for each species that inhabits the park will be made

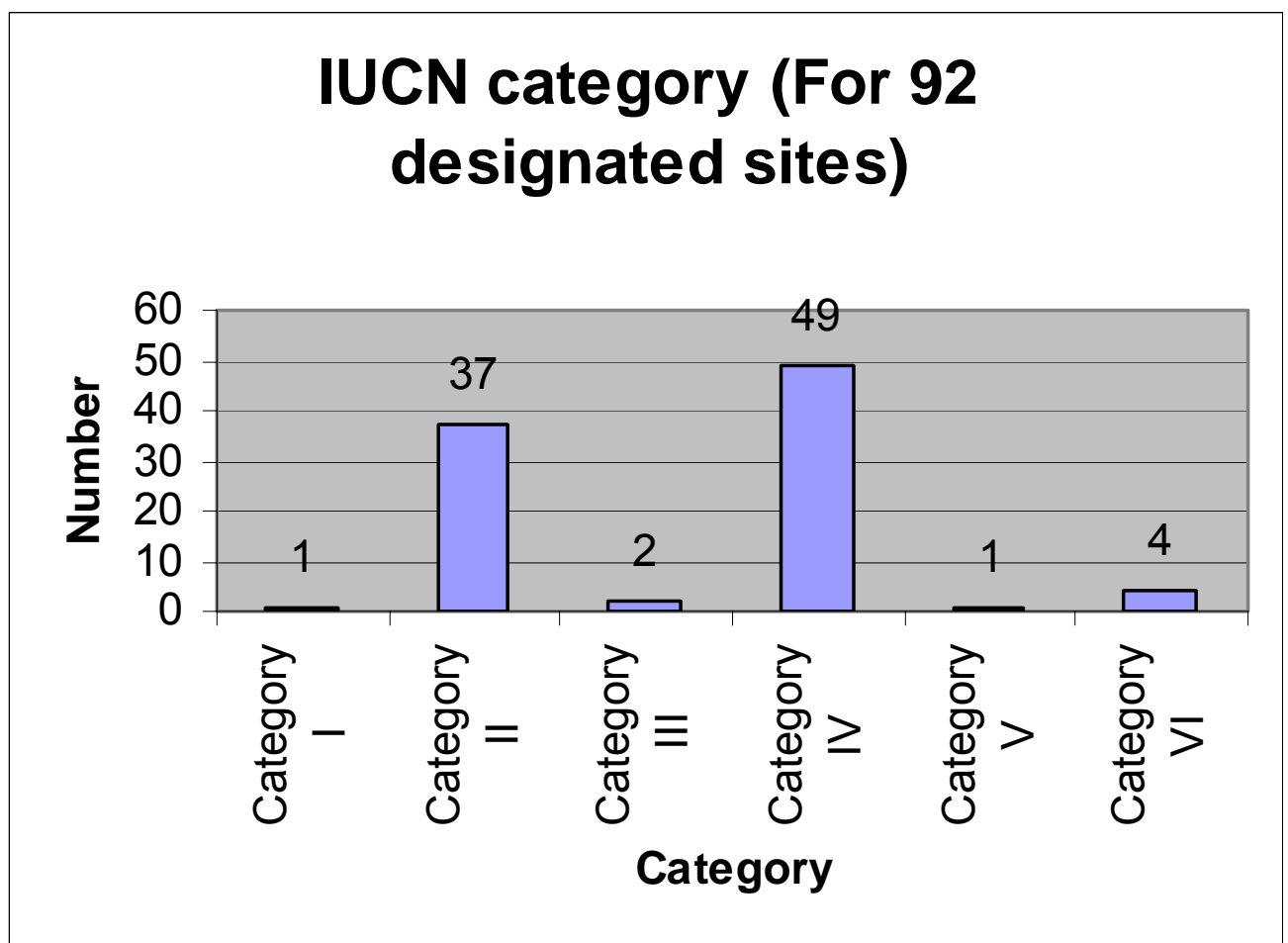
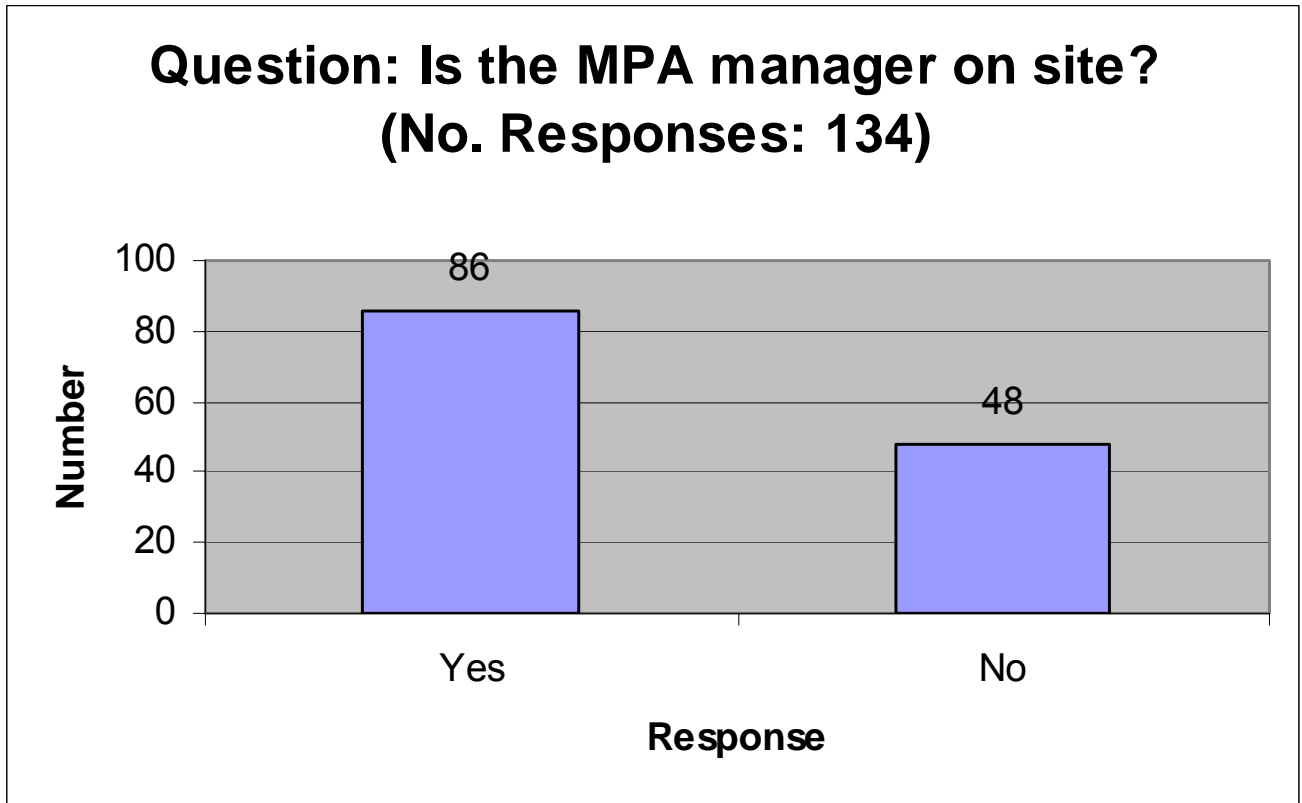
noxious substances in fishing activities. Most of the sites recorded habitat types that would be severely impacted by such practices.

- 4) Monitoring in the park did not allow managers to assess the change in fisheries resources or welfare. Both of these data would facilitate future policy decisions that will benefit all of the community.
- 5) Few data on catch and effort is recorded at a site level. No data is recorded on by-catch.
- 6) Data collection systems are present at the national level. The capacity of these systems to deliver meaningful data to managers is limited as in many places reports suggest that not enough data is collected. It is suggested that the use of logbooks are considered as an option and a culture is developed within the fishing community to provide fisheries data. Logbooks maybe more beneficial in the recreational and sports fishery as the literacy rate of many fishers is low. However, an integrated approach to data collection should be developed with more landing inspections combined with facilitated logbook entry. Data collection strategies should include incentives for the fishers. By-in to such programmes may be assisted by including training for fishers in fish handling and processing, health and safety etc. Again this would mean more resources for fisheries divisions.

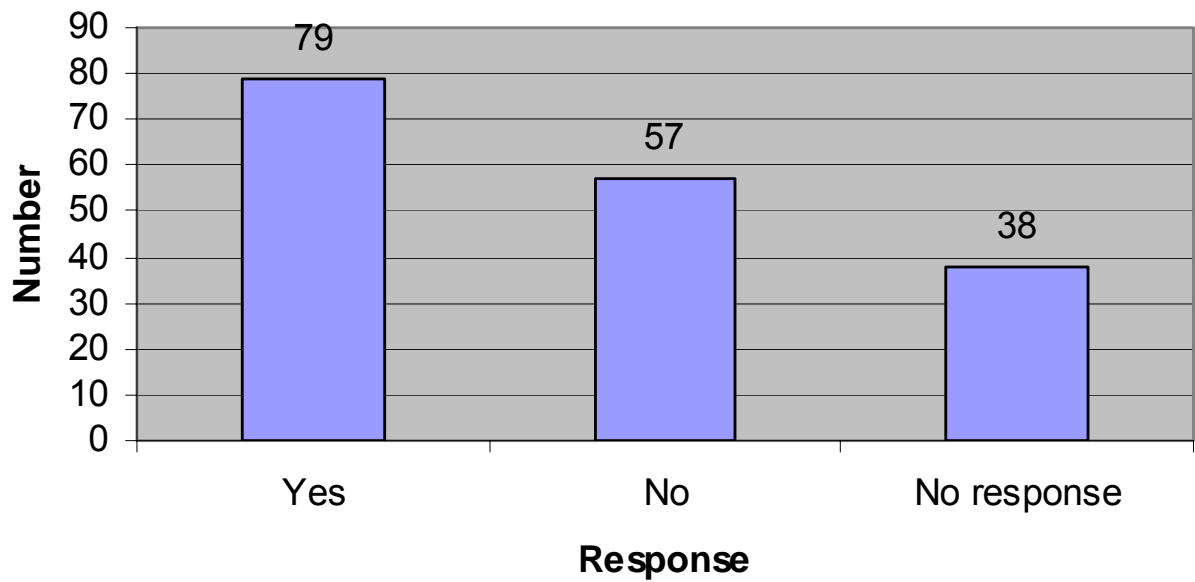
### **Stakeholder involvement**

- 1) Relatively few parks ensure collaborative management regimes have been implemented with local stakeholders, and relatively few have capacity building programmes to increase the effective involvement of stakeholders.
- 2) At a site level the MPAs were intended to reduce conflict between fishers and recreational users, at a sub-national level they were intended to reduce conflict between commercial fishers and artisanal fishers.

## Appendix 1: Summary graphs of key findings

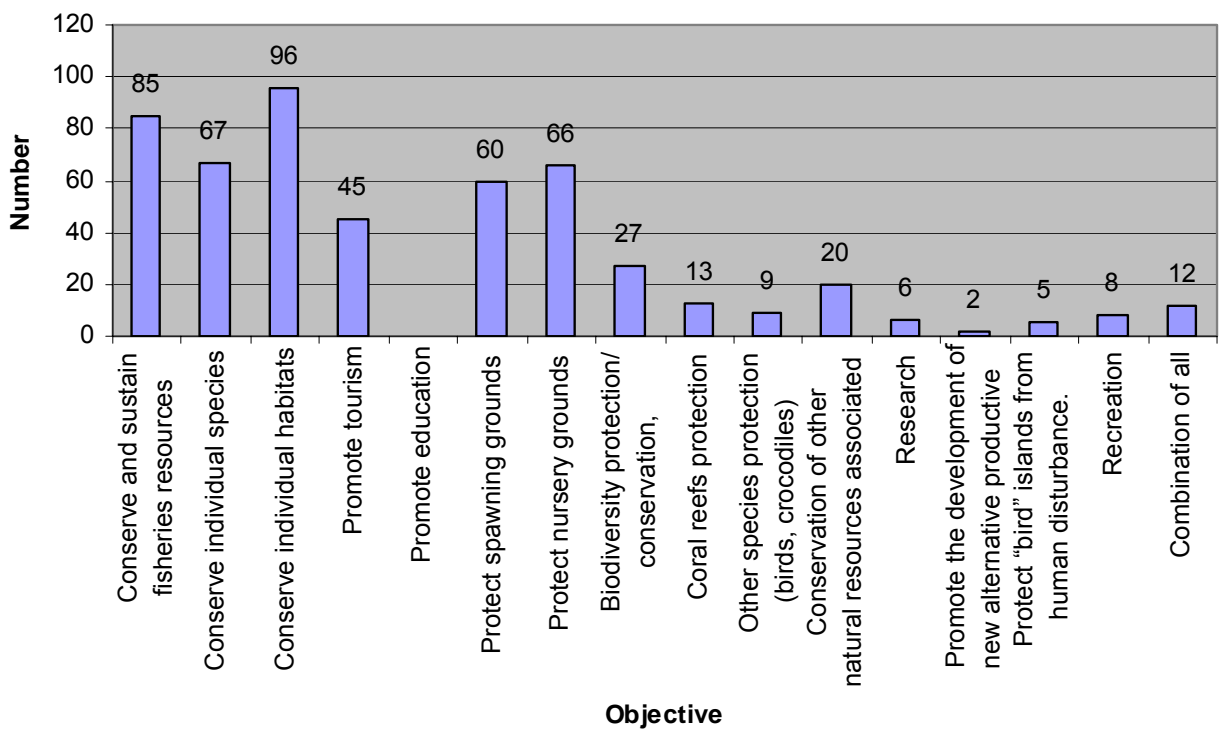


**Question: Is the FRA part of a network of reserves? (No. Responses: 136)**

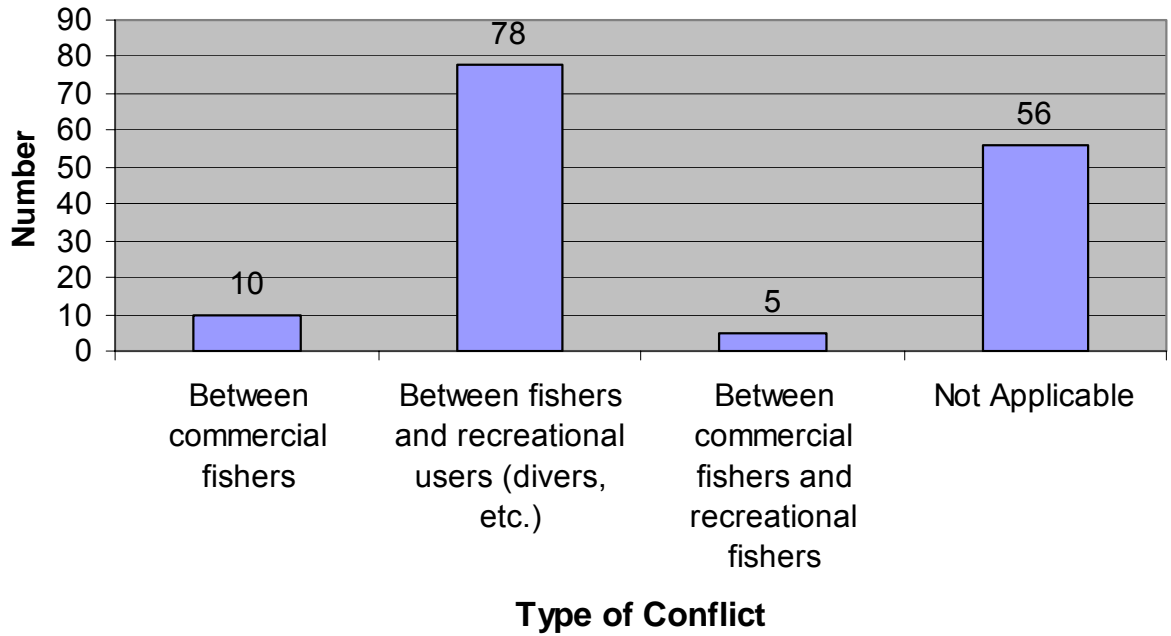




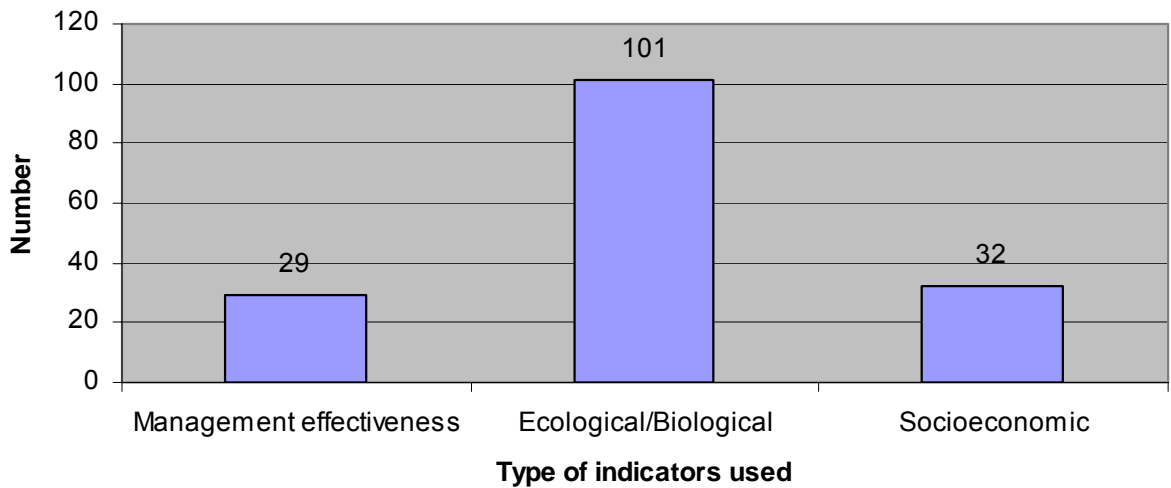
## Management objectives

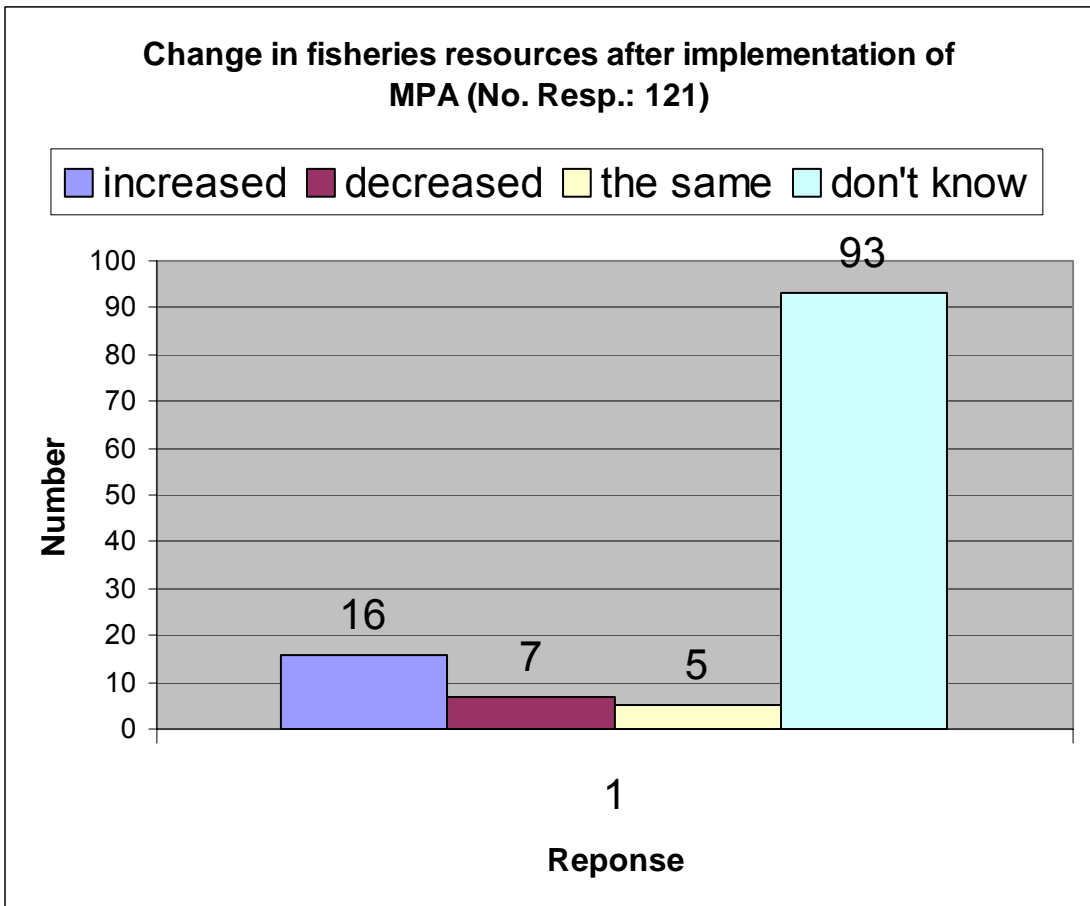
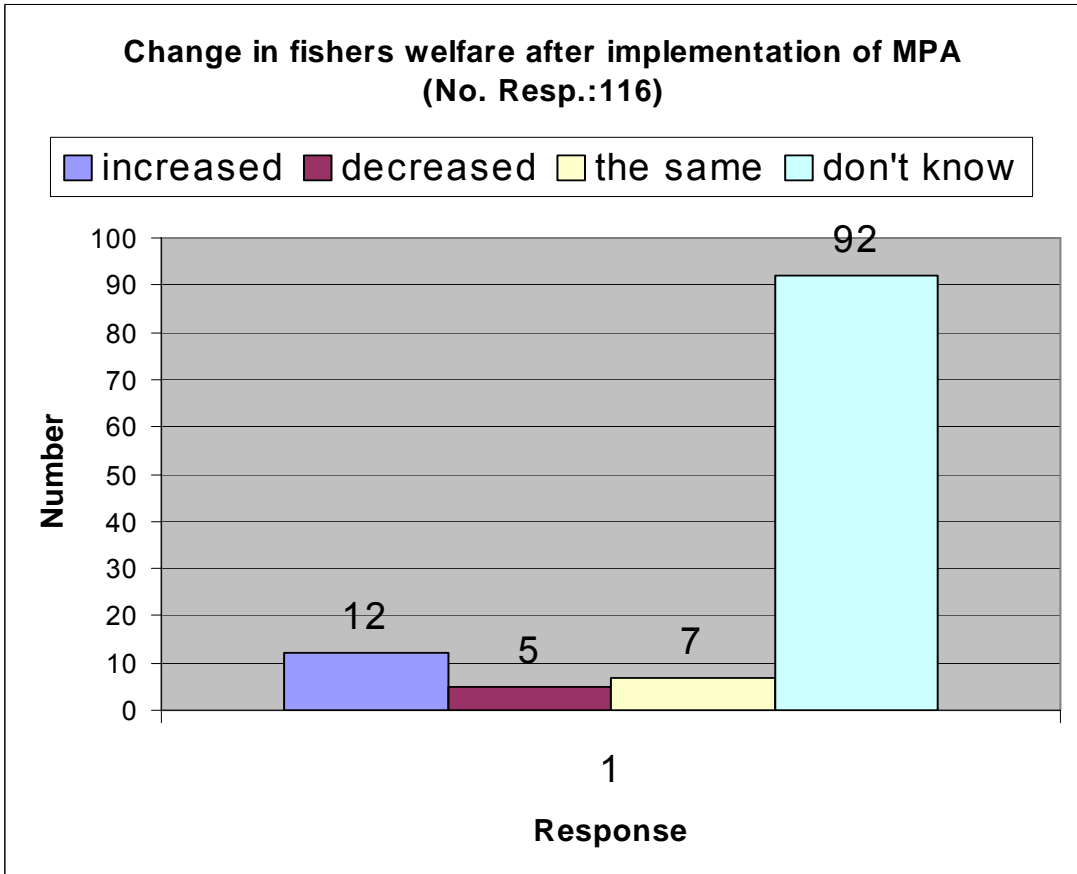


**Question: What conflicts is the FRA intended to reduce? (No. Responses: 139)**

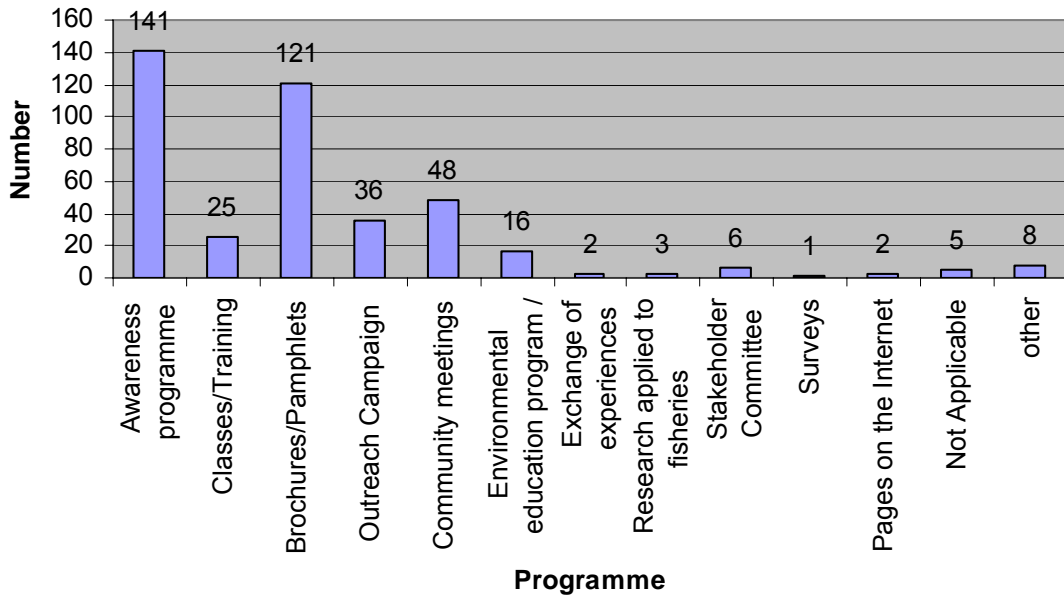


**Indicators used for monitoring (No. Responses: 139)**

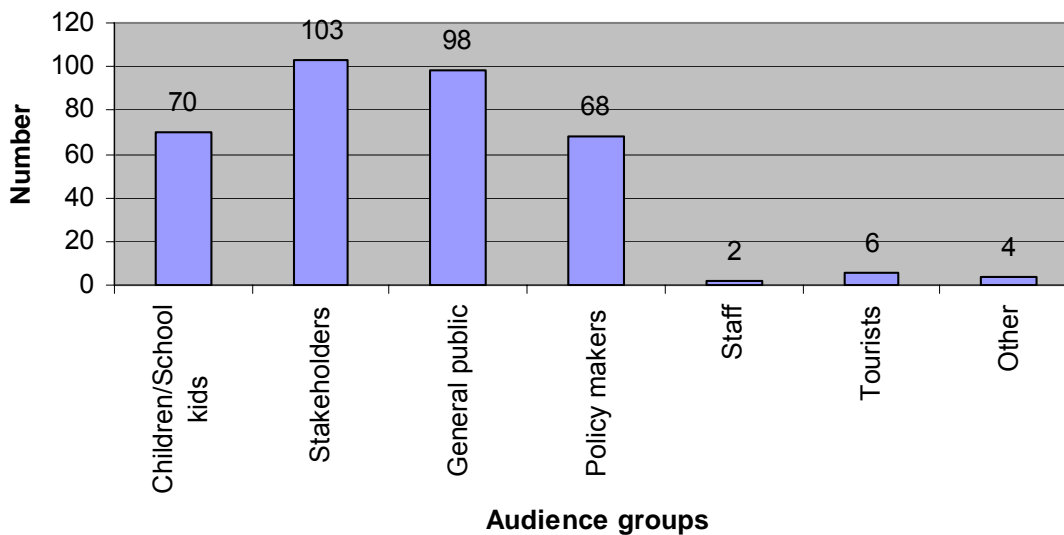




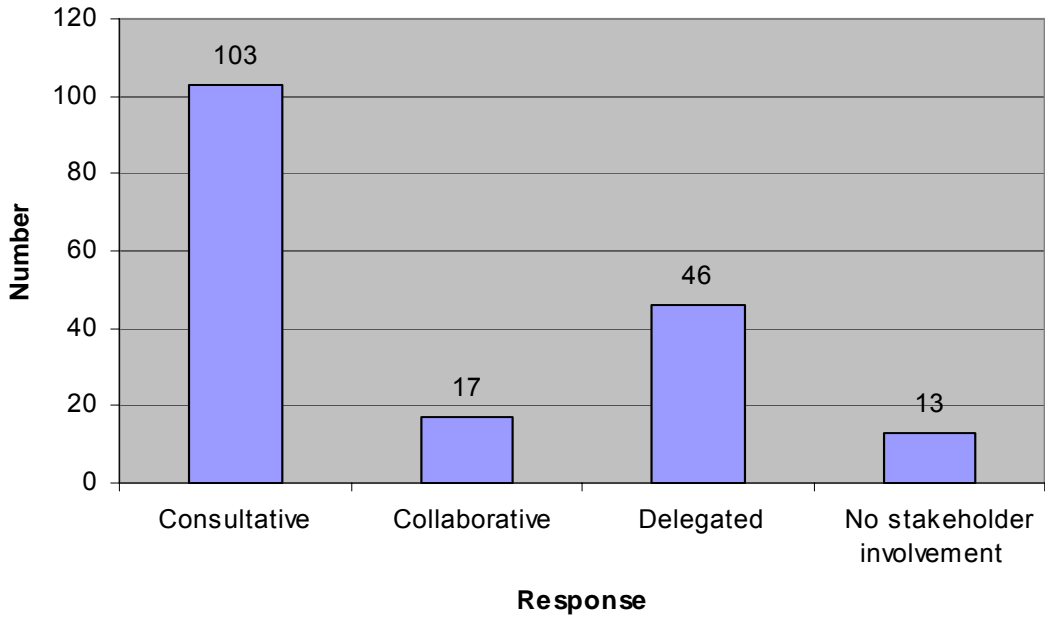
**Type of awareness programme. (No. Responses: 141)**



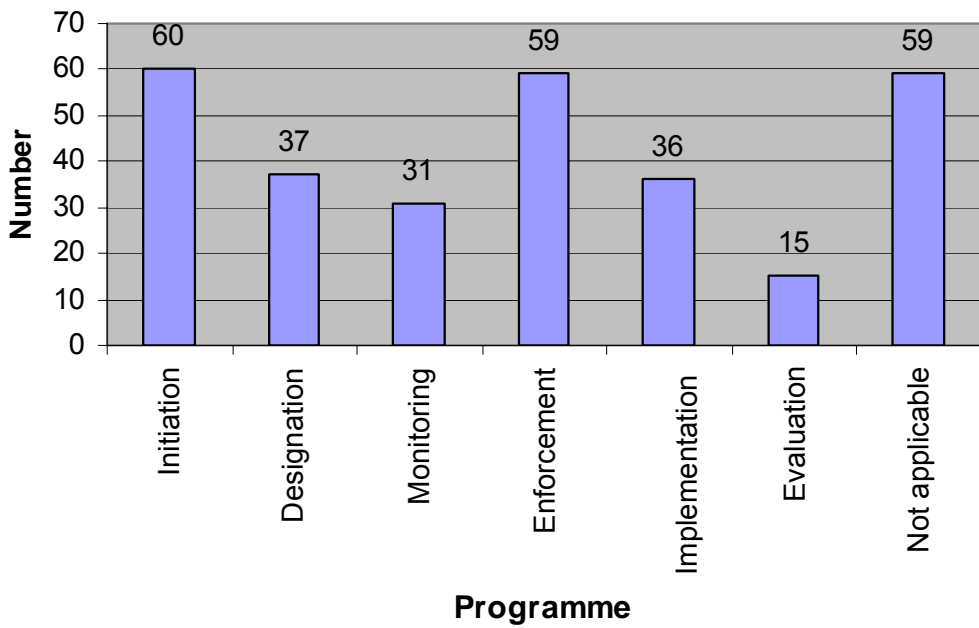
**Target audience of awareness programme. (No. Responses: 141)**



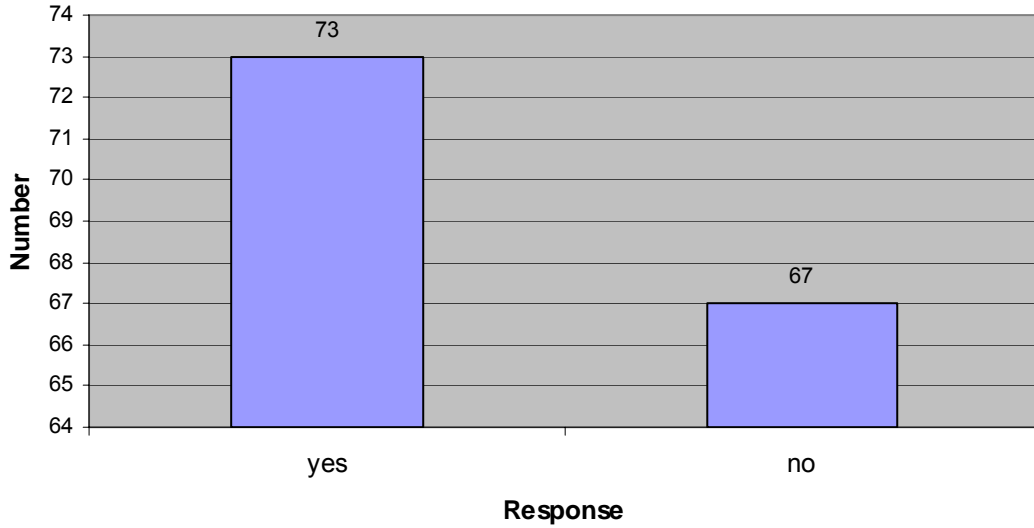
### Stakeholder involvement (No. Responses: 141)



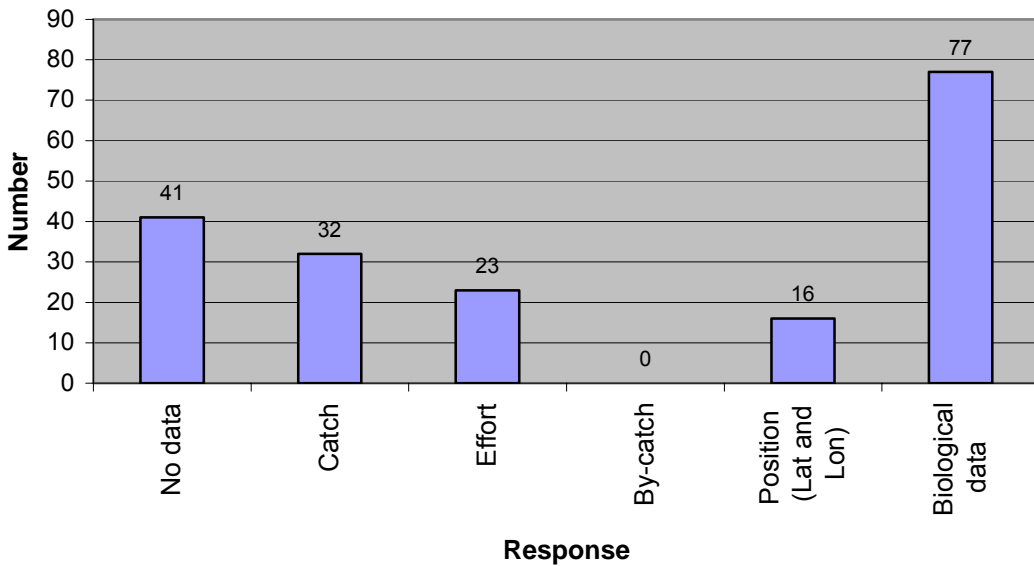
### Stage of Involvement



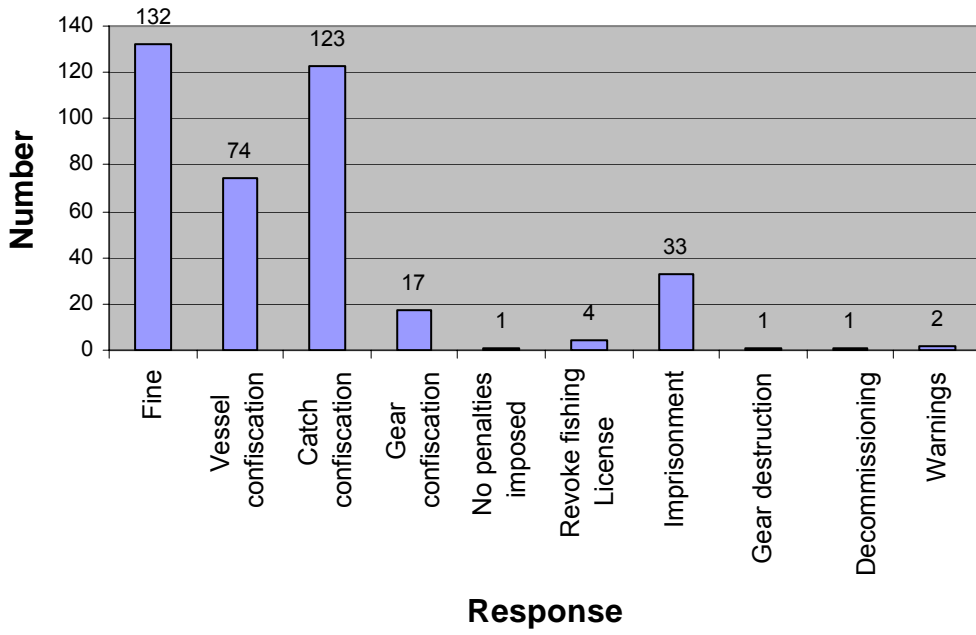
**Question: Is there a capacity building project that aims to make stakeholders more effectively involved in these processes? (No. Responses: 140)**



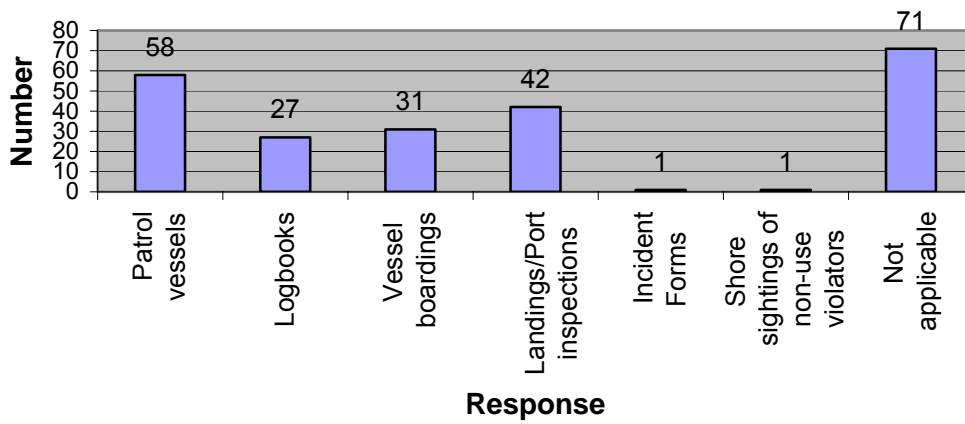
**Type of data recorded in the FRA (No. Responses: 138)**



### Type of penalties (No. Responses: 132)



### Research Patrols and Enforcement. (No. Responses: 133)

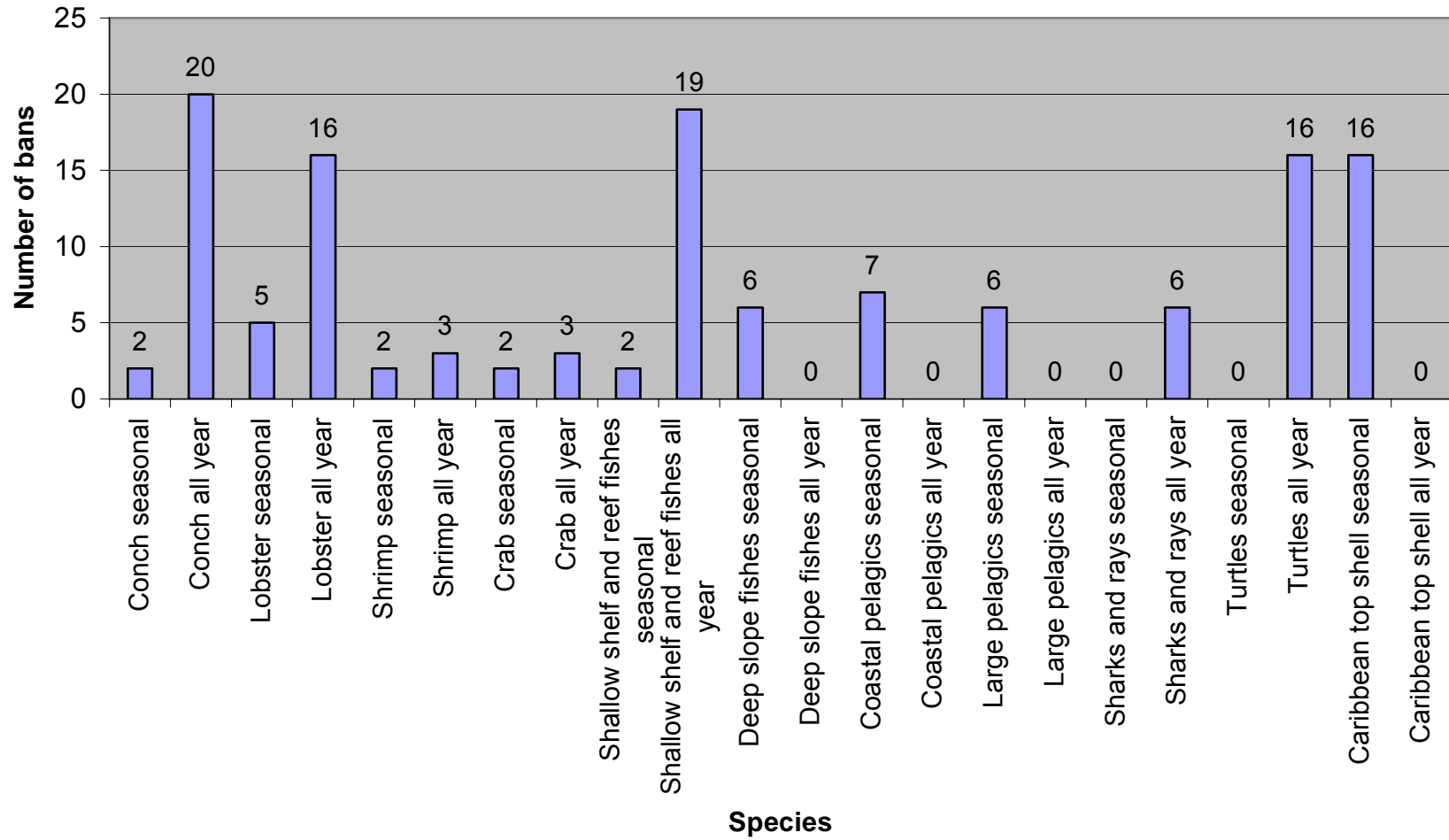


**Permanent no entry, no take, or catch and release only (No. Responses: 150)**

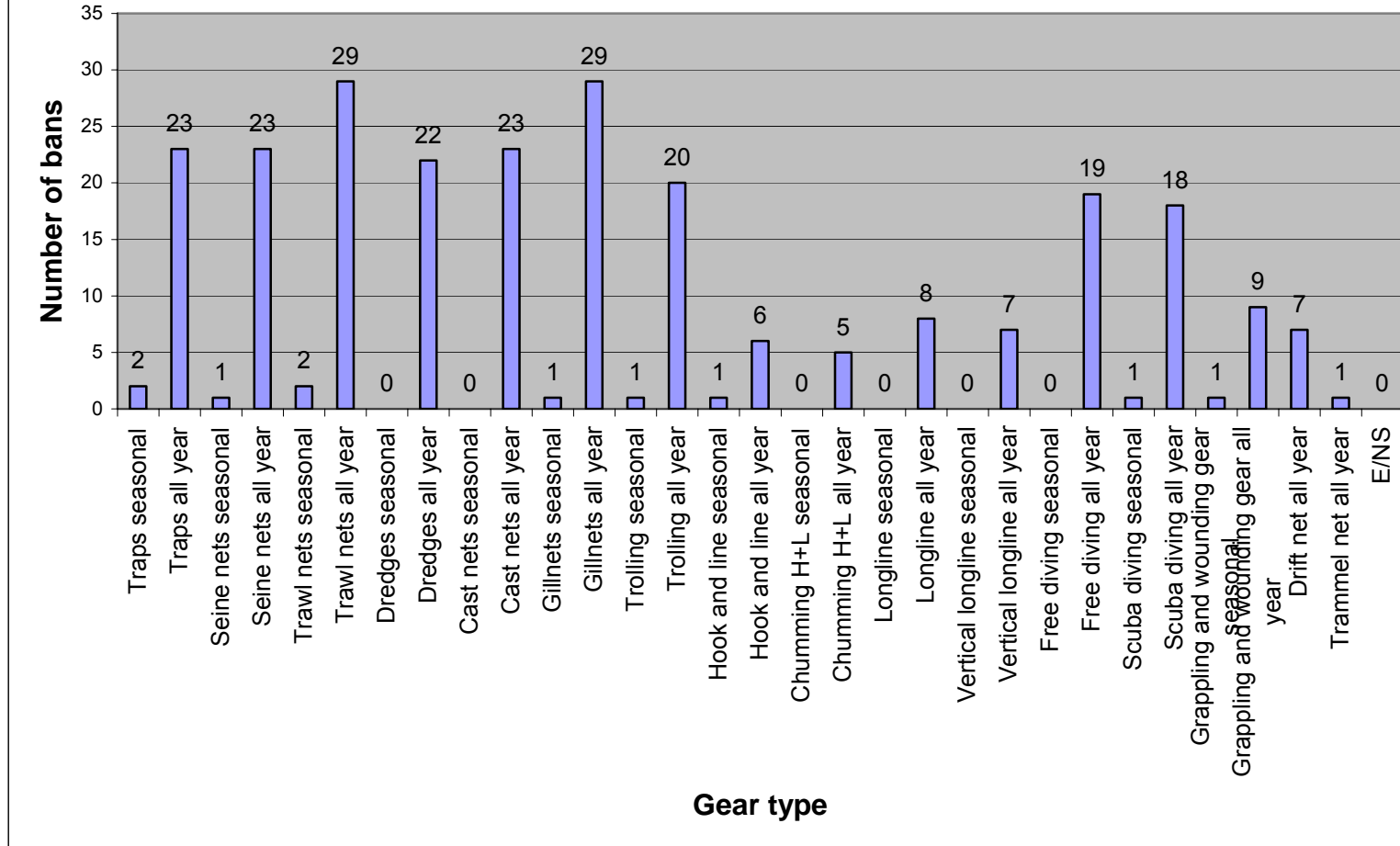




## Species bans over and above national legislation

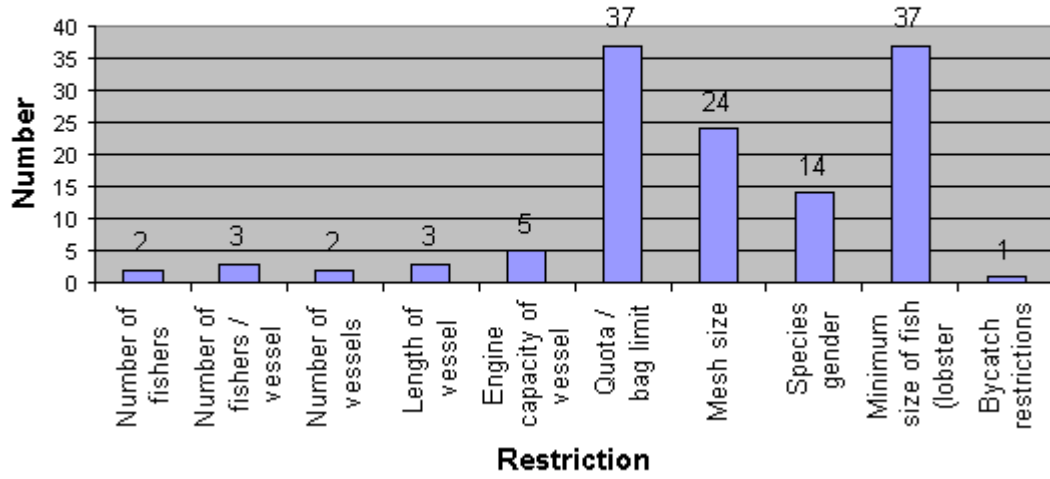


## Gear bans over and above national legislation





### Other restrictions over and above national legislation



## Appendix 2: Sites not listed in the WDPA for which data was collected

<b>COUNTRY</b>	<b>MPA</b>
Dominican Republic	Canal de Catuano
<b>No take zones</b>	
Bahamas	North Bimini
Bahamas	Berry Islands
Bahamas	South Eleuthera

### Appendix 3: Occurrence of corals and national level conservation measures.

This represents sites where the primary habitat type was coral. It also only lists areas that are NOT no take, no entry and catch and release. The 'Xs' record the existence of legislation. Therefore blanks correspond to countries for which fishing can occur and for which there is no national or site level interventions.

	<b>No. Sites recording coral as the primary habitat</b>	<b>Countries legislation for complete bans on explosive or noxious substances</b>	<b>Bans on extraction of coral and other marine flora:</b>
Belize	2	x	x
Cayman Islands	16		
Costa Rica	2		
Dominica	1	x	
Mexico	2		
Nicaragua	1		
Puerto Rico	6	x	
Saint Vincent and the Grenadines	1	x	
Saint Lucia	2	x	
Turks & Caicos Islands	1	x	
United States	1		
Venezuela	1		

## Appendix 4: Overview of national conch, lobster and other minimum sizes

The purpose of the following section is to allow the reader to access information by restriction (rather than having to trawl all of the national plans to collect information e.g. on marine mammal fishing bans).

### Species minimum size data.

#### LOBSTER AND CONCH

COUNTRY	SPECIES	DIMENSION	SIZE / WEIGHT
Anguilla	Spiny lobster	Carapace length	9.5 cm
Anguilla	Conch	Shell length	18 cm
Antigua and Barbuda	Spiny lobster	Minimum size	N/S
Antigua and Barbuda	Spiny lobster	Minimum weight	N/S
Antigua and Barbuda	Conch	Minimum size	N/S
Antigua and Barbuda	Conch	Minimum weight	N/S
Bahamas	Spiny lobster	Tail	5.5 inches
Bahamas	Conch	Shell length / weight	N/S
Belize	Spiny lobster	Carapace length	7.62 cm or 3 inches
Belize	Spiny lobster	Tail weight	4 ounces
Belize	Conch	Shell length	7 inches
Belize	Conch	Meat weight	3 ounces (85 g)
Bermuda	Spiny lobster	Carapace length	3 5/8 inches
Bermuda	Spiny lobster	Carapace length – 2 <sup>nd</sup> . Tail segment	1 3/8 inches
Bermuda	Spiny lobster	Tail weight	12 ounces
BVI	Spiny lobster	Carapace length	3.5 inches
BVI	Spiny lobster	Weight	1 lb.
Colombia	Conch	Lip size	7 mm
Colombia	Conch	Shell length	24 cm
Colombia	Conch	Meat weight	N/S
Cuba	Spiny lobster	N/S	N/S
Cuba	Conch	Lip size	5 mm
Cuba	Conch	Shell length	20 cm
Dominica	Spiny lobster	N/S	N/S
Dominican Republic	Conch	Shell length	25 cm
Grenada	Spiny lobster	Carapace length	3.7 inches
Grenada	Conch	Shell length	N/S
Grenada	Conch	Meat weight	N/S
Guadaleupe	Conch	Weight	250 g (cleaned)
Haiti	Conch	N/S (and 'well formed lip)	N/S
Honduras	Spiny lobster	N/S	N/S
Honduras	Conch	Shell length	22 cm

Honduras	Conch ( <i>C. madagascariensis</i> )	Shell length	15 cm
Jamaica	Spiny lobster	Carapace length	7.62 cm or 3 inches
Martinique	Conch	Weight	250 g (cleaned)
Mexico	Spiny lobster	N/S	N/S
Mexico	Conch	Shell length	20 cm
Netherlands Antilles	Conch	Shell length	20 cm
Nicaragua	Conch	Shell length	20 cm
Panama	Spiny lobster	N/S	N/S
Puerto Rico	Spiny lobster	Carapace length	3.5 inches
Puerto Rico	Conch	Lip size thickness	3/8 inch
Puerto Rico	Conch	Shell length	9 inches
St. Kitts and Nevis	Spiny lobster	Carapace length	3.75 inches or 9.5 cm
St. Kitts and Nevis	Conch	Shell length	18 cm
St. Kitts and Nevis	Conch	Meat weight	225g cleaned
St. Lucia	Spiny lobster	N/S	N/S
St. Lucia	Conch	Lip size	N/S
St. Lucia	Conch	Meat weight	N/S
St. Vincent	Spiny lobster	Total length	9 inches
St. Vincent	Spiny lobster	Carapace length	3.75 inches or 9.5 cm
St. Vincent	Spiny lobster	Minimum weight	1.5 pounds
St. Vincent	Conch	Shell length	18 cm or 7 inches
St. Vincent	Conch	Meat weight cleaned	8 ounces or 225 g
Turks and Caicos	Spiny lobster	Carapace length	3.57 inches
Turks and Caicos	Spiny lobster	Tail weight	7 ounces.
USA (Florida)	Spiny lobster	Carapace length	3 inches
USA (Florida)	Spiny lobster	Tail length	5.5 inches
US Virgin Islands	Spiny lobster	Carapace length	3.5 inches
US Virgin Islands	Conch	Lip size thickness	3/8 inch
US Virgin Islands	Conch	Shell length	9 inches
Venezuela	Spiny lobster	Minimum size	N/S
Venezuela	Spiny lobster	Minimum weight	N/S
Venezuela	Conch	Lip size	5 mm
Venezuela	Conch	Shell length	20 cm



### Other species

Other minimum size restrictions	
Species	Country
Urchins	Grenada St. Lucia, Turtles Bahamas Grenada Monserrat Nicaragua St. Kitts and Nevis St. Lucia Turks and Caicos, Sponges Bahamas Turks and Caicos, Mexico – mullet, octopus, grouper
Mutton and Yellow snapper, Red Hind	US Virgin Islands and Puerto Rico

### Appendix 5: Other lobster restrictions by country

Other lobster restrictions	
Restriction	Country
Berried females, moulting individuals landing ban:	Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Cuba, Dominica, Dominican Republic, Grenada, Honduras, Jamaica, Nicaragua, Panama, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent, Turks and Caicos, US Virgin Islands and Venezuela.

### Appendix 6: Overview of seasonal and all year species bans by country

Species	Country
<b>Lobster:</b>	Antigua and Barbuda, Bahamas, Barbados, Belize, Bermuda, Cuba, Dominica, Dominican Republic, Grenada, Honduras, Jamaica, Nicaragua, St. Kitts and Nevis, St. Lucia, St. Vincent, Turks and Caicos, USA, Venezuela,
<b>Conch:</b>	Belize, Bermuda, Colombia, Cuba, Cayman, Dominica, Dominican Republic, Grenada, Guadaleupe, Honduras, Jamaica, Mexico, Monserrat, Puerto Rico, St. Lucia, St. Vincent, USA, US Virgin Islands, Venezuela,
<b>Shrimp:</b>	Belize, Dominican Republic, Guadaleupe, Honduras, Mexico, Nicaragua, Panama,
<b>Marine mammal:</b>	Bahamas, St. Lucia, St. Lucia, Turks and Caicos.
<b>Turtle:</b>	Anguilla, Antigua and Barbuda, Belize Bahamas, Grenada, Monserrat, Nicaragua, St. Kitts and Nevis, St. Lucia
<b>Shark ban:</b>	Nicaragua, USA
<b>Aquarium fish:*</b>	Antigua and Barbuda, St. Kitts and Nevis
<b>Coral and other marine flora:</b>	Antigua and Barbuda, Bahamas, Belize Grenada, St. Kitts and Nevis
<b>Crab:</b>	Bahamas, USA
<b>Shallow shelf fishes:</b>	Barbados, USA,
<b>Deep slope fishes:</b>	Barbados, USA,

<b>Coastal pelagic fishes:</b>	Barbados, USA,
<b>Large pelagics:</b>	USA,
<b>Urchins:</b>	Barbados, St. Lucia,
<b>Flat head mullet:</b>	Mexico,
<b>Octopus:</b>	Mexico,
<b>Grouper:</b>	Mexico, USA,
<b>Nassau grouper:</b>	Puerto Rico,
<b>Mutton snapper:</b>	Puerto Rico, US Virgin Islands
<b>Red hind:</b>	Puerto Rico, US Virgin Islands
<b>Sea horses and butterfly fishes (for aquarium trade)*:</b>	Puerto Rico, US Virgin Islands
<b>Goliath fish:</b>	Puerto Rico, US Virgin Islands,
<b>Oysters:</b>	USA,

## **Appendix 7: Overview of destructive fishing gear bans by country**

<b>Countries with complete bans on explosive or noxious substances</b>
Anguilla, Bahamas, Barbados, Belize, Dominica, Jamaica, Monserrat, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent, Turks and Caicos, US Virgin Islands

## Appendix 8: List of all local sites for which data was collected

COUNTRY	NAME	YEAR	AREA
Netherlands Antilles	St Eustatius Marine Park Northern Reserve and Southern Reserve	1996	Whole of island from HWL to 30m depth 1187 ha
Antigua	Cades Bay Marine Reserve	1999	
Antigua	Diamond Reef	1972	
Antigua	Palaster Reef	1972	
Bahamas	Berry Islands	1990	80000 (in combination with four other no-take reserves) ha
Bahamas	Exuma Cays	1990	80000 (in combination with four other no-take reserves)
Bahamas	North Bimini	1990	80000 (in combination with four other no-take reserves) ha
Bahamas	Northern Abaco Cays	1990	80000 (in combination with four other no-take reserves)
Bahamas	South Eleuthera	1990	80000 (in combination with four other no-take reserves)
Belize	Blue Hole Natural Monument	1996	413.99 ha
Belize	Glover's Reef Marine Reserve	1993	35067 ha
Belize	Half Moon Caye Natural Monument	1982	9700
Belize	Hol Chan Marine Reserve	July 1987	1800 ha
Bermuda	Airplane (wreck)	2000	28.3 ha
Bermuda	Aristo (wreck)	2000	28.3 ha
Bermuda	Blanche King (wreck)	2000	28.3 ha
Bermuda	Caraquet (wreck)	2000	28.3 ha
Bermuda	Commissioner' s Point Area	1996	12.6
Bermuda	Constellation (wreck)	1988	78.5 ha
Bermuda	Cristobal Colon (wreck))	2000	28.3 ha
Bermuda	Darlington (wreck)	2000	28.3 ha
Bermuda	Eastern Blue Cut	1989	113.1 ha
Bermuda	Eastern Protected	First established in	4119 ha

	Area	1974 but area was modified and expanded in 1990.	
Bermuda	Hermes and Minnie Bressleur (wrecks)	1989.	78.5 ha
Bermuda	Hog Breaker	2000	28.3ha
Bermuda	Kate (Wreck )	1989	28.3ha
Bermuda	Lartington (wreck)	2000	28.3ha
Bermuda	L'Herminie (wreck)	2000	28.3ha
Bermuda	Madiana	1990	28.3ha
Bermuda	Marie Celeste (wreck)	2000	28.3ha
Bermuda	Mills Breaker	2000	28.3ha
Bermuda	Montana (wreck)	2000	28.3ha
Bermuda	North Carolina (wreck)	2000	28.3ha
Bermuda	North East Breaker	2000	28.3ha
Bermuda	North Eastern Protected Area	1990	1780 ha
Bermuda	North Rock	1990	314.2 ha
Bermuda	Pelinaion and Rita Zovetta (wrecks)	1989	78.5 ha
Bermuda	Snake Pit	2000	28.3 ha
Bermuda	South West Breaker Area	1988	113.1 ha
Bermuda	South Western Protected Area	First established in 1974 but area was modified and expanded in 1990	11,309 ha
Bermuda	Tarpon Hole	2000	28.3 ha
Bermuda	Taunton (wreck)	2000	28.3 ha
Bermuda	The Cathedral	2000	28.3 ha
Bermuda	Vixen (wreck)	1973	3.1 ha
Bermuda	Walsingham Marine Reserve		24.9 ha
Bermuda	Xing Da (wreck))	1997	12.6 ha
Barbados	Barbados Marine Reserve	1980	250
Columbia	El Corchal El Mono Hernandez Fauna and Flora Sanctuary	Ag. 2002	3850 ha
Columbia	Los Flamencos Fauna and Flora Sanctuary	May 1977	7000 ha
Columbia	Providence McBean Lagoon National Park	Oct. 1995	995 ha
Columbia	Via Parque Isla de Salamanca	Ag. 31, 1964	56200 ha
Costa Rica	Cahuita National Park (from April 30, 1978)	Was established as a national monument on September 7, 1970	1106 ha
Costa Rica	Tortuguero National Park	Sept 7, 1970 and April 17, 1975	31187 ha

Costa Rica	Wildlife National Refuge Gandoca-Manzanillo management plan marine sector	Oct 29, 1985	9449 ha (4436 ha marine)
Cuba	Cayos de Ana María	2001	19 049 ha
Cuba	Ciénaga de Zapata national Park	it is on process of approbation	216 551 ha
Cuba	Jardines de la Reina National Park	it is on process of approbation	216 551 ha
Cuba	Las loras	2001	6 362 ha
Cuba	Los Caimanes National Park	it is on process of approbation	28 756 ha
Cuba	PN Guanahabibes	2001	39 826 ha
Cuba	Punta MPAncés National Park	It is on approving process	4 598 ha
Cuba	RF Lanzasillo-Pajonal- Fragoso	2001	55 836 ha
Cuba	RF Las Picuas-Cayos del Cristo	2001	55 836 ha
Cuba	Rincón de Guanabo	2001	39 826 ha
Cuba	Río Máximo	2001	55 836 ha
Cayman	7-Mile Beach Marine Park Zone	Marine Parks 1986 and Marine Conservation Law 1978	5.119
Cayman	Barkers Replenishment Zone	Marine Parks 1986 and Marine Conservation Law 1978	347600ha
Cayman	Bloody Bay-Jacksons Marine Park Zone	Marine Parks 1986 and Marine Conservation Law 1978	157 ha
Cayman	Cayman Islands Marine Park System: Environmental Zone	Marine Parks 1986 and Marine Conservation Law 1978	1687 ha
Cayman	Cayman Islands Marine Park System: No Diving Zone	Marine Parks 1986 and Marine Conservation Law 1978	339 Ha
Cayman	Cayman Islands Marine Park System: Open Zone	Marine Parks 1986 and Marine Conservation Law 1978	Unknown: Territorial Waters out to 12 miles.
Cayman	Cayman Kai Marine Park Zone	Marine Parks 1986 and Marine Conservation Law 1978	59.1 ha
Cayman	Colliers Replenishment Zone	Marine Parks 1986 and Marine Conservation Law	67.6 ha

		1978	
Cayman	Dennis Point Replenishment Zone	Marine Parks 1986 and Marine Conservation Law 1978	1.5 ha
Cayman	Dick Sessinger Bay Marine Park Zone	Marine Parks 1986 and Marine Conservation Law 1978	212.9 ha
Cayman	East End	Marine Parks 1986 and Marine Conservation Law 1978	4.8 ha
Cayman	Frank Sound Replenishment Zone	Marine Parks 1986 and Marine Conservation Law 1978	220.9 ha
Cayman	George Town Marine Park Zone	Marine Parks 1986 and Marine Conservation Law 1978	1.74
Cayman	Gun Bay Replenishment Zone	Marine Parks 1986 and Marine Conservation Law 1978	156 ha
Cayman	Hawksbill Bay Marine Park Zone	Marine Parks 1986 and Marine Conservation Law 1978	91.8 ha
Cayman	NE Bay Replenishment Zone	Marine Parks 1986 and Marine Conservation Law 1978	10.9 ha
Cayman	North Sound Replenishment Zone	Marine Parks 1986 and Marine Conservation Law 1978	3338.4 ha
Cayman	NW Point Marine Park Zone	Marine Parks 1986 and Marine Conservation Law 1978	136.4 ha
Cayman	Preston Bay Marine Park Zone	Marine Parks 1986 and Marine Conservation Law 1978	91.8 ha
Cayman	Snipe Point Replenishment Zone	Marine Parks 1986 and Marine Conservation Law 1978	249.7 ha
Cayman	South Hole Sound Replenishment Zone	Marine Parks 1986 and Marine Conservation Law 1978	339.5 ha

Cayman	South Sound Replenishment Zone	Marine Parks 1986 and Marine Conservation Law 1978	3.395
Cayman	Spanish Bay Reef Marine Park Zone	Marine Parks 1986 and Marine Conservation Law 1978	81 ha
Cayman	Spanish Bay Reef Marine Park Zone		81 ha
Cayman	Spotts Replenishment Zone	Marine Parks 1986 and Marine Conservation Law 1978	35.2 ha
Cayman	Treasure Island Replenishment Zone	Marine Parks 1986 and Marine Conservation Law 1978	0.364
Cayman	West Bay Cemetery Replenishment Zone	Marine Parks 1986 and Marine Conservation Law 1978	0.364
Cayman	West End Marine Park Zone	Marine Parks 1986 and Marine Conservation Law 1978	44.9 ha
Dominica	Cabrits National Park	1987	531 ha coastal and marine
Dominica	Soufriere-Scottshead Marine Reserve	2000/2001	Approximately 600-700ha
Dominican Republic	Canal de Catuano	decree No. 269-99. 1999	
Dominican Republic	The MPA does not have a specific name. It belongs to Parque Nacional Jaragua. Southwest coast of Isla Beata, from the tide line up to 50m depth.	decree No. 269-99. 1999	
Honduras	Blanca Jeannette Kawas National Park	June 5, 1993	78145 ha
Honduras	Monumento Natural Marino Archipiélago Cayos Cochinos	1993	48500 ha
Jamaica	Discovery bay Fisheries Reserve	1996	31
Jamaica	Negril Marine Park,	1998	Approximately 16000 ha
St. Lucia	Soufriere Marine Management Area (SMMA)	Officially established in July 1995	
St. Lucia	The Maria Islands	The Maria Islands	

	Marine Reserve.	Marine Reserve was established in 1986, under section no: 22 of the Fisheries Act no: 10 of 1984	
Mexico	Área de Protección de Flora y Fauna Laguna de Términos	July 1979 as a Fauna Refuge area and Nov, 27 2000 as a Biosphere reserve	705, 016 ha.
Mexico	Biosphere reserve Ría Celestún	july 1979 as a Fauna Refuge area and Nov, 27 2000 as a Biosphere reserve	81482.33 ha
Mexico	Parque Marino Nacional Arrecifes de Cozumel	1980, Refuge Area for the protection of marine flora and Fauna. July 15, 1996 National Marine Park	734.59 ha
Mexico	Parque Marino Nacional Costa Occidental de Isla Mujeres, Punta Cancún y Punta Nizuc	Feb 2, 1973 as a refuge but in July 19, 1996 as a national park	
Mexico	Parque Nacional Arrecife de Puerto Morelos	Feb 2, 1998	
Mexico	Parque Nacional Isla Contoy	1961, Natural Park, 1986 area for marine turtle protection, Feb 1998 National Park	
Mexico	Parque Nacional Sistema Arrecifal Veracruzano	updated regulations, Ag. 24, 1992	52,238 ha
Mexico	Reserva De La Biosfera Banco Chinchorro	July 19, 1996	144, 360 ha
Mexico	Reserva de la Biosfera Ría Lagartos	May 21, 1999	
Mexico	Reserva de la Biosfera Sian Ka'an	updated regulations, Feb, 2 1998	705, 016 ha.
Nicaragua	Reserva natural cayos miskitos	1992	
Puerto Rico	Canal de Luis Peña de Isla de Culebra Natural Reserve	1990 & 1999	4180.80 ha
Puerto Rico	Guanica Natural Reserve	1981	161.87 ha
Puerto Rico	Isla de Mona Reserve	1986	5490 ha
Puerto Rico	Isla Desecho	1999	146 ha
Puerto Rico	La Parguera Natural Reserve	1998	5114.41 ha



Puerto Rico	Reserva Nacional de Investigación Marina Punta de Jobos	01/09/1981	1140 ha
Puerto Rico	Reserva Natural Arrecifes de la Cordillera	January 1980	12000 ha
Puerto Rico	Reserva Natural Boquerón	1980 and 1998	237 ha
Puerto Rico	Reserva Natural Caja de Muertos	January 1980	
Puerto Rico	Reserva Natural Punta Petrona	1979	
Puerto Rico	Tourmaline Reef Natural Reserve	1996	3666 ha
Turks and caicos	Admiral Cockburn Land and Sea National Park	The National Park Ordinance was established in 1975 and in force on the 30 October, 1975. However the ordinance has been amended in 1989 and 1992.	479.55
Turks and caicos	Bell Sound Nature Reserve	The National Park Ordinance was established in 1975 and in force on the 30 October, 1975. However the ordinance has been amended in 1989 and 1992.	1141.21
Turks and caicos	Chalk Sound National Park	The National Park Ordinance was established in 1975 and in force on the 30 October, 1975. However the ordinance has been amended in 1989 and 1992.	1459.7
Turks and caicos	Columbus Landfall Marine National Park	The National Park Ordinance was established in 1975 and in force on the 30 October, 1975. However the ordinance has been amended in 1989 and 1992.	517.99 ha
Turks and caicos	East bay Islands national Park	The National Park Ordinance was established in 1975 and in force on the 30	493.71

		October, 1975. However the ordinance has been amended in 1989 and 1992.	
Turks and caicos	East Harbour Lobster and Conch Reserve	The National Park Ordinance was established in 1975 and in force on the 30 October, 1975. However the ordinance has been amended in 1989 and 1992.	
Turks and caicos	Fort George Land and Sea National Park	The National Park Ordinance was established in 1975 and in force on the 30 October, 1975. However the ordinance has been amended in 1989 and 1992.	493.71 ha
Turks and caicos	Grand Turk Cays Land and Sea National Park	The National Park Ordinance was established in 1975 and in force on the 30 October, 1975. However the ordinance has been amended in 1989 and 1992.	156.20 ha
Turks and caicos	Lake Catherine Nature Reserve	The National Park Ordinance was established in 1975 and in force on the 30 October, 1975. However the ordinance has been amended in 1989 and 1992.	391.73 ha
Turks and caicos	North West Point Marine National Park	The National Park Ordinance was established in 1975 and in force on the 30 October, 1975. However the ordinance has been amended in 1989 and 1992.	1025.87 ha
Turks and caicos	North, middle and East Caicos Nature Reserve	The National Park Ordinance was established in 1975 and in force on the 30	84.98 ha

		October, 1975. However the ordinance has been amended in 1989 and 1992.	
Turks and caicos	Pigeon Pond and Frenchman's Creek Nature Reserve	The National Park Ordinance was established in 1975 and in force on the 30 October, 1975. However the ordinance has been amended in 1989 and 1992.	
Turks and caicos	Princess Alexandra Land and Sea National Park	The National Park Ordinance was established in 1975 and in force on the 30 October, 1975. However the ordinance has been amended in 1989 and 1992.	2643.40 ha
Turks and caicos	Princess Alexandra nature Reserve Little Water, Donna and Mangrove Cays	The National Park Ordinance was established in 1975 and in force on the 30 October, 1975. However the ordinance has been amended in 1989 and 1992.	
Turks and caicos	South Creek National Park	The National Park Ordinance was established in 1975 and in force on the 30 October, 1975. However the ordinance has been amended in 1989 and 1992.	74.05 ha
Turks and caicos	Vine Point (Man O' War Bush) and Ocean Hole Nature Reserve	The National Park Ordinance was established in 1975 and in force on the 30 October, 1975. However the ordinance has been amended in 1989 and 1992.	756.76
Turks and caicos	West Caicos Marine National Park	The National Park Ordinance was established in 1975 and in force on the 30	413.99 ha

		October, 1975. However the ordinance has been amended in 1989 and 1992.	
USA	Apalachicola National Estuarine Research Reserve (ANERR)	1979	{
USA	Biscayne National Park	1980	
USA	Crocodile Sanctuary of Everglades National Park	1980	3300 ha
USA	Dry Tortugas National Park (FL) Research Natural Area (RNA)	July, 2001	25899 ha
USA	Florida Keys National Marine Sanctuary	1990	995 ha
USA	John Pennekamp Coral Reef State Park (Lobstering Exclusion Zones)	1994	Appx. 1500 ha
St. Vincent	Tobago Cays Marine Park	December 1997	
Venezuela	Laguna de La Restinga National Park	Feb 1974	18862 ha
Venezuela	Laguna de las Marites National Monument	1974	3674 ha
Venezuela	Laguna de Tacarigua National Park	1974	39100 ha - 20700 ha marine area
Venezuela	Las Tetras de Maria Guevara National Monument	1974	3674 ha
Venezuela	Los Roques Archipelago National Park	may 1974	221120 ha
Venezuela	Médanos del Coro National Park	1974	91280 ha
Venezuela	Mochima National Park	Dec. 1973	94935 ha
Venezuela	Morrocoy National Park	may 1974 but enlarged in 1975	32090 ha
Venezuela	Refugio de Fauna Ciénaga Los Olivitos	1986	26000 ha
Venezuela	Refugio de Fauna Cuare	1972	11852 Ha.
Venezuela	Refugio de Fauna Isla Aves	1972	158000ha
Venezuela	Reserva de Fauna Silvestre Ciénagas de Juan Manuel, Aguas	1991	

	Blancas y Aguas Negras		
Venezuela	San Esteban National Park	1987	44.500 ha
Venezuela	Turuépano National Park	1992	60 000 ha
Venezuela	Cas Cay/Mangrove Lagoon Marine Reserve and Wildlife Sanctuary	29 September 1994	
US Virgin Is	Compass Point Pond Marine Reserve and Sanctuary	1992	
US Virgin Is	Hind Bank Marine Conservation District	06 December 1999	
US Virgin Is	St. James Marine Reserve and Wildlife Sanctuary	29 September 1994	

## Appendix 9: Conservation Status of Fishes of the Western Atlantic Ocean and Its Oceanic Islands<sup>65</sup>

SPECIES	COMMON NAME	HABITAT	REDLIST <sup>66</sup>	CITES	US ESL
Acipenser brevirostrum Lesueur 1818	shortnose sturgeon (En) esturgeon à nez court (Fr) esturión hociquicorto (Es)	freshwater, brackish, marine	vulnerable	Appendix I	endangered
Acipenser oxyrinchus Mitchill 1815	Atlantic sturgeon (En)	freshwater, brackish, marine	lower risk		
Acipenser oxyrinchus desotoi Vladykov 1955	Gulf sturgeon (En)	freshwater, brackish, marine	vulnerable		threatened
Acipenser oxyrinchus oxyrinchus Mitchill 1815	Atlantic sturgeon (En)	freshwater, brackish, marine	lower risk		
Ariopsis bonillai (Miles 1945)	New Grenada sea catfish (En)	marine	endangered (listed as Arius bonillai)		
Arius bonillai see Ariopsis bonillai					
Balistes vetula Linnaeus 1758	queen triggerfish (En)	marine	vulnerable		
Batrachoides manglae Cervigón 1964	Cotuero toadfish (En)	marine	vulnerable		
Carcharhinus brevipinna (Müller & Henle 1839)	spinner shark (En)	marine	lower risk		
Carcharhinus leucas (Müller & Henle 1839)	bull shark (En)	marine, rarely freshwater	lower risk		
Carcharhinus limbatus (Müller & Henle 1839)	blacktip shark (En)	marine	lower risk		
Carcharhinus longimanus (Poey 1861)	oceanic whitetip shark (En)	marine	lower risk		
Carcharhinus obscurus (Lesueur 1818)	dusky shark (En)	marine	lower risk		
Carcharhinus obscurus (Lesueur 1818)(Northwest Atlantic and Gulf of Mexico populations)	dusky shark (En)	marine	vulnerable		

<sup>65</sup> Data source: <http://www.redlist.org/>

<sup>66</sup> [http://www.redlist.org/info/categories\\_criteria2001.html](http://www.redlist.org/info/categories_criteria2001.html)

Carcharhinus plumbeus (Nardo 1827)	sandbar shark (En)	marine	lower risk		
Carcharius taurus see Eugomphodus taurus					
Carcharodon carcharius (Linnaeus 1758)	great white shark (En)	marine	vulnerable		
Centrophorus granulosus (Bloch & Schneider 1801)	gulper shark (En)	marine	vulnerable		
Dermatolepis inermis see Epinephelus inermis					
Epinephelus drummondhayi Goode & Bean 1878	speckled hind (En)	marine	critically endangered		
Epinephelus inermis (Valenciennes in Cuvier & Valenciennes 1833)	marbled grouper (En)	marine	vulnerable (listed as Dermatolepis inermis)		
Epinephelus nigritus (Holbrook 1855)	Warsaw grouper (En)	marine	critically endangered		
Epinephelus niveatus (Valenciennes in Cuvier & Valenciennes 1833)	snowy grouper (En)	marine	vulnerable		
Epinephelus striatus (Holbrook 1855)	Nassau grouper (En)	marine	endangered		
Eugomphodus taurus (Rafinesque 1810)	grey nurse shark (En) sand tiger shark (En)	marine	vulnerable (listed as Carcharius taurus)		
Galeocerdo cuvier (Péron & Lesueur in Lesueur 1822)	tiger shark (En)	marine	lower risk		
Hexanchus griseus (Bonnaterre 1788)	bluntnose sixgill shark (En)	marine	lower risk		
Hippocampus erectus (Perry 1810-11)	lined seahorse (En)	marine	vulnerable		
Hippocampus reidi Ginsburg 1933	slender seahorse (En)	marine	vulnerable		
Hippocampus	dwarf seahorse	marine	vulnerable		

zosteræ Jordan & Gilbert 1882	(En)				
Hypoplectrus providencianus Acero P. & Garzón-Ferreira 1994	masked hamlet (En)	marine	vulnerable		
Isurus oxyrinchus Rafinesque 1810	shortfin mako (En)	marine	lower risk		
Jenkinsia parvula Cervigón & Velazquez 1978	Venezuelan herring (En)	marine	vulnerable		
Lachnolaimus maximus (Walbaum 1792)	hogfish (En)	marine	vulnerable		
Lamna nasus (Bonnaterre 1788)	porbeagle (En)	marine	lower risk		
Lucifuga dentatus Poey 1858		inland (subterranean)	vulnerable (listed as Stygicola dentata)		
Lucifuga simile Nalbant 1981		inland (subterranean)	vulnerable		
Lucifuga spelaeotes Cohen & Robins 1970	New Providence cusk-eel (En)	inland (subterranean)	vulnerable		
Lucifuga subterraneus Poey 1858	New Providence cusk-eel (En)	inland (subterranean)	vulnerable		
Lucifuga teresinarum Díaz Pérez 1988		inland (subterranean)	vulnerable		
Lutjanus analis (Cuvier in Cuvier & Valenciennes 1828)	mutton snapper (En)	marine	vulnerable		
Lutjanus cyanopterus (Cuvier in Cuvier & Valenciennes 1828)	Cubera snapper (En)	marine	vulnerable		
Mustelus canis (Mitchill 1815)	dusky smoothhound (En)	marine	lower risk		
Mycteroperca cidi Cervigón 1966	Venezuelan grouper (En)	marine	vulnerable		
Mycteroperca microlepis (Goode & Bean 1879)	gag grouper (En)	marine	vulnerable		
Negaprion brevirostris (Poey 1868)	lemon shark (En)	marine	lower risk		
Pagrus pagrus (Linnaeus 1758)	red pogy (En)	marine	endangered		
Priolepis robinsi Garzón-Ferreira & Acero P. 1991		marine	lower risk		



Prionace glauca (Linnaeus 1758)	blue shark (En)	marine	lower risk		
Pristis pectinata Latham 1794	smalltooth sawfish (En) wide sawfish (En)	freshwater, brackish, and marine	endangered		
Pristis perotteti Müller & Henle 1841	largetooth sawfish (En)	freshwater, brackish, and marine	critically endangered		
Protemblemaria punctata Müller & Henle 1841	largetooth sawfish (En)	marine	vulnerable		
Saccogaster melanomycter Cohen 1981		marine	vulnerable		
Sanopus astrifer (Robins & Starck 1965)	whitespotted toadfish (En)	marine	vulnerable		
Sanopus greenfieldorum Collette 1983	whitelined toadfish (En)	marine	vulnerable		
Sanopus reticulatus Collette 1983	reticulated toadfish (En)	marine	vulnerable		
Sanopus splendidus Collette, Starck & Phillips in Collette 1974	splendid toadfish (En)	marine	vulnerable		
Scarus guacamaia Cuvier 1829	rainbow parrotfish (En)	marine	vulnerable		
Serranus dewegeri Metzelaar 1919	mero viejo (Es)	marine	vulnerable		
Sphyrna lewini (Griffith & Smith 1834)	scalloped hammerhead (En)	marine	vulnerable		
Sphyrna zygaena (Linnaeus 1758)	smooth hammerhead (En)	marine	vulnerable		
Squalus acanthias Linnaeus 1758	piked dogfish, spiny dogfish (En)	marine	vulnerable		
Stygicola dentata see Lucifuga dentatus					
Thunnus obesus (Lowe 1839)	bigeye tuna (En) atún (Es)	marine	vulnerable		
Thunnus thynnus (Linnaeus 1758) (Western Atlantic stock)	northern bluefin tuna (En), thon rouge (Fr), atún (Es)	marine	critically endangered		



## Appendix 10: Gear bans and GBI score by site

Country	Name	GBI Score	Traps		Seine nets		Trawl nets		Dredges		Cast nets		Gillnets		Trolling		Hook and line		Chumming hook and line		Longline		Vertical longline		Free diving		Scuba diving		Grappling and wounding gear		Drift net	Trammel net	E/NS
			seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year					
Belize	Blue Hole Natural Monument	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Belize	Hol Chan Marine Reserve	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Belize	Glover's Reef Marine Reserve - other areas (general use zone)	8	0	2	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0			
Barbados	Barbados Marine Reserve	5	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2				
Columbia	Via Parque Isla de Salamanca	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Columbia	Providence McBean Lagoon National Park	25	0	2	0	2	0	4	0	4	0	0	0	3	0	0	0	0	1	0	3	0	3	0	1	0	0	0	2				
Columbia	Los Flamencos Fauna and Flora Sanctuary	15	0	0	0	2	0	4	0	0	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3		
Costa Rica	Tortuguero National Park	28	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	1	0	1	0	3	0	3	0	0	0	0	0	2			
Costa Rica	Wildlife National Refuge Gandoca-Manzanillo management plan marine sector	28	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	1	0	1	0	3	0	3	0	0	0	0	0	2			
Costa Rica	Cahuita National Park	22	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	2			
Cayman	West Bay Cemetery Replenishment Zone	20	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0			
Cayman	Barkers Replenishment Zone	20	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0			
Cayman	Colliers Replenishment Zone	20	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0			
Cayman	Dennis Point Replenishment Zone	20	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0			
Cayman	Gun Bay Replenishment Zone	20	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0			

Country	Name	GBI Score	Traps		Seine nets		Trawl nets		Dredges		Cast nets		Gillnets		Trolling		Hook and line		Chumming hook and line		Longline		Vertical longline		Free diving		Scuba diving		Grappling and wounding gear		Drift net	Trammel net	E/NS
			seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year			
Cayman	East End	20	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0			
Cayman	NE Bay Replenishment Zone	20	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0			
Cayman	Cayman Islands Marine Park System: No Diving Zone	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0				
Cayman	North Sound Replenishment Zone	20	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0			
Cayman	Cayman Islands Marine Park System: Open Zone	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0				
Cayman	Snipe Point Replenishment Zone	20	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0			
Cayman	South Hole Sound Replenishment Zone	20	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0			
Cayman	South Sound Replenishment Zone	20	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0			
Cayman	Spotts Replenishment Zone	20	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0			
Cayman	Treasure Island Replenishment Zone	20	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0			
Cayman	Frank Sound Replenishment Zone	20	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0			
Dominica	Cabrits National Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Honduras	Monumento Natural Marino Archipiélago Cayos Cochinos	29	2	0	0	2	0	4	0	4	0	2	0	3	1	0	1	1	0	0	0	3	0	3	0	0	0	1	0	2			
Honduras	Blanca Jeannette Kawas National Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
St. Lucia	Soufriere Marine Management Area (SMMA) - Marine Reserve	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

Country	with restricted take Name	GBI Score	Traps		Seine nets		Trawl nets		Dredges		Cast nets		Gillnets		Trolling		Hook and line		Chumming hook and line		Longline		Vertical longline		Free diving		Scuba diving		Grappling and wounding gear		Drift net	Trammel net	E/NS	
			seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year						
St. Lucia	Soufriere Marine Management Area (SMMA) - Fishing Priority Area	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
St. Lucia	Soufriere Marine Management Area (SMMA) - Multiple Use Area	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Mexico	Parque Marino Nacional Costa Occidental de Isla Mujeres, Punta Cancún y Punta Nizuc	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2				
Mexico	Reserva de la Biosfera Ría Lagartos	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Mexico	Parque Nacional Arrecife de Puerto Morelos - other areas	3	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Mexico	Parque Nacional Isla Contoy - other areas	6	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Mexico	Biosphere reserve Ría Celestún	17	2	0	2	0	4	0	0	0	0	2	0	3	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2	0				
Mexico	Parque Marino Nacional Arrecifes de Cozumel - other areas	6	0		0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0				
Mexico	Parque Nacional Sistema Arrecifal Veracruzano	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Nicaragua	Reserva natural cayos miskitos	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Puerto Rico	Tourmaline Reef Natural Reserve	7	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Puerto Rico	La Parguera Natural Reserve	7	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Puerto Rico	Isla de Mona Reserve	7	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					

Country	Name	GBI Score	Traps		Seine nets		Trawl nets		Dredges		Cast nets		Gillnets		Trolling		Hook and line		Chumming hook and line		Longline		Vertical longline		Free diving		Scuba diving		Grappling and wounding gear		Drift net	Trammel net	E/NS
			seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year	seasonal	all year					
Puerto Rico	Canal de Luis Peña de Isla de Culebra Natural Reserve	7	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Puerto Rico	Guanica Natural Reserve	7	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Puerto Rico	Reserva Natural Boquerón	7	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Turks and Caicos	East Harbour Lobster and Conch Reserve	22	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	0	0	1	0	0	0	3	0	0	0	0	0	0			
USA	Biscayne National Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
St. Vincent and the Grenadines	Tobago Cays Marine Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Venezuela	Laguna de Tacarigua National Park - other areas	18	0	0	0	2	0	0	0	4	0	2	0	3	0	1	0	0	0	0	0	3	0	3	0	0	0	0	0				
Venezuela	Morrocoy National Park	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2					
Venezuela	Laguna de La Restinga National Park - other areas	29	0	2	0	2	0	4	0	4	0	2	0	3	0	1	0	1	0	1	0	3	0	3	0	1	0	0	0	2			
Venezuela	Turuépano National Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					

## Appendix 11: Species bans and SBI score by site

Country	Name	SMI	Conch seasonal	Conch all year	Lobster seasonal	Lobster all year	Shrimp seasonal	Shrimp all year	Shallow shelf and reef fishes seasonal	Shallow shelf and reef fishes all year	Deep slope fishes seasonal	Deep slope fishes all year	Coastal pelagics seasonal	Coastal pelagics all year	Large pelagics seasonal	Large pelagics all year	Sharks and rays seasonal	Sharks and rays all year	Turtles seasonal	Turtles all year
Belize	Blue Hole Natural Monument	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Belize	Hol Chan Marine Reserve	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Belize	Glover's Reef Marine Reserve - other areas (general use zone)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barbados	Barbados Marine Reserve	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Columbia	Via Parque Isla de Salamanca	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Columbia	Providence McBean Lagoon National Park	11	0	3	0	3	0	3	0	2	0	0	0	0	0	0	0	0	0	0
Columbia	Los Flamencos Fauna and Flora Sanctuary	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Costa Rica	Tortuguero National Park	5	0	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Costa Rica	Wildlife National Refuge Gandoca-Manzanillo management plan marine sector	5	0	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Costa Rica	Cahuita National Park (from April 30, 1978)	6	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cayman	West Bay Cemetery Replenishment Zone	12	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Cayman	Barkers Replenishment Zone	12	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Cayman	Colliers Replenishment Zone	12	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Cayman	Dennis Point Replenishment Zone	12	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Cayman	Gun Bay Replenishment Zone	12	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Cayman	East End	12	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Cayman	NE Bay Replenishment Zone	12	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Cayman	Cayman Islands Marine Park System: No Diving Zone	9	0	0	3	0	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Cayman	North Sound Replenishment Zone	12	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Cayman	Cayman Islands Marine Park System: Open Zone	9	0	0	3	0	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Cayman	Snipe Point Replenishment Zone	12	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Cayman	South Hole Sound Replenishment Zone	12	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Cayman	South Sound	12	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	4

Replenishment Zone																				
Country	Name	SBI	Conch seasonal	Conch all year	Lobster seasonal	Lobster all year	Shrimp seasonal	Shrimp all year	Shallow shelf and reef fishes seasonal	Shallow shelf and reef fishes all year	Deep slope fishes seasonal	Deep slope fishes all year	Coastal pelagics seasonal	Coastal pelagics all year	Large pelagics seasonal	Large pelagics all year	Sharks and rays seasonal	Sharks and rays all year	Turtles seasonal	Turtles all year
Cayman	Spotts Replenishment Zone	12	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Cayman	Treasure Island Replenishment Zone	12	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Cayman	Frank Sound Replenishment Zone	12	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Dominica	Cabrits National Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Honduras	Monumento Natural Marino Archipiélago Cayos Cochinos	7	0	3	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0
Honduras	Blanca Jeannette Kawas National Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
St. Lucia	Soufriere Marine Management Area (SMMA) - Marine Reserve with restricted take	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
St. Lucia	Soufriere Marine Management Area (SMMA) - Fishing Priority Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
St. Lucia	Soufriere Marine Management Area (SMMA) - Multiple Use Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	Parque Marino Nacional Costa Occidental de Isla Mujeres, Punta Cancún y Punta Nizuc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	Reserva de la Biosfera Ría Lagartos	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	Parque Nacional Arrecife de Puerto Morelos - other areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	Parque Nacional Isla Contoy - other areas	15	0	3	3	0	0	3	0	2	0	0	1	0	0	0	0	0	3	0
Mexico	Biosphere reserve Ría Celestún	7	0	0	3	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0
Mexico	Parque Marino Nacional Arrecifes de Cozumel - other areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	Parque Nacional Sistema Arrecifal Veracruzano	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nicaragua	Reserva natural cayos miskitos	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Puerto Rico	Tourmaline Reef Natural Reserve	9	0	0	0	0	0	0	0	0	2	0	1	0	3	0	0	0	3	0
Puerto Rico	La Parguera Natural Reserve	9	0	0	0	0	0	0	0	0	2	0	1	0	3	0	0	0	3	0
Puerto Rico	Isla de Mona Reserve	4	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0



Puerto Rico	Canal de Luis Peña de Isla de Culebra Natural Reserve	4	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0
Country	Name	SBI	Conch seasonal	Conch all year	Lobster seasonal	Lobster all year	Shrimp seasonal	Shrimp all year	Shallow shelf and reef fishes seasonal	Shallow shelf and reef fishes all year	Deep slope fishes seasonal	Deep slope fishes all year	Coastal pelagics seasonal	Coastal pelagics all year	Large pelagics seasonal	Large pelagics all year	Sharks and rays seasonal	Sharks and rays all year	Turtles seasonal	Turtles all year	
Puerto Rico	Guanica Natural Reserve	9	0	0	0	0	0	0	0	0	2	0	1	0	3	0	0	3	0	0	
Puerto Rico	Reserva Natural Boquerón	9	0	0	0	0	0	0	0	0	2	0	1	0	3	0	0	3	0	0	
Turks and Caicos	East Harbour Lobster and Conch Reserve	14	3	0	0	3	0	3	0	2	0	0	0	0	0	0	0	3	0	0	
USA	Biscayne National Park	5	0	0	0	0	3	0	2	0	0	0	0	0	0	0	0	0	0	0	
St. Vincent	Tobago Cays Marine Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Venezuela	Laguna de Tacarigua National Park- other areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Venezuela	Morrocoy National Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Venezuela	Laguna de La Restinga National Park - other areas	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Venezuela	Turuépano National Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

## Appendix 12: Habitat type by country

COUNTRY	NO. RESP.	HABITAT TYPE									
		Coral Reef	Sea grass	Mangrove	Sandy flat	Rocky Shore	Nesting beaches	Seasonal flooded forest	Savannah	Oyster reef	Dry forest
Antigua	3	3		1							
Bahamas	0										
Belize	4	4	1	1	1						
Bermuda	33	32									
Barbados	0										
Cayman Islands	28	27	1								
Colombia	4			4	1						
Costa Rica	3	2	2	1	2		1				
Cuba	11	8	1	2							
Dominican Republic	2		2	1							
Dominica	2	2									
Honduras	2	1						1			
Jamaica	2	1									
Mexico	10	7	5	5	1	1	1	1	1		
Netherlands Antilles	1	1									
Nicaragua	1	1									
Puerto Rico	11	11	5	7	1	3					1
Sain Vincent and the Grenadines	1	1									
Saint Lucia	2	2									
Turks & Caicos Islands	17	17									
United States	11	7	5	5	5	5				1	
US virgin Islands	4	2	1	2							
Venezuela	14	3	3	13	1		3				5

### Appendix 13: Initiating authority and management authority

COUNTRY	AUTHORITY MANAGING						AUTHORITY MANAGING			
	Gov. org.	NGO	Private company	Research Org	Local stakeholder	other	Gov. org.	NGO	Shared management	mixed planning
Antigua	3						3			
Bahamas										
Belize	3	3			2 share		1	3		
Bermuda	32						32			
Barbados										
Cayman Islands	27						27			
Colombia	4						4			
Costa Rica	3						1		2	
Cuba	11									
Dominican Republic	2						2	1		1
Dominica	2						2			
Honduras		1	1					2		
Jamaica		1			1			1		2
Mexico	9	2	1	1	1		10			
Netherlands Antilles	1							1		
Nicaragua	1								1	
Puerto Rico	10						11			
Sain Vincent and the Grenadines	1									
Saint Lucia	2	1					2	2		2
Turks & Caicos Islands		17					17			
United States	10						11			
US virgin Islands	4						4			
Venezuela	14				1		14			

## Appendix 14: What gives the MPA its management authority

COUNTRY	MANAGEMENT PLAN		MANAGEMENT AUTHORITY				
	No. Resp.	Yes	No	No. Resp.	Legislation	Formal agreement	Informal agreement
Antigua	3	1	2	3	1		
Bahamas							
Belize	4	3	1	4	1		
Bermuda	33	1	32	33	1		
Barbados							
Cayman Islands	27		27	27	27		
Colombia	3		3	4	4		
Costa Rica	3	3		3	3	2	
Cuba	11	11		11	4	10	
Dominican Republic	2	2		2	2		
Dominica	1	1		2	2		1
Honduras	2	2		2	2		
Jamaica	2	2		2	1	1	
Mexico	10	9	1	10	10		
Netherlands Antilles	1	1		1	1		
Nicaragua	1	1		1	1		
Puerto Rico	2	2		9	9		
Sain Vincent and the Grenadines	1	1					
Saint Lucia	2	1	1	2	2	1	
Turks & Caicos Islands	17	17		17	17		
United States	11	10	1	11	10	5	
US virgin Islands	4		4	4	4		
Venezuela	8	8		12	12		

### Appendix 15: Number of MPAs with IUCN designation by category and country

COUNTRY	NO. RESPONSES	CATEGORY					
		I	II	III	IV	V	VI
Anguilla							
Antigua	3						
Bahamas							
Belize	4			1			
Bermuda	31						
Barbados							
Cayman Islands	28	1		11		14	
Colombia	4			1			
Costa Rica	3						
Cuba	11			6		5	
Dominican Republic							
Dominica	2			1			1
Honduras	2			1			
Jamaica	2						
Mexico	10			4			4
Netherlands Antilles	1						
Nicaragua	1						
Puerto Rico	8					6	
Sain Vincent and the Grenadines	1					1	
Saint Lucia	2						
Turks & Caicos Islands	17					17	
United States	11			2		2	
US virgin Islands	4						
Venezuela	14			8	2	4	

## Appendix 16: Fisheries data collected by country

COUNTRY	FISHERIES DATA						
		No data	Catch	Effort	By-catch	Position	Biological data
Antigua	3	2					
Bahamas							
Belize	4						
Bermuda	32	29					
Barbados							
Cayman Islands	28						28
Colombia	4	3					
Costa Rica	3	1					
Cuba	11						
Dominican Republic	2	1					
Dominica							
Honduras	2						
Jamaica	2						
Mexico	8						
Netherlands Antilles	1						
Nicaragua	1				1		
Puerto Rico							
Sain Vincent and the Grenadines							
Saint Lucia	2						
Turks & Caicos Islands	17						17
United States	10	5					
US virgin Islands	3	2					
Venezuela	5	2					