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Bahamian Lobster Fisheries Improvement Plan
Scoping Document

Prepared for

WWF-US & Dept. Marine Resources, Bahamas

Prepared by

MRAG Americas, Inc.

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Contents

1 Introduction

Following the completion of a recent MSC pre-assessment for the Bahamian lobster fishery, a number of Performance Indictors (PIs) were scored such that the fishery would be likely to either fail under a full MSC assessment (score below 60), or pass with conditions (score between 60 and 80).

The main purpose of this document is to identify and prioritise the PI categories under each of three MSC principals such that relevant tasks, or actions, may be developed as part of a Fishery Improvement Project (FIP). The objectives of the FIP would be to ensure a more sustainable fishery and increase the likelihood of passing a full MSC assessment, either with or without conditions.

A fishery likely to fail one or more performance indicator (score < 60) has two options for passing certification: make improvements to the fishery to reach the conditional pass level (score $\geq$ 60 but < 80); or make improvement to the fishery to score $\geq$ 80. The MSC requires closing out conditions within the 5-year certification period. The decision will likely depend on such things as amount of work and time to reach a conditional pass compared with that to reach an unconditional pass. For example, data necessary to perform a stock assessment may take several years to collect, but preliminary studies within the FIP may be sufficient to obtain a conditional pass until more information is available within the 5 year re-assessment period.

The following summary table provides general information about each PI that might cause the fishery to either fail (High Priority) or pass with conditions (Medium Priority) (see Table 1). In addition, the likely

timeframe for the completion of tasks associated with each PI have been highlighted, although these may be subject to change according to the target set (e.g. pass assessment without conditions or with some conditions).

This scoping document is designed to assist in the planning phase of an FIP and provides an example of the likely range of activities or steps that may be considered to reach one or more the MSC scoring guideposts (SG). These have been outlined in the following set of tables to demonstrate what outcome(s) or information is required to prevent a fail (below SG60), a conditional pass (between SG60 and SG80) or pass (above SG80). These are compared with an existing Draft Action Plan for lobster in Appendix 1.

Table 1: Summary information for Performance Indicators highlighted within the MSC Pre-assessment to be either a high (below SG60) or medium priority (between SG60 and SG80).

Performance Indicator Category		Priority	Timeframe	Linkages
Principal 1				
1.1	Stock status	High	Med/ Long	1.2; 1.3; 1.6
1.2	Reference points	High	Medium	1.1; 1.3; 1.6
1.3	Performance of the harvest strategy	Medium	Long	1.1; 1.2; 1.4; 1.6
1.4	Harvest control rules and tools	High	Medium	1.1; 1.2; 1.3; 1.5; 1.6; 3.1; 3.7
1.5	Information/ monitoring	Medium	Medium	1.2; 1.3; 1.4; 1.6
1.6	Assessment	High	Med/ Long	1.1; 1.2; 1.4; 1.5
Principal 2				
2.1	Retained spp: Information/ monitoring	Medium	Short	3.1
2.2	Bycatch spp: Information/ monitoring	Medium	Short	3.1
2.3	ETP spp: Information/ monitoring	Medium	Short	3.1
2.4	Habitat: status	Medium	Short/ Med	2.5; 2.6; 3.9
2.5	Habitat: management strategy	Medium	Short/ Med	2.4; 2.6; 3.1; 3.7
2.6	Habitat: Information/ monitoring	Medium	Medium	2.4; 2.5; 2.6; 3.1
2.7	Ecosystem: status	Medium	Medium	2.8; 2.9; 3.9
2.8	Ecosystem: management strategy	Medium	Short/ Med	2.7; 2.9; 3.1; 3.7
2.9	Ecosystem: Information/ monitoring	Medium	Short/ Med	2.7; 2.8; 3.1
Principal 3				
3.1	Governance and policy: legal framework	Medium	Short	1.4; 2.1; 2.2; 2.3; 2.5; 2.6; 2.8; 2.9
3.2	Governance and policy: consultation, roles and responsibilities	Medium	Short	3.6
3.3	Governance and policy: long term objectives	Medium	Short	2.5; 3.8
3.4	Governance and policy: incentives for sustainable fishing	Medium	Short	3.9
3.5	Fishery specific management system: fishery-specific objectives	Medium	Short	3.3; 3.8; 3.9
3.6	Fishery specific management system: decision-making processes	Medium	Short	3.2
3.7	Fishery specific management system: compliance & enforcement	Medium	Medium	1.4; 3.1; 3.2; 3.5
3.8	Fishery specific management system: research plan	Medium	Short	3.3; 3.5
3.9	Fishery specific management system: monitoring and evaluation	High	Med/ Long	1.1; 2.4; 2.7; 3.4; 3.5

2 Key MSC Performance Indicators to inform FIP

The MSC pre-assessment report had highlighted a number of PIs that may cause the Bahamian lobster fishery to either fail or pass a full assessment with conditions. This section provides more detail of each PI likely to cause concern within three major MSC Principals and indicates the current status of the fishery against one or more of the MSC scoring guideposts at 60 and 80. If the fishery is likely to fail a full assessment based on the PI score, it is given a High Priority, whereas a fishery that might pass with conditions is given a Medium Priority. A short description of the type of information and/or research that might help the fishery attain the standard necessary to reach one or more scoring guidepost is also given to assist in developing a Fisheries Improvement Project.

2.1 Principle 1

2.1.1 Stock status

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">1.1
Stock status</td><td rowspan="4">The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing.</td><td colspan="2">Previous assessments have indicated that the status of the stock was reaching a fully exploited level. It is now classified as “unknown” and more information may be required to establish whether a decline in the status has occurred, and whether this has reached a precautionary limit reference point.</td><td>High</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>It is likely that the stock is above the point where recruitment would be impaired.</td><td colspan="2">It is highly likely that the stock is above the point where recruitment would be impaired.

The stock is at or fluctuating around its target reference point.</td></tr>
<tr><td colspan="3">Comment: An important pre-requisite for scoring 60 and above is to develop precautionary reference points (see below). Estimates of current stock biomass and fishing mortality could be available through the development of an appropriate stock assessment and the results compared with target and limit reference points. In the absence of these data, proxy values may be sufficient to reach SG60 level. Lower levels of uncertainty about the status of stock biomass and fishing mortality will increase confidence in the results.</td></tr>
</table>

2.1.2 Reference Points

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">1.2 Reference points</td><td rowspan="4">Limit and target reference points are appropriate for the stock.</td><td colspan="2">To date, no precautionary reference points are available for this fishery.</td><td>High</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.</td><td colspan="2">Reference points are appropriate for the stock and can be estimated.

The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.</td></tr>
<tr><td colspan="3">Comment: Biological reference points should be developed to determine if the stock biomass is overfished and/or whether overfishing is occurring that could lead to unsustainable exploitation. In the absence of robust biological reference points that can be used to determine the status of the fishery in terms of stock biomass and fishing mortality, precautionary proxy values such as minimum tail length against length at maturity (i.e. Lm_{100}) and basic CPUE trends may be sufficient to reach SG60 level.</td></tr>
</table>

2.1.3 Performance of the harvest strategy

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">1.3 Performance of the harvest strategy</td><td rowspan="4">There is a robust and precautionary harvest strategy in place.</td><td colspan="2">In recognition of the challenges faced by monitoring and enforcing an open-access fishery across a large archipelago, a precautionary harvest strategy has been developed for the lobster fishery. Limited monitoring, however, is unable to determine whether the harvest strategy is actually working and achieving its objectives. This is confounded by the lack of information on the status of the stock and associated limit reference points.</td><td>Medium</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>The harvest strategy is expected to achieve stock management objectives reflected in the target and limit reference points.

The harvest strategy is likely to work based on prior experience or plausible argument.

Monitoring is in place that is expected to determine whether the harvest strategy is working.</td><td colspan="2">The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.

The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives.</td></tr>
<tr><td colspan="3">Comment: The results of a stock assessment will help establish whether current management strategies are effective at maintaining the stock at sustainable levels. Based on the results of these findings, alternative management action(s) may be required. Further assessments of the stock should be undertaken in a timely manner to continue monitoring the performance of the strategy. Although this PI is likely to pass with conditions (i.e. score above SG60), a low value could reduce the overall average score of the assessment. A description of the SG60 evaluation criteria have been given to ensure the fishery far exceeds them.</td></tr>
</table>

2.1.4 Harvest control rules (HCRs) and tools

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">1.4
Harvest control rules (HCRs) and tools</td><td rowspan="4">There are well defined and effective harvest control rules in place</td><td colspan="2">No fishery-specific harvest control rules exist to describe management action in response to changes in the fishery and/or changes in stock status in relation to reference points.</td><td>High</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>Generally understood harvest control rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.

There is some evidence that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.</td><td colspan="2">Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.

The selection of the harvest control rules takes into account the main uncertainties.

Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.</td></tr>
<tr><td colspan="3">Comment: Given available information on the status of the stock in relation to biological reference points, HCRs can be developed which describes what management actions will occur in response to changes in the fishery. HCRs do not have to specify monotonically declining levels of fishing mortality with declining stock biomass. Instead, periodic reductions in fishing mortality such as closed areas and/or seasons may serve an equal purpose. These rules should be developed in a transparent manner and ideally, tested to ensure they are robust to uncertainties in the reported data.</td></tr>
</table>

2.1.5 Harvest strategy: Information / monitoring

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">1.5
Harvest strategy: Information / monitoring</td><td rowspan="4">Relevant information is collected to support the harvest strategy</td><td colspan="2">The stock structure of lobster within the Greater Caribbean is unknown. However, some relevant information is available to hypothesize that the Bahamas population is linked to other stocks within the northern Caribbean region. Fisheries statistics, including limited catch and effort data, are collected but are insufficient to monitor the productivity of the fishery. Information on the number of part- and full-time fishers, vessel number and type are reported, although the total number of active fishing gear, especially casitas, remains unknown. Fishery removals are monitored through voluntary landing forms and catch information supplied to processing plants. A revised data collection form is being developed that should include more information on fishing effort and location.</td><td>Medium</td></tr>
<tr><td>SG60</td><td>SG80</td><td></td></tr>
<tr><td>Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.

Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.</td><td>Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.

Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.

There is good information on all other fishery removals from the stock.</td><td></td></tr>
<tr><td colspan="3">Comment: It is important to determine the boundaries of the stock and whether it is it vulnerable to exploitation by other countries outside national jurisdiction. This may be achieved by conducting genetic or other related studies to help identify the likely structure of the lobster population within the region. This may require regional co-operation. Additional fisheries-dependent data could provide more effective monitoring of the fishery and provide appropriate data for stock assessment purposes. Fisheries-independent surveys may also be considered as a valuable tool to obtain unbiased data for stock assessment purposes. It would be important to evaluate the results of each stock assessment to ensure the objectives of the harvest strategy are being achieved.</td><td></td></tr>
</table>

2.1.6 Assessment of stock status

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">1.6 Assessment of stock status</td><td rowspan="4">There is an adequate assessment of the stock</td><td colspan="2">Using limited fishery and biological information, an assessment of the lobster population was made in 2007 using a length-converted catch curve analysis. The current assessment does not provide information on the status of the stock biomass and cannot be related to biological reference points. The assessment methodology has not been subject to external review.</td><td>High</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>The assessment estimates stock status relative to reference points.

The major sources of uncertainty are identified.</td><td colspan="2">The assessment is appropriate for the stock and for the harvest control rule, and is evaluating stock status relative to reference points.

The assessment takes uncertainty into account.

The stock assessment is subject to peer review.</td></tr>
<tr><td colspan="3">Comment: A strategy could be developed to provide a preliminary assessment of the stock based first on data-limited information, but then leading to more sophisticated data-rich models as more information becomes available from the fisheries monitoring program. A review of the data requirements necessary to develop and run stock assessment models would indicate what additional information is required from the fishery and/or research. An assessment of the stock can be made using fisheries-dependent and/ or fisheries independent data. Increased credibility of the results would be generated if the stock assessment methodology and results were later subject to external review.</td></tr>
</table>

2.2 Principle 2

2.2.1 Retained species: information / monitoring

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">2.1
Retained species: information / monitoring</td><td rowspan="4">The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species.</td><td colspan="2">Information collected from the Marine Resource Landing Form and Monthly Purchase Report can be used to monitor the fishery from the landing ports and processors in New Providence, Andros, Abaco and Grand Bahama. Potential changes in retained species composition and abundance of catches is likely to be monitored through the Landing Form and informal discussions between fishers and Fisheries Officers. Monitoring can be improved within the outer islands.</td><td>Medium</td></tr>
<tr><td>SG60</td><td>SG80</td><td></td></tr>
<tr><td>Main retained species are likely to be within biologically based limits or if outside the limits there are measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.

If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery.</td><td>Main retained species are highly likely to be within biologically based limits, or if outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding.</td><td></td></tr>
<tr><td colspan="3">Comment: A literature review could be used initially to determine what, if any, species are retained in other lobster fisheries. Without sufficient evidence, research may be required to collect quantitative information to determine the level of retained species within the lobster fishery, especially wooden traps. Retained species may not be vulnerable or especially valuable, and catch falls below 5-10% of target catch. Therefore, as they are not “main” species, retained catch does not pose a serious risk and could score an 80 for stock status. To score higher would require full evaluation of stock status for all species, which would require substantially more information</td></tr>
</table>

2.2.2 Bycatch species: information / monitoring

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">2.2
Bycatch species: information / monitoring</td><td rowspan="4">Information on the nature and amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch.</td><td colspan="2">Potential changes in bycatch species composition and abundance of catches will not be monitored through the Landing Form, but the close association between the fishers and fisheries officers will help determine if new trends are likely to pose an important issue. Monitoring can be improved within the outer islands.</td><td>Medium</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>n/a</td><td colspan="2">Qualitative information and some quantitative information are available on the amount of main bycatch species affected by the fishery.

Information is sufficient to estimate outcome status with respect to biologically based limits.

Information is adequate to support a partial strategy to manage main bycatch species.

Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).</td></tr>
<tr><td colspan="3">Comment: Similar to retained species, a literature review could be used initially to determine what, if any, bycatch species are caught then released elsewhere in other lobster fisheries. Without sufficient evidence, research may be required to collect quantitative information to determine the level of bycatch within the lobster fishery, especially wooden traps.</td></tr>
</table>

2.2.3 ETP species: information / monitoring

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">2.3
ETP species: information / monitoring</td><td rowspan="4">Relevant information is collected to support the management of fishery impacts on ETP species, including:
- information for the development the management strategy;
- information to assess the effectiveness of the management strategy; and
- information to determine the outcome status of ETP species.</td><td colspan="2">Potential changes in ETP species composition and abundance of catches will not be monitored through the Landing Form, but the close association between the fishers and fisheries officers will help determine if new trends are likely to pose an important issue. Monitoring can be improved within the outer islands.</td><td>Medium</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>n/a</td><td colspan="2">Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species, and if so, to measure trends and support a full strategy to manage impacts.

Sufficient data are available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.</td></tr>
<tr><td colspan="3">Comment: Similar to bycatch species, a literature review could be used initially to determine what, if any, ETP species may be caught in the lobster fishery. Without sufficient evidence, research may be required to collect quantitative information to determine the level of ETP caught within the lobster fishery, especially wooden traps.</td></tr>
</table>

2.2.4 Habitat: Status

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">2.4
Habitat:
Status</td><td rowspan="4">The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function.</td><td colspan="2">Limited monitoring cannot demonstrate trends in habitat structure in the regions used for lobster fishing. The coral reefs and seagrass beds appear to have been maintained although the potential impacts of fishing activities remain unknown. A high proportion of fishers use casitas to attract lobster. These artificial habitats are thought to increase the potential area available to lobsters and prevent fishers having to dive directly on the reef, thus potentially reducing the level of damage to the coral. Casitas are now increasingly being placed on seagrass beds. Casitas are made from sheet metal and wooden poles, which although do not cause ghost fishing, may contribute to long-term reef damage following a hurricane or other disturbance. Fishers also use a number of traps that are tied together in a string. Unlike casitas that remain in position and require fishers to dive in order to harvest lobster, traps must be pulled to the surface to release and sort the catch.</td><td>Medium</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>n/a</td><td colspan="2">The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.</td></tr>
<tr><td colspan="4">Comment: A literature review could be used initially to determine the likely impact of the gear used on the habitat structure and function. Without sufficient evidence, research may be required to collect quantitative information on the impacts of both casitas and wooden lobster traps on different habitats.</td></tr>
</table>

2.2.5 Habitat: Management strategy

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">2.5
Habitat:
Management strategy</td><td rowspan="4">There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types.</td><td colspan="2">Regulations are in place to prevent fishers from touching coral or using poisons or other chemicals without permission that may damage the habitat and living marine resources. As such, casitas and lobster traps are not placed directly on the reef, which is thought to help minimize habitat impacts. However, there are no regulations or controls in place to limit the total number of casitas or traps in use. The recent trend of using casitas in seagrass areas (Gittens, pers comm.) may indicate an increase in fishing pressure within other areas.</td><td>Medium</td></tr>
<tr><td>SG60</td><td>SG80</td><td></td></tr>
<tr><td>n/a</td><td>There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.

There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or habitats involved.

There is some evidence that the partial strategy is being implemented successfully.</td><td></td></tr>
<tr><td colspan="3">Comment: An important pre-requisite for developing an appropriate management strategy is first to understand the range of likely impacts from the fishery on different habitats (see above). Based on this information, a review of existing fisheries regulations will determine if new management structures are required, or existing regulations should be enforced. Without sufficient knowledge of both the scale and intensity of the potential impacts, precautionary measures may be introduced to limit or cap the number of gear in use.
Based on the findings of any research (see above), a revised management strategy might be implemented and evaluated in a timely manner.</td><td></td></tr>
</table>

2.2.6 Habitat: Information / monitoring

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">2.6
Habitat:
Information / monitoring</td><td rowspan="4">Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types.</td><td colspan="2">Baseline information is available on the distribution of main habitat types within The Bahamas. However, no information is available to determine the level of risk the fishery poses on the nature, distribution and vulnerability of the main lobster habitats.</td><td>Medium</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>n/a</td><td colspan="2">The nature, distribution and vulnerability of all main habitat types in the fishery area are known at a level of detail relevant to the scale and intensity of the fishery.

Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent, timing and location of use of the fishing gear.

Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).</td></tr>
<tr><td colspan="3">Comment: A review of existing information would help determine a baseline of information and identify key gaps in knowledge. Additional quantitative information may be required to describe the nature, distribution and vulnerability of the main lobster habitats. Effective monitoring of the spatial and temporal locations and intensity of fishing activities would be useful to determine the scale of potential impacts.</td></tr>
</table>

2.2.7 Ecosystem: Status

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">2.7 Ecosystem: Status</td><td rowspan="4">The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function.</td><td colspan="2">No information is available to determine the impact of the lobster fishery on the trophic structure and function of the ecosystem. However, the lobster fishery does not appear to retain other species, discard bycatch or ETP species. As such, the potential impact of the fishery on the trophic structure and function is likely to come directly from changes in the abundance of lobster. Lobster is a primary herbivore on the reef, and their depletion would be expected to have a noticeable affect on the level of algal cover, for example. Moreover, lobsters are important prey item for a variety of predators, including turtles and sharks. Casitas act as refuges that allow lobster and other marine animals to move freely in and out of the gear. In contrast, lobster traps are designed to retain lobster, which if lost could lead to ghost fishing. The size and structure of the traps are likely to allow juvenile finfish to escape, but without a biodegradable panel, Bahamian lobster traps are capable of ghost fishing adult lobster.</td><td>Medium</td></tr>
<tr><td>SG60</td><td>SG80</td><td></td></tr>
<tr><td>n/a</td><td>The fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.</td><td></td></tr>
<tr><td colspan="3">Comment: Prior to determining the potential impact of the fishery on the ecosystem structure and function, additional information may be required (see information/ monitoring below). Following the availability of this information, an assessment of the likely impact(s) can be made.</td><td></td></tr>
</table>

2.2.8 Ecosystem: Management strategy

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">2.8 Ecosystem: Management strategy</td><td rowspan="4">There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function</td><td colspan="2">Regulations are in place to prevent wooden lobster traps and casitas touching and damaging the reefs, although no limits have been placed on the number of gear in use. Although size and construction of lobster traps are regulated, they are not required to include a biodegradable panel in case the trap is lost.</td><td>Medium</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>n/a</td><td colspan="2">There is a partial strategy in place, if necessary, that takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.

The partial strategy is considered likely to work, based on plausible argument (eg, general experience, theory or comparison with similar fisheries/ ecosystems).

There is some evidence that the measures comprising the partial strategy are being implemented successfully.</td></tr>
<tr><td colspan="3">Comment: Information that can be obtained on the potential impacts of fishing activities on the ecosystem structure and function will help determine whether current management strategies are effective at maintaining ecosystem structure and function. Based on this information, a review of existing fisheries regulations will determine if new management structures are required, or existing regulations should be enforced.</td></tr>
</table>

2.2.9 Ecosystem: Information / monitoring

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">2.9 Ecosystem: Information / monitoring</td><td rowspan="4">There is adequate knowledge of the impacts of the fishery on the ecosystem.</td><td colspan="2">The lobster fishery is considered highly targeted with no known bycatch/ ETP species issues that may also affect ecosystem trophic structure and function. Existing data collection programs should be sufficient to determine changes in targeting behavior, although this is unlikely due to the high value of the product.</td><td>Medium</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>n/a</td><td colspan="2">Information is adequate to broadly understand the functions of the key elements of the ecosystem.

Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but may not have been investigated in detail.

The main functions of the Components (i.e. target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known.

Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.

Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).</td></tr>
<tr><td colspan="3">Comment: To date little or no information exists to gauge the level of impacts of the fishery on the ecosystem. A literature review could highlight the potential impacts of the lobster fishery on key elements of ecosystem structure and function. This coupled with the results from other activities (e.g. stock assessment, total retained species, ETP, bycatch etc), could help inform the scale and intensity of the potential impacts. Further research may also help determine the likely impacts of casitas and wooden lobster traps on the ecosystem structure and function, especially in respect to potential ghost fishing. Information on the potential effects of reduced grazing pressure on the reefs might also be considered.</td></tr>
</table>

2.3 Principle 3

2.3.1 Governance and Policy: Legal and/or customary framework

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">3.1 Governance and Policy: Legal and/or customary framework</td><td rowspan="4">The management system exists within an appropriate and effective legal and/or customary framework that:

- Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 & 2,

- Observes the legal rights created explicitly or by custom of people dependent on fishing for food and livelihood, and

- Incorporates an appropriate dispute resolution framework.</td><td colspan="2">There is a legal framework in place with fisheries regulations that can be used to manage the fishery and promote sustainable utilization of the resource. The Fisheries Act is currently under revision primarily to incorporate obligations under the Law of the Sea Convention, and is not expected to affect the operation of the lobster fishery. The management regime has previously been shown to be successful, when relevant information is available, through the adoption of a 5 year rebuilding plan for Nassau grouper and several IUU fishing arrests. Concern has been expressed, however, over the effectiveness of the legal justice system to deliver appropriate fines and penalties for violations of the regulations, which are currently made under a criminal judicial system.</td><td>Medium</td></tr>
<tr><td>SG60</td><td>SG80</td><td></td></tr>
<tr><td>n/a</td><td>The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.

The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery.

The management system or fishery is attempting to comply in a timely fashion with binding judicial decisions arising from any legal challenges.
The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</td><td></td></tr>
<tr><td colspan="3">Comment: A review of fisheries fines and penalties could be undertaken to provide guidance to the judicial system.</td><td></td></tr>
</table>

2.3.2 Governance and Policy: Consultation, roles and responsibilities

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">3.2 Governance and Policy: Consultation, roles and responsibilities</td><td rowspan="4">The management system has effective consultation processes that are open to interested and affected parties.

The roles and responsibilities of organizations and individuals who are involved in the management process are clear and understood by all relevant parties.</td><td colspan="2">A multi-agency approach is used to manage the fisheries sector (e.g. DMP, Defense Force, Police Force etc), and organizations and individuals involved in the process have been identified together with their functions, roles and responsibilities. The management system does include a consultation process through the Fisheries Advisory Committee. To date, however, the consultation process with key stakeholders is ad-hoc with little or no formal procedures. As such opportunities for stakeholders to engage in the management process or express their opinions and knowledge are limited.</td><td>Medium</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>n/a</td><td colspan="2">Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.

The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge.

The management system demonstrates consideration of the information obtained. The consultation process provides opportunity for all interested and affected parties to be involved.</td></tr>
<tr><td colspan="3">Comment: A review of the functions, roles and responsibilities of organizations and individuals involved in the management process could be made prior to developing a more formalized approach. This would help provide a transparent consultation process for all interested and affected parties involved. It would be useful to determine whether the minister could implement a consultation process as a policy statement, or whether formal rulemaking or legislation is required.</td></tr>
</table>

2.3.3 Governance and Policy: Long term objectives

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">3.3 Governance and Policy: Long term objectives</td><td rowspan="4">The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach.</td><td colspan="2">Fisheries policy has general long term objectives within the Fisheries Act, which include achieving maximum sustainable yields whilst ensuring the conservation of the resources, and reserving the 100% of the fishing rights within Bahamian waters to local people. More specific objectives are available within the draft FMP. This document has not yet been approved.</td><td>Medium</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>n/a</td><td colspan="2">Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within management policy.</td></tr>
<tr><td colspan="4">Comment: Finalization and approval of the FMP would help satisfy this condition.</td></tr>
</table>

2.3.4 Governance and Policy: Incentives for sustainable fishing

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">3.4 Governance and Policy: Incentives for sustainable fishing</td><td rowspan="4">The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing.</td><td colspan="2">There are no clear incentives that are developed to encourage sustainable fishing practices. A range of subsidies exist, including duty free concessions, but it is unclear whether these may contribute to unsustainable fishing.</td><td>Medium</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>n/a</td><td colspan="2">The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that negative incentives do not arise.</td></tr>
<tr><td colspan="4">Comment: A review of the current duty-free concessions would help to identify areas that might be considered as subsidies that contribute to unsustainable fishing. These can be identified and management actions developed to minimize their impact whilst developing other positive economic and social incentives for sustainable fishing practices.</td></tr>
</table>

2.3.5 Fishery specific management system: Fishery-specific objectives

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">3.5 Fishery specific management system: Fishery-specific objectives</td><td rowspan="4">The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC’s Principles 1 and 2.</td><td colspan="2">With exception to the general long term objectives of the fisheries sector there currently are no fisheries-specific objectives. More specific objectives for the lobster fishery are available within the draft FMP. This document has not yet been approved.</td><td>Medium</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>n/a</td><td colspan="2">Short and long term objectives, which are consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are explicit within the fishery’s management system.</td></tr>
<tr><td colspan="4">Comment: Finalization and approval of the FMP would help satisfy this condition.</td></tr>
</table>

2.3.6 Fishery specific management system: Decision-making processes

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">3.6 Fishery specific management system: Decision-making processes</td><td rowspan="4">The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives.</td><td colspan="2">Only informal decision-making processes exist that result in measures and strategies to maintain the stock at sustainable levels. Based on relevant information, DMR is able to respond to serious or other significant issues identified from research, monitoring and evaluation. With exception to casitas, the majority of decision-making processes are based on the precautionary approach and the best available information.</td><td>Medium</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>n/a</td><td colspan="2">There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.

Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.

Decision-making processes use the precautionary approach and are based on best available information.

Explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.</td></tr>
<tr><td colspan="3">Comment: A review of the current institutional arrangements and decision-making processes within the fishery-specific management system would help identify key gaps that might require further attention. Formalization of the decision making procedures, specifying best available information, proactive addressing of concerns, the precautionary approach, and providing for explanations of decisions, would satisfy this requirement.</td></tr>
</table>

2.3.7 Fishery specific management system: Compliance and enforcement

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">3.7 Fishery specific management system: Compliance and enforcement</td><td rowspan="4">Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with.</td><td colspan="2">A number of MCS mechanisms exist and are implemented within the lobster fishery. Overall however, these need to be strengthened to enable sufficient data to be collected to conduct robust stock assessments and ensure compliance with regulations in force.</td><td>Medium</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>n/a</td><td colspan="2">A monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.

Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.

Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.

There is no evidence of systematic non-compliance.</td></tr>
<tr><td colspan="4">Comment: Implementation of a revised fisheries data collection form will help obtain additional fisheries information. However, increased biological sampling may be required to ensure compliance with precautionary management measures (e.g. minimum size etc).
A thorough review of the current MCS system would help to identify gaps in knowledge and human capacity. This may result in numerous recommendations including additional training of Fisheries Officers and/ or increased surveillance patrols (at-sea and port sampling), for example. A review of current fisheries fines and penalties (see Legal and/or customary framework above) will also help establish guidelines for more effective prosecutions and lead to higher levels of compliance.</td></tr>
</table>

2.3.8 Fishery specific management system: Research plan

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">3.8
Fishery specific management system: Research plan</td><td rowspan="4">The fishery has a research plan that addresses the information needs of management.</td><td colspan="2">Fisheries management and research is currently limited by financial constraints and human capacity. While there is no detailed research plan, projects are identified at the beginning of each fiscal year. In many instances the manpower and time have not been available to complete the projects. This research does not consistently address issues with stock status and ecosystem impacts of the fishery. Collaboration with DMR to attend WECAFC-FAO funded workshops has led to a list of regional priorities for lobster, but these are not necessarily deemed appropriate by the government.</td><td>Medium</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td></td><td colspan="2">A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC’s Principles 1 and 2.

Research results are disseminated to all interested parties in a timely fashion.</td></tr>
<tr><td colspan="3">Comment: Based on the short- and long-term objectives of the fishery, a more detailed research plan could be developed with a list of priorities to demonstrate how research will help address, amongst others, issues of stock status and ecosystem impacts. This will help to identify key areas of existing and new research and development, consistent with the objectives of the MSCs Principles 1 and 2. The results of current research could be made available and disseminated to all interested parties through participation at regional workshops or via the internet, for example.</td></tr>
</table>

2.3.9 Fishery specific management system: Monitoring and evaluation

<table>
<tr><th>PI Category</th><th>PI</th><th colspan="2">Status</th><th>Priority</th></tr>
<tr><td rowspan="4">3.9
Fishery specific management system: Monitoring and evaluation</td><td rowspan="4">There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives.

There is effective and timely review of the fishery-specific management system</td><td colspan="2">The lobster fishery provides limited information with which to monitor the performance of some of its components (e.g. MCS etc) within the management system. It is believed that effective and timely reviews of the fishery-specific management system are not conducted, since the fishery does not yet have clear fishery-specific objectives.</td><td>High</td></tr>
<tr><td>SG60</td><td colspan="2">SG80</td></tr>
<tr><td>The fishery has in place mechanisms to evaluate some parts of the management system and is subject to occasional internal review.</td><td colspan="2">The fishery has in place mechanisms to evaluate key parts of the management system and is subject to regular internal and occasional external review.</td></tr>
<tr><td colspan="3">Comment: To date, limited monitoring of the fishery reduces the level of information available to evaluate the performance of the fishery-specific management system against its limited objectives (to be revised). However, increased monitoring and data collection would provide the basis to make more informed decisions about the status of the fishery and the performance of the management system.</td></tr>
</table>

Appendix 1: Comparison of Draft Action Plan for Bahamian lobster* with key MSC Performance Indictors

Issues	Action	MSC Performance Indicator
Destructive fishing practices	More rigorous enforcement of existing regulations	**3.4.** The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing. **3.7.** Fishery specific management system: compliance and enforcement.
	Modify traps to improve selectivity (i.e. escape vents, increase mesh size) and reduce ghost fishing (i.e. biodegradable panels).	**2.1.** The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species. **2.2.** Information on the nature and amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch. **2.3.** Relevant information is collected to support the management of fishery impacts on ETP species, including: - Information for the development the management strategy; - Information to assess the effectiveness of the management strategy; - Information to determine the outcome status of ETP species. **2.8.** There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function.

Issues	Action	MSC Performance Indicator
Habitat degradation and destruction	Control of land based pollution and coastal development particularly near critical coastal habitats for juveniles (i.e. mangrove wetlands, sea-grass beds and coral rubble fields).	Non-fishery specific objectives
	Discourage the use of spearguns.	**1.3.** There is a robust and precautionary harvest strategy in place. **3.4.** The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing. **3.7.** Fishery specific management system: compliance and enforcement.

* Taken from Draft Plan for Managing the Marine Fisheries of The Bahamas

Issues	Action	MSC Performance Indicator
Depletion of lobster stocks in some areas	Evaluate the feasibility of using artificial habitats to rebuild depleted stocks	**1.1.** The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing. **1.3.** There is a robust and precautionary harvest strategy in place. **1.5.** Relevant information is collected to support the harvest strategy. **3.3.** The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach. **3.5.** The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2. **3.8.** The fishery has a research plan that addresses the information needs of management.
	Expand and enforce Marine Protected Areas	**1.3.** There is a robust and precautionary harvest strategy in place. **2.7.** The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function. **2.9.** There is adequate knowledge of the impacts of the fishery on the ecosystem. **3.8.** The fishery has a research plan that addresses the information needs of management.
	Enforce regulations regarding minimum size and landing of egg-bearing lobster	**1.3.** There is a robust and precautionary harvest strategy in place. **3.4.** The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing. **3.7.** Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with.
	Institute mandatory trap marking and identification system	**1.3.** There is a robust and precautionary harvest strategy in place. **1.5.** Relevant information is collected to support the harvest strategy. **3.1.** The management system exists within an appropriate and effective legal and/or customary framework. **3.2.** The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organizations and individuals who are involved in the management process are clear and understood by all relevant parties. **3.4.** The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing.

Issues	Action	MSC Performance Indicator
Use of 'Condos'	Institute a mandatory condo marking system	**2.4.** The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function. **2.6.** Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types. **2.9.** There is adequate knowledge of the impacts of the fishery on the ecosystem. **3.1.** The management system exists within an appropriate and effective legal and/or customary framework. **3.4.** The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing.
	Issue permits to licensed fishers allowing them to use the condos	**3.1.** The management system exists within an appropriate and effective legal and/or customary framework. **3.4.** The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing.
	Develop a database with the condo details (i.e. number of condos and locations)	**1.5.** Relevant information is collected to support the harvest strategy. **3.9.** There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system