Marine Stewardship Council (MSC) 1st Surveillance Audit Report

The Bahamas spiny lobster fishery

On behalf of

The Bahamas Marine Exporters Association (BMEA)

Prepared by

Control Union Pesca Ltd

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Glossary

Acronym	Definition
BMEA	The Bahamas Marine Exporters Association
BNT	Bahamas National Trust
BREEF	The Bahamas Reef Environmental Educational Foundation
BSLWG	Bahamas Spiny Lobster Working Group
CAB	Conformity Assessment Body
CPUE	Catch per Unit Effort
DMR	Department of Marine Resources
EEZ	Exclusive Economic Zone
ETP	Endangered, Threatened and protected (species)
HCR	Harvest Control Rule
IUU	Illegal, Unreported and Unregulated (fishing)
MPA	Marine Protected Area
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
RBDF	Royal Bahamas Defence Force
SSB	Spawning Stock Biomass
SWTO	Southwestern region of the Tongue of the Ocean
TAC	Total Allowable Catch
TNC	The Nature Conservancy
UoA	Unit of Assessment
UoC	Unit of Certification
WWF	World Wildlife Fund

1 Executive Summary

The first annual surveillance audit for the Bahamas spiny lobster fishery has been completed.

The audit was undertaken by a team made up of Dr Michael Bell, Tom Matthews and Henry Ernst, who travelled to Nassau, The Bahamas on the 1st of November 2019 to meet with the client, the Bahamas Marine Exporters Association (BMEA) representatives and stakeholders involved in the MSC certification of this fishery. The stakeholders included representatives from the Department of Marine Resources (DMR), the Nature Conservancy (TNC), the Bahamas Reef Environmental Educational Foundation (BREEF) and the Royal Bahamas Defence Force (RBDF).

An update of the happenings in the fishery was provided by the client and stakeholders at the site visit. Progress against the conditions raised during the certification audit was checked and deemed to be "on target" for all conditions. A new recommendation was raised following the appearance of lionfish in a bycatch dataset. Given the limitations of the bycatch data set (described in detail under Principle 2) the team decided against changing the status of lionfish to "main bycatch". The recommendation is centred around developing a robust dataset to determine the MSC classification of lionfish as a bycatch species in this fishery.

Overall, for spiny lobster, landed weight has decreased from the levels in 2014, 2015 and 2016. Exports from the fishery have been below the annual 5 million-pound (in tails exported) control rule.

Regional cooperation in the fight against Illegal Unreported and Unregulated (IUU) fishing appears to be increasing, which will greatly aid the estimation of total removals from the Bahamian lobster stock.

Following consideration of all stakeholders' inputs and new information provided by the client, the fishery assessment team concludes that the fishery should remain certified against the MSC Standard.

2 Report Details

2.1 Surveillance information

1	**Fishery name**	
	The Bahamas Spiny Lobster Fishery	
2	**Surveillance level and type**	
	Surveillance level 6, on-site surveillance	
3	**Surveillance number**	
	1st Surveillance	X
	2nd Surveillance	
	3rd Surveillance	
	4th Surveillance	
	Other (expedited etc)	
4	**Team leader**	

Name	Henry Ernst
Areas of responsibility	Team Leader
Competency criteria (Annex PC)	Henry obtained a MSci in marine biology from the University of Southampton. He has a broad background in marine research including inshore fisheries, functional marine ecology and aquaculture research. Prior to joining CU Pesca he was engaged in benthic invertebrate identification and biomass work with the National Oceanographic Centre, Southampton, United Kingdom. Henry has passed his team leader training course, undertaken three MSC surveillance audits as a team member and is an ISO lead auditor. He has passed the traceability module of the online training, Henry has participated in 3 FA and 7 surveillance audits, allowing him to meet competency criterion 6. In Table PC3. He therefore meets the team leader qualifications. Henry is fluent in English, the common language spoken by the fishery and stakeholders.
Conflict of interest in relation to this fishery	No conflict of interest has been identified for this fishery
On-site or off-site	On-site
CV	CV available on request

5	Team members

Name	Dr. Michael Bell
Areas of responsibility	Principle expert
Competency criteria (Annex PC)	Dr Bell has 24 years' experience as a research scientist, including 17 years in fisheries, where his research has focused on assessment, monitoring and management of sustainable fisheries and the ecological consequences of marine fisheries. Mike is currently Research Associate at the International Centre for Island Technology at the Heriot-Watt University in Orkney providing research, teaching and consultancy on sustainable fisheries. Previous professional experience includes various shellfish projects, stock assessment peer reviews, MSC assessments, Chair of the ICES Working Group on *Nephrops* Stocks and Scientific Advisor for Orkney Sustainable Fisheries, developing stock assessments and Fishery Improvement Projects for brown crab and researching crustacean and scallop fishery dynamics. Mike has also provided workshops on generalised linear modelling techniques, age-based stock assessments and mark-recapture modelling techniques. These qualifications provide Mike with the appropriate skills to meet competency criteria 1 and 2 of Table PC3. With regards to Principle 2, between 2005 and 2008, Mike was a fisheries scientist at CEFAS Lowestoft and completed assessment of trawl catch composition in NE English *Nephrops* fishery. He therefore meets competency criterion 3 in Table PC3 for bycatch. Mike has completed MSC training modules for the v2.0 Fisheries Certification Requirements. Mike is fluent in English, the common language spoken by the fishery and stakeholders.
Conflict of interest in relation to this fishery	No conflict of interest has been identified for this fishery
On-site or off-site	On-site
CV	CV available upon request

Name	Thomas Matthews
Areas of responsibility	Principle expert
Competency criteria (Annex PC)	Tom has worked almost exclusively with lobster research and management issues in Florida and the Caribbean for 27 years. He has worked on specific lobster management issues in Nicaragua, Honduras, Belize, Mexico, Puerto Rico, and the US Virgin Islands. He has also consultation with lobster researchers and managers in most countries in the Caribbean and have organised or chaired several international meetings. Tom currently works as the lobster research programme administrator for the Florida Fish and Wildlife Conservation Commission (FWC), Fish and Wildlife Research Institute in the Florida Keys. FWC is the lead agency responsible for management of the spiny lobster fishery in Florida. Here he is responsible for analysis of all lobster fishery research for management of the fishery. Based on the above experience, Tom meets the necessary requirements

		under Table PC3, section 4 and 5. Tom is also fluent in English, the common language spoken by the fishery and stakeholders.
	Conflict of interest in relation to this fishery	No conflict of interest has been identified for this fishery
	On-site or off-site	On-site
	CV	CV available upon request
6	**Audit/review time and location**	
	1st November 2019 at BAIC training Center, Nassau, New Providence, Bahamas.	
7	**Assessment and review activities**	
	During the audit, CU Pesca communicated with the client and relevant stakeholders making use of any available up to date information to assess and review; • Any changes to the fishery and its management including those to management systems, regulation and relevant personnel assessments; • Any changes to the scientific base of information such as stock; • progress against the four conditions associated with this fishery (PIs 1.2.3, PI 2.4.3, PI 2.5.3 and PI 3.2.3); • Any developments or changes within the fishery impact may impact on traceability and the ability to segregate MSC from non-MSC products; Any other significant changes in the fishery.	

2.2 Background

This report is the first annual surveillance report of the initial MSC assessment cycle for the Bahamas rock lobster fishery (*Panulirus argus)* operating in the Bahamian archipelago. The fishery was certified on the 3rd of August 2018 with four conditions across all three principles of the MSC Standard. The conditions are on PI 1.2.3, PI 2.4.3, PI 2.5.3, and PI 3.2.3. Progress against these conditions, and the adherence to the client action plan is reported in Section 3.2 of this report. The surveillance level set for this fishery is the default MSC surveillance level (Level 6). As a result, an on-site audit was held at the BAIC training center in Nassau on the 1st of November 2019. The assessment team comprised of Dr Michael Bell, Tom Matthews, and Henry Ernst. The audit was initially scheduled to take place on the 2nd September 2019, however the threat posed by hurricane Dorian resulted in the site visit being postponed. Stakeholders were advised of the postponing of the site visit through a notification email sent on the 30th August 2019, a follow up email was sent on the 3rd September 2019 confirming new date and (unchanged) location of the site visit.

At the time of writing, parts of the Bahamas were still recovering from the impact of hurricane Dorian. The North of the Bahamas suffered the brunt of the impact, namely the islands of Grand Bahama and Abaco. In total, six processors were rendered non-operational, with most gearing up to resume operations at the time of writing. Several Department of Marine Resources (DMR) vessels were lost or damaged during (strewn onto land) or after (engines stolen off the vessels in the aftermath) the hurricane. Many fishermen and DMR staff of the northern islands have been displaced. As a result of the storm, both enforcement and fishing effort have been greatly diminished by the storm, but both are expected to recover in due time.

Three new DMR vessels have been purchased, and 30 new DMR technical staff have been hired (with 7 more on the way). These officers are trained both in enforcement procedures and in sampling and data collection. The Fisheries Act is currently under revision. This is likely to significantly impact the fishery and therefore its performance against the MSC Standard. At the time of writing however, the modifications are yet to be enacted. There is a strong possibility that the new Act will be finalized and enacted over the coming year.

Details on the happenings of this fishery in relation to the three MSC Principles are detailed in Sections 2.4, 2.5, and 2.6 below.

2.2.1 Version details

Table 1. Fisheries programme documents versions

Document	Version number
MSC Fisheries Certification Process	Version 2.1
MSC Fisheries Standard	Version 2.01
MSC General Certification Requirements	Version 2.4.1
MSC Reporting Template	Version 2.01

2.2.2 Units of Assessment (UoA)

CU Pesca confirms that the fishery under audit remains within in the scope of the MSC Fisheries Standard (7.4 of the MSC Fisheries Certification Process v2.1):

- The target species is not an amphibian, reptile, bird or mammal;

- The fishery does not use poisons or explosives;
- The fishery is not conducted under a controversial unilateral exemption to an international agreement;
- The client or client group does not include an entity that has been successfully prosecuted for a forced or child labour violation in the last 2 years;
- The fishery has in place a mechanism for resolving disputes, and disputes do not overwhelm the fishery;
- The fishery is an enhanced fishery (UoA 1) as per the MSC FCP 7.4.6; and
- The fishery is not an introduced species-based fishery as per the MSC FCP 7.4.7.

CU Pesca confirms that the client group has submitted the completed 'Certificate Holder Forced and Child Labour Policies, Practices and Measures Template' prior to the start of this assessment.

The current Unit of Assessment (UoA) is given in Table 2 and Table 3.

Table 2. UoA 1 – Condos (casitas)

Species	Spiny lobster (*Panulirus argus*)
Geographical range	Territorial waters and EEZ of The Bahamas
Method of capture	Free diving using hooks or spears on condos with and without compressors
Stock	Caribbean Spiny Lobster – Bahamas stock
Management System	Bahamian Department of Marine Resources
Client group	Bahamas Marine Exporters Association (BMEA)
Other eligible fishers	Any Bahamian lobster fisher landing legal product and selling to the BMEA. Note: For historical/cultural reasons, there is no direct requirement to have a fishing licence or permit to fish or to sell fish in The Bahamas, although fishing vessels >20 feet are required to be registered, and permits are required for catches >250 lbs, as well as for using compressors and setting lobster traps. There is therefore no such thing as an illegal Bahamian fisherman in The Bahamas, except under certain specific circumstances. (It is, however, illegal for non-Bahamians to fish in Bahamas waters without a permit.) This is the reason that 'other eligible fishers' is worded in this way.

Table 3. UoA 2 – Lobster traps

Species	Spiny lobster (*Panulirus argus*)
Geographical range	Territorial waters and EEZ of The Bahamas
Method of capture	Lobster traps
Stock	Caribbean Spiny Lobster - Bahamas
Management System	Bahamian Department of Marine Resources
Client group	Bahamas Marine Exporters Association (BMEA)

Other eligible fishers	Any Bahamian lobster fisher landing legal product. Note: For historical/cultural reasons, there is no requirement to have a fishing licence or permit to fish or to sell fish in The Bahamas, and only fishing vessels >20 feet or vessels that catch ≥250 lbs are required to have a permit. There is therefore no such thing as an illegal Bahamian fisherman in The Bahamas (although it is illegal for non-Bahamians to fish in Bahamas waters without a permit). This is the reason that 'other eligible fishers' is worded in this way.

2.2.3 Catch data

As stated in the initial assessment (Gascoigne et al., 2018), this fishery is not managed through a Total Allowable Catch (TAC). Given that landings are principally driven by exports (90-95% of landings are exported), effort is limited by a harvest control rule that came into force in the 2018/19 season capping exports at 5 million pounds of tails in a seasonal year. It is believed that once this threshold is met, commercial fishing for lobster would reduce drastically and fishing effort would shift to other species (because the export market drives this fishery).

Table 4. Landings of lobster (tails and whole) from the Bahamas since initial certification

TAC	Year	N/A	Amount	N/A
UoA share of TAC	Year	N/A	Amount	N/A
UoC share of TAC	Year	N/A	Amount	N/A
Total green weight catch by UoC	Year	2018	Landed weight (lbs.) – Tails	3,198,437
			Landed weight (lbs) - Whole	17,959
			Landed weight (tonnes) – Tails	1450.78
			Landed weight (tonnes) – Whole	8.14
	Year	2017	Landed weight (lbs.) – Tails	3,567,435
			Landed weight (lbs) - Whole	22,377
			Landed weight (tonnes) – Tails	1618.16
			Landed weight (tonnes) – Whole	10.15

2.2.4 Scope of the assessment in relation to Enhanced Fisheries

A full description of how this fishery meets the "enhanced fishery" MSC criteria is provided in Gascoigne et al. (2018). Fishing practices have not changed since the publication of this report, the status of this fishery as enhanced, and the use of the default assessment tree therefore remain unchanged.

2.3 Vessel list

Due to the structure of the UoCs (which is itself due to the Bahamian legislation stating that every Bahamian national can catch and sell lobster – unless their catch exceeds 250lbs or they are using a vessel >20 feet) and the nature of the fishing effort (various fishing practices due to the fact that this

fishery is open to all Bahamians – ranging from large dive motherships to small day vessels) a vessel list is not provided here.

2.4 Principle 1

2.4.1 Overview

The Category 5 Hurricane Dorian in early September 2019 has impacted the fishery in various ways including physical damage from waves to habitats (assessment of coral reef damage is ongoing) and infrastructure and loss of traps and casitas (see also Principle 2 Overview, Section 2.5). The worst damage has been experienced in the northern Bahamas. Five processors handling spiny lobster have greatly reduced operational capacity and one has not restarted. One of these is unlikely to re-start, but there is the possibility of a new processing plant being developed. Loss of vessels has temporarily diminished the capacity of DMR to monitor the fishery, but three new vessels were acquired prior to the hurricane and this capacity is expected to recover quickly. Also prior to the hurricane, 30 new DMR staff were recruited, distributed throughout the islands, and are currently being trained, and this represents a significant increase in capacity to monitor and enforce. Further recruitment has been partially curtailed following the hurricane, but seven new technical staff are due to be recruited.

Extensive damage to fishing vessels of all sizes has been experienced, resulting in diminished effort in the spiny lobster fishery at present. This is alongside significant displacement of persons, including fishers and DMR staff. Fisheries developments include two new exporters added since 2018, and the development of greater access to the Chinese market for live lobsters.

Revision of the Fisheries Act is nearing completion. This will ensure structural stakeholder involvement, mandates data collection from more fishery sectors and will provide more severe penalties for illegal activities (both local and foreign vessels) across the board. The provisions of the act are expected to bolster the quality and coverage of data required for monitoring and management.

2.4.2 Stock status and Harvest Control Rule

No update on stock status is available beyond new values of mean size, CPUE, landings quantities, and there is no new determination of stock status in relation to MSY criteria since Medley (2017). Recent CPUE data for the spiny lobster fishery, recorded in traps, are 119.9lb/man/day in 2017/18 and 86.9 lb/man/day in 2018/19. These values are well above the trigger and limit values (40 and 20, respectively) considered in relation to the new HCR approved in 2018 (Table 7 in Gascoigne et al., 2018). However, it was clarified by Dr Gittens during the audit meeting that these CPUE reference points are not currently used as part of the HCR, and that there is only a watching brief on CPUE as it is not considered to be responsive to the state of the stock. The whole of the HCR is thus defined by the statement provided by the Ministry of Agricultural and Marine Resources (see Appendix 6 of Gascoigne et al., 2018):

Commencing 1st August, at the start of the 2018/2019 spiny lobster / crawfish season, a new Harvest Control Rule (HCR) for The Bahamas took effect. The export quota for spiny lobster / crawfish tails (or its equivalent weight in whole weight or live lobster) is set at 5 million pounds. Exports are monitored by the Department of Marine Resources and, after adequate notice is given, commercial exports will cease when the limit of 5 million pounds has been reached. If 5 million pounds is not exceeded, the fishery will close on March 31st, as usual. This export quota will be enacted on a seasonal basis. If the export limit is reached during one season, subject to normal authorisations, exports will again be allowed beginning August 1st of the subsequent season. Revisions of the export quota amount, and its

implementation, will take place as needed. This HCR does not negate applicable laws pertaining to fisheries or exports.

Under this HCR, commercial exports will cease if the limit of 5 million pounds is reached. A new stock assessment is considered to be needed post-Hurricane Dorian incident, and at this time current and projected stock status will be considered in relation to the SSB40 target and SSB20 limit reference points.

2.4.3 Information on unreported and IUU catch

The fishery is managed by a limit on the export quota for spiny lobsters, which is considered to comprise 95 % of all removals. For this limit to be effective in controlling fishing pressure, it is essential to account for the true levels of unreported and illegal catch. Condition 1 requires that information be collected on all other fishery removals from the stock, including unreported local and foreign IUU catch in The Bahamas (see Table 6). Considerable progress was reported by DMR in providing resources and research approaches to gain information on subsistence fishing by commercial fishers, sales direct to restaurants, foreign recreational landings and commercial scale poaching by foreign vessels (see Appendix 2). Despite some curtailment owing to the effects of Hurricane Dorian (e.g. intention to hire 37 technical staff on top of the 30 recently hired reduced to 7), it is still true that increased staff capacity is expected to "greatly improve the enforcement, data collection and monitoring abilities of the DMR", and this capacity is being distributed throughout the islands to cover the spatial distribution of fishing activities. This is alongside the revision of the Fisheries Act that is expected to augment the capacity to monitor the fishery, including the mandatory reporting of data from all fishers if necessary.

Enforcement is an important activity in terms of both reducing illegal removals and gaining information on their levels. Two Lieutenant Commanders from the Royal Bahamas Defence Force (RBDF) participated in the Site Visit, reporting on enhanced capabilities to detect and act upon illegal fishers. Predominantly these fishers are from the Dominican Republic – reportedly the Dominican grounds are fished out, driving communities reliant on fishing to seek catches elsewhere. RBDF have been extremely active in detecting these activities, working on information from local fishers and assisted by Cuban Border Guards in apprehending Dominican fishers that have fled into Cuban waters. Illegal vessels are impounded and ultimately scuttled, which has led to some changes in the nature of poaching activities. For example, 'mother ships' are staying off the banks and sending out smaller vessels to undertake the fishing, thus reducing the scale of losses from impoundment.

The RBDF work closely with DMR, and information supplied on illegal fishing activities will form a crucial input to the estimation of the scale of IUU catch. Overall, DMR plans to estimate the level of currently unquantified removals are well defined and the resources are in place to implement these plans. It was agreed that standardisation of these approaches to ensure consistency and quality of data, and careful consideration of the scope for double counting (e.g. between subsistence fishing and sales to hotels) will be important during this implementation phase.

2.4.4 Principle 1 overall conclusion

No formal update on stock status in relation to SSB criteria is available, but reported landings for 2018/19 remain well within the export quota (see Table 4) and CPUE remains at or above recent high levels (albeit that CPUE is considered not to be strongly responsive to stock abundance). The level of any impact of the 2019 Hurricane Dorian on spiny lobster stocks in The Bahamas will need to be considered in the light of the next analytical stock assessment. Unreported and illegal catches, not included in the export quota, remain to be quantified reliably, but significant progress has been made

in DMR plans to estimate these, and the fishery is on track to meet Condition 1 in relation to PI 1.2.3. Resources have been put in place to implement these plans, supported by coordination with the RBDF. Further, the proposed new Fisheries Act is at an advanced stage of development and will provide for mandatory provision of data from fishery sectors that are not covered by any such requirements at present.

2.5 Principle 2

2.5.1 Designation of species

The designation of species as Primary, Secondary or Endangered, Threatened or Protected (ETP) species is based on the following criteria.

Primary species (MSC Component 2.1):

- Species in the catch that are not covered under P1
- Species that are within scope of the MSC program, i.e. no amphibians, reptiles, birds or mammals
- Species where management tools and measures are in place, intended to achieve stock management objectives reflected in either limit (LRP) or target reference points (TRP). Primary species can therefore also be referred to as 'managed species'.

Secondary species (MSC Component 2.2):

- Species in the catch that are not covered under P1
- Species that are not managed in accordance with limit or target reference points, i.e. do not meet the primary species criteria
- Species that are out of scope of the programme, but where the definition of ETP species is not applicable (see below).

ETP (Endangered, Threatened or Protected) species (MSC Component 2.3) are assigned as follows:

- Species that are recognised by national ETP legislation
- Species listed in binding international agreements (e.g. CITES, Convention on Migratory Species (CMS), ACAP, etc.)
- Species classified as 'out-of scope' (amphibians, reptiles, birds and mammals) that are listed in the IUCN Redlist as vulnerable (VU), endangered (EN) or critically endangered (CE).

Both primary and secondary species are defined as 'main' if they meet the following criteria:

- The catch comprises 5% or more by weight of the total catch of all species by the UoC;
- The species is classified as 'less resilient' and comprises 2% or more by weight of the total catch of all species by the UoC. Less resilient is defined here as having low to medium productivity, or species for which resilience has been lowered due to anthropogenic or natural changes to its life-history;
- The species is out of scope but is not considered an ETP species (secondary species only);
- Exceptions to the rule may apply in the case of exceptionally large catches of bycatch species.

2.5.2 Overview

Since the initial assessment, the Bahamas and adjacent waters have been struck by a category 5 hurricane (hurricane Dorian – during the first week of September). Coastlines have been severely impacted, and even in some cases altered. While the damage on land could begin to be quantified by the time the assessment team arrived on site (five processors handling spiny lobster have greatly reduced operational capacity and one has not restarted), it was still too early to ascertain the extent of damage caused to the marine ecosystem. Coral reefs assessments are ongoing, though damage to reefs is believed highly likely, both from the force of the wind and waves as well as debris strewn from the islands. Mangrove forests are believed to have survived without major loss. Gear loss estimates are also being undertaken at the time of writing. While damage has been dealt to the existing DMR infrastructure (vessels either flipped on land, parts stolen in the aftermath), steps have been made in bolstering presence through the purchasing of three new vessels and the hiring of 30 new DMR technical staff, with 7 more officers to be hired in the near future. The DMR technical staff will be trained in data collection, with direct application to Principle 2 (bycatch, ETP, habitat, and ecosystem information collection) and the resolution of Principle 2 conditions.

2.5.3 Bycatch

This section applies to UoA 2 only (traps), as there is no bycatch associated with the casita component of the fishery (as evidenced in the Public Certification Report – Gascoigne et al., 2018).

2.5.3.1 Primary species

Since the initial assessment, no management tools and measures have been put into place, for any of the non-target species caught by this fishery. As a result, there are still no Primary species in this fishery.

2.5.3.2 Secondary species

A doctoral dissertation by Dr. Gittens (Gittens, 2017) investigated non-lobster catch in Bahamian lobster trap fisheries across several fishing grounds (Cay Lobos, South Andros, and the southwestern region of the Tongue of the Ocean (SWTO)). Sampling by weight could only be undertaken at SWTO and South Andros. Under half the traps sampled were found to contain non-target species (Table 5), and bycatch accounted for under one third of the total retained catch by weight (see Tables 6 and 7).

Table 5. Percentage of Commercial Lobster traps containing non-target species (Gittens, 2017)

Location	Number of Traps Sampled	Number with Bycatch	Percent with Bycatch
Cay Lobos	119	29	24.3
South Andros	392	99	25.3
*SWTO	50	44	88.0
Total	561	172	45.9

*SWTO-Near SW Tongue of the Ocean

Table 6. Weight and Percent bycatch from commercial lobster traps at two distinct fishing grounds (Gittens, 2017)

Fishing Ground	Lobster Weight (Kg)	Total Bycatch		Retained Bycatch		Bycatch Discarded Dead		Bycatch Discarded Alive	
		Weight (Kg)	%*	Weight (Kg)	%*	Weight (Kg)	%*	Weight (Kg)	%*
South Andros	123.8	39.8	32.1	27.9	22.5 [70]	2.2	1.7 [5]	9.7	7.8 [24]
Near SW Tongue of the Ocean	4682.5	2200.2	47.0	691.8	14.8 [31]	25.0	0.5 [1]	1484.5	31.7 [67]

*Percentage calculated as a proportion of the total weight of lobster catch; [ ]-Percentage calculated as a proportion of the total weight of bycatch; Weights at SW Tongue of the Ocean were estimated based on the sampling of 50 traps (1 trap per string of 25 traps) among 1250 traps that were in use by a commercial fishing vessel. Estimates at South Andros were based on the sampling of 392 traps among approximately 800 traps for a commercial vessel.

From these data we can ascertain the percentage of bycatch as a proportion of total retained catch and not lobster weight:

Table 7. Bycatch as a % of total catch based on data from Table 6 (Gittens, 2017)

Fishing ground	Total retained catch (including lobster and bycatch - kg)	kg		%	
		Lobster	Bycatch	Lobster	Bycatch
South Andros	163.6	123.8	39.8	75.68	24.32
SWTO	6882.7	4682.5	2200.2	68.03	31.97
Total	**7046.3**	**4806.3**	**2240**	**68.21**	**31.79**

Dr Gittens' study found: "*Based on the estimated weight of bycatch, the invasive lionfish P. volitans made up the largest component of bycatch at 39%, followed by D. venosus (25%), H. album (10%) P. alta (4%), and A. polygonius (4%) at SWTO and South Andros".*

This study thus represents the 3rd study in which trap bycatch has been quantified by weight for the lobster trap fishery in Bahamian waters. The species classifying as main in Dr Gittens study are presented in Table 8. Total bycatch composition across the traps sampled in Gittens (2017) is presented in Figure 1.

Table 8. Dominant bycatch species identified for the lobster trap fishery in Gittens (2017) and their designation

Species	Percentage of total catch	P2 designation
Lionfish (*Pterois volitans*)	12%	Main
Stareye crab – hermit crab (*Dardanus venosus*)	8%	Main
White margate (*Haemulon album*)	3.1%	Minor

Short bigeye (*Pristigenys alta*)	1.3%	Minor
Honeycomb cowfish (*Acanthostracion polygonius*)	1.3%	Minor

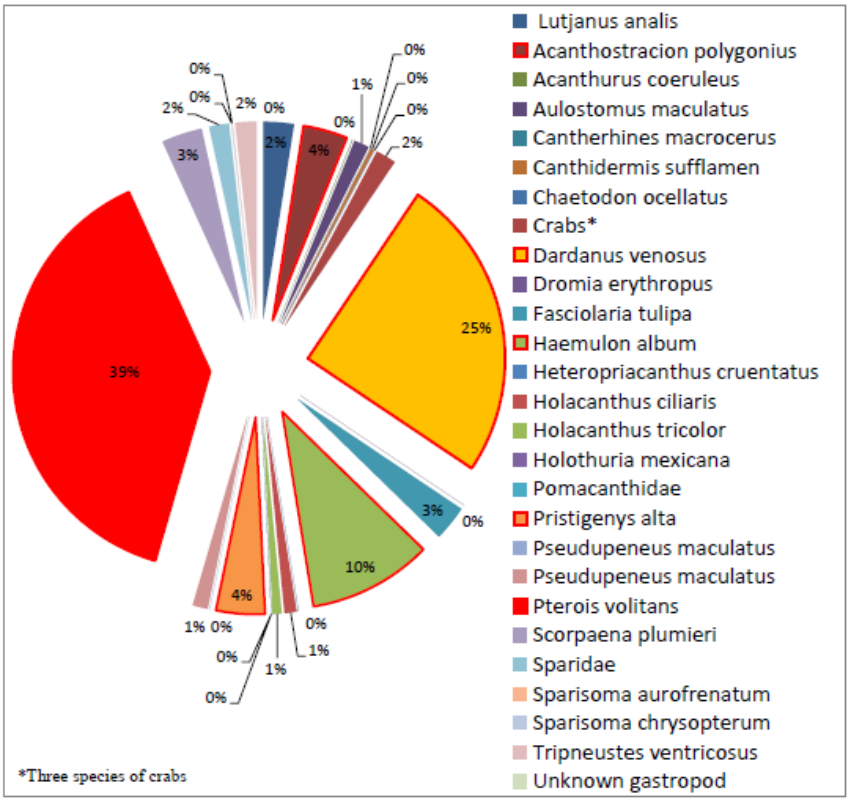

Figure 1. Proportion of Bycatch by species based on weight sampled from SWTO and South Andros sites in Gittens (2017)

The study conducted by Dr. Gittens is the only update to bycatch information on this fishery since initial certification. While it is stated that *"the estimates of bycatch presented in the current study for the trap fishery are informative, they may not be representative of the fishery in all seasons because observations took place during the final month of the open season when lobster catches are typically low"* (Gittens, 2017), three out of the four studies used to assess the bycatch of this fishery indicates lionfish to be considered as a main species. The comments of Dr. Gittens on the representativeness of this data must be considered, and as a result, lionfish will not be considered a main species in this surveillance audit.

However, a recommendation (see Section 3.1.3) will be raised to monitor the incidence of lionfish bycatch in the lobster trap UoA for this fishery. More information is needed to determine whether the lionfish meets the "main" criteria in the lobster trap UoA across the whole fishery and season.

An interesting point, lionfish are non-native to the Bahamas, the removal of invasive lionfish would likely benefit the ecosystem and could be regarded as a positive side-effect of this fishery – raising interesting questions for scoring. This is further discussed in the ecosystem section.

Given that Dr. Gittens study is the first mention of *D. venosus* as a potential main species and given the comments on sampling timing and data representativeness, *D. venosus* will not be considered Secondary main species. Though by the following the recommendation set at this audit (Section 3.1.3), the status of the stareye hermit crab as a main species will be elucidated.

Regarding the catch of vulnerable non-ETP species – opportunistic conch catch taking place as an auxiliary to condo or trap fisheries is not considered bycatch in this fishery – as the initial assessment team had considered this conch catch to represent a separate fishery. This view is upheld by the assessment team for this surveillance. As for Nassau grouper (*Epinephelus striatus*), two specimens were caught at the Cay Lobos sampling site (over 119 traps sampled). This is the first mention of grouper bycatch across all studies for the assessment of this fishery. Progress on the recommendation will likely provide information on whether any action is needed to mitigate these encounters.

2.5.4 Endangered, Threatened, and Protected (ETP) species

Across 17,659 photos taken in Dr. Gittens study on whether lobsters are more susceptible to higher mortality from predators near casitas, hawksbill turtles (*Caretta caretta*) were photographed on two occasions, a nurse shark (*Ginglymostoma cirratum*) was captured once, and the Caribbean reef shark (*Carchrahinus perezii*) was captured twice (Gittens, 2017). Most sightings of these species took place in cameras deployed in natural habitats (one of the reef shark photos was taken at a casita deployment, otherwise all were in the natural environment).

Though it is not considered an ETP species, the Nassau grouper (*Epiphelus striatus*) was noted to be vulnerable in the initial assessment (Gascoigne et el., 2018). One *E. striatus* specimen was noted in the camera trap study, in natural habitat.

Other than through this camera trap study, no turtle, shark, cetacean, or manatee interactions were noted by the client. This remains consistent with the findings of the initial assessment.

2.5.5 Habitats

There has been no officially reported change in habitats. Hurricane Dorian likely led to damage to coral reefs, as well as potentially the burying of seagrass meadows. At the time the team was on site, and during the surveillance period, the extent of the damage was still being assessed, with no official quantitative information available.

The fishery remains predominantly casita based. These have become the most commonly used “gear” since the 1990s. It is estimated there are roughly 1 000 000 casitas fishing at the time of writing, compared to approximately 50 000 traps. While active fishing effort is reduced leading up to, during, and after hurricanes, all gear used in this fishery remains in the water (though some traps may have been removed by fishermen). Hurricane Dorian will have likely led to damage and displacement of condos and traps alike. Work to estimate the number of condos in use is being undertaken (further information available in section 3.2).

The main development in terms of habitats for this fishery has been the designation and recommendation of 43 new Marine Protected Areas that will cover 3 282 674 hectares[1]. The identification of these areas heavily relied on stakeholder engagement; through Marine Gap Analysis (consultation of ~40 local and international scientists through three national workshops), Public Consultation (three rounds of public stakeholder consultations between 2016 and 2018, engaging roughly 400 people, maps of proposed areas were shared over social media for public comment over a six-week consultation period), and Public Relations (members of the public were consulted through face-to-face meetings, TV, radio, social and print media). This process was led by Bahamas National

[1] https://breef.org/wp-content/uploads/2019/02/Bahamas-Protected-Marine-Protection-Plan.pdf

Trust, the Perry Institute for Marine Science, The Nature Conservancy, and the Bahamas Reef Environmental Educational Foundation (BREEF).

Should these areas be accepted, the goal of effectively conserving 20% of the nearshore resources of the Bahamas by 2020 (the 20 by 20 goal) would be met. These areas serve to protect habitats and preserve ecosystem functioning, as well as serve as a replenishment zone for the Bahamian fisheries. These areas were selected based upon community support in each area as well as assessments and surveys of the waters conducted by DMR, the Bahamas National Trust (BNT) and other partners' staff. The new Fisheries Act currently being drafted will likely influence the management of these marine protected areas, though no specific information is available at this time.

A study aimed at quantifying the lobster population in the Exuma land and sea park is planned for summer 2021. Anecdotal evidence suggests that lobster is plentiful in the park. Further anecdotal evidence leads to believe that MPAs could heavily contribute to replenishing lobster populations in the Bahamas, the study in the Exuma land and sea park should

2.5.6 Ecosystem

For the fisheries' progress on the ecosystem-related condition, please see section 3.2.

As far as the fisheries' impact on the Bahamian nearshore ecosystem is concerned, the only noteworthy change would be the appearance of the invasive lionfish as a bycatch species in another report (Gittens, 2018). Lionfish catch in this fishery could benefit the functioning of the coral reef ecosystem. Given the absence of natural predators in Bahamian (and Caribbean) waters coupled with their voracious appetite, lionfish have a significant effect on reef fish species both by direct consumption of fish, and by out-competing other native predators such as groupers or snappers (Albins and Hixon, 2008). The addition of lionfish-specific traps to stings has been considered, though so far this is purely speculative.

Other than fishery-specific impacts, the damage dealt by hurricane Dorian (described in the sections above) has undoubtedly affected the ecosystem in which the fishery operates. As noted previously in this report, damage inspection is ongoing at the time of writing.

2.5.7 Principle 2 overall conclusion

Fishing activities have changed little since initial certification. The changes to the Fisheries Act will likely affect this fishery and its performance against the MSC Standard but not at this audit. Progress to meet conditions is discussed in detail in section 3.2, though the team believes the year 1 milestones have been met for the conditions on this principle (conditions 2 and 3). The presence of a wide variety of stakeholders during the site visit highlights a willingness to collaborate amongst the stakeholders involved in this fishery, especially concerning data collection and sharing.

2.6 Principle 3

The Management System is under the sole jurisdiction of the Government of The Bahamas. The legal framework for fisheries management requires action by the government to address the conditions established for certification.

The client has coordinated with the Bahamian government initiated a substantial update and revision the Fisheries Resources Act (Jurisdiction and Conservation). Enacted in 2006, the Act makes provisions for the conservation and management of the fishery resources within the waters of Bahamian jurisdiction and is the relevant piece of legislation in relation to the commercial fishery. The Act defines the rules for Bahamian and foreign fishing vessels, the limits of the Exclusive Economic Zone (EEZ), fishery inspections, as well as import/export restrictions, offences and penalties for breaches under the Act.

The proposed revisions are broad and inclusive, but adoption and implementation of the revised rules remain aspirational at this early time in the rule making process.

Section 10 of the Act gives the government the authority to set optimum yields for fishery resources in Bahamian waters, and requires “the need to ensure, through proper conservation and management measures, the maintenance of the resources or restoration of populations of harvested species at levels which can produce maximum sustainable yield”. Revision of Harvest Control Rule establishes the means to include licenses for all fishermen to facilitate monitoring of harvest. This includes mandatory survey and data collection (logbook) compliance. Inclusion of Marine protected areas, co-management plan for these areas, and a research plan (Ecological Gap Assessment) to identify the suitability of these MPAs for fisheries management is proposed.

The Act is currently undergoing revision, which was triggered by the need to incorporate port state measures, in response to the EU’s IUU Regulation. The draft act has been through all the required stages of consultation, and is awaiting review, discussion and approval by Cabinet.

The Royal Bahamas Defence Force (RBDF) has launched the Sandy Bottom Project: a large investment that resulted in the purchasing of nine new patrol craft, the renovation of the base at Coral Harbour, a maintenance program for RBDF equipment, and the establishment of a base in southern Bahamas to better monitor Illegal, Unregulated, and Unreported (IUU) fishing activities. Large patrol crafts are stationed offshore to detect foreign poachers while smaller crafts enforce MPAs and associated requirements (such as bag limits and minimum catch size). Currently, an unsigned but functional MOU with Cuba for high-seas enforcement exists in order to better monitor and prevent IUU activities in both Cuban and Bahamian waters. Inclusion of Turks and Caicos enforcement officers on RBDF patrols has begun. Furthermore, a comprehensive agreement with Turks and Caicos means that Bahamian vessels can enter Turks and Caicos waters to apprehend IUU fishermen. Cooperative agreements and actions with the Dominican Republic have not yet progressed despite the technical agreement signed 3 years ago. Generally, regional cooperation towards the mitigation of IUU fishing appears to be improving.

Specific areas codified in the revised Fisheries Management Act under review in Year 1 included: continual improvement of dialogue and collaboration between enforcement agencies concerning IUU detection and sanction options, including consideration of systematic non-compliance risks, and timelines to implement sanctions. This includes consideration of alignment of regulations and enforcement practices, such as issues surrounding the use of compressors outside of lawful depth limits. Collaboration concerning independent and joint enforcement operations on the seas and at landing sites is continuing. Efforts have been noted by the team to have the revised Fisheries Act

finalised. This includes measures to increase fines for various aspects of poaching including foreign poaching, fishing during closed seasons and employment of Bahamians who are non-Bahamian. Agreements made and progress with enforcement will be presented to the Conformity Assessment Body (CAB) at following annual surveillance audit. DMR to plan IUU risk assessment study in consultation with RBDF, Bahamas Spiny Lobster Working Group (BSLWG) and BMEA. The development of indicators of fishing activity and IUU indicators as part of IUU risk assessment will also be explored. Develop and/ or revise education and awareness programme for local fishers related to lobster catches, in particular problems related to undersized, berried lobsters and the use of air compressors.

Participation with the multiple regional organisations that play a role in the fishery remain in place. Although there is nothing mandatory in place, co-operation within the region through research and data sharing is beneficial to the management of the fishery, by allowing the use of the most up-to-date scientific information and management.

Consultation by fishery participants and wider stakeholders are in place and are proposed for codification in the revised fisheries management act. This includes mandatory consultation with Fishery Advisory Committee and wider stakeholder consultation process conducted by DMR.

2.6.1 Principle 3 overall conclusion

The principal change concerning Principle 3 is the drafting and revision of the Fisheries Act. At the time of writing this has not been finalised and approved. Regional enforcement efforts appear to be becoming more cohesive, with cooperation between Caribbean states apparently increasing. The nature and methods of the IUU fishery will likely change in the future in response to new enforcement tactics. The team is confident the relevant authorities are well placed to deal with this in the future.

2.7 Traceability

The Nature Conservancy (TNC) is heavily involved with BMEA members in matters of traceability. TNC is looking to pilot improved data collection on the fishermen level in order to supplement stock assessments. The current plan is to build an app that facilitates use while providing incentives to the fishermen to share their data in order to trace catch at a finer scale.

Since initial certification, one of the BMEA members, Heritage Seafood, has gone fully electronic in its traceability systems (through the stages of product receipt, cleaning, deveining, packing and casing). Some parts of processing also logged manually as a backup. Barcode labels on each bag at production receipt allow the tracing of product from the gear, location, bag weight, and quantity through each step of the processing facility. In such the only difference is a move away from tags towards barcodes. This is a pilot system that has been developed in collaboration with TNC.

During the site visit, Mr Pritchard presented the traceability system at Tropic Seafood to the assessment team. Tropic Seafood are British Restaurant Consortium certified and carry out traceability exercises every 6 months to ensure the systems they have in place function as designed. Further to this, a full set of documentation allowing the team to conduct a traceback exercise was provided (available upon request).

3 Results

3.1 Surveillance results overview

3.1.1 TAC and catch data

As stated in the initial assessment (Gascoigne et al., 2018), this fishery is not managed through a Total Allowable Catch (TAC). Given that landings are principally driven by exports (90-95% of landings are exported), effort is limited by capping exports at 5 million pounds of tails in a calendar year. It is believed that once this threshold is met, commercial fishing for lobster would reduce drastically and fishing effort would shift to other species.

Table 9. Landings of lobster (tails and whole) from the Bahamas since initial certification

TAC	Year	N/A	Amount	N/A
UoA share of TAC	Year	N/A	Amount	N/A
UoC share of TAC	Year	N/A	Amount	N/A
Total green weight catch by UoC	Year	2018	Landed weight (lbs.) – Tails	3,198,437
			Landed weight (lbs) – Whole	17,959
			Landed weight (tonnes) – Tails	1450.78
			Landed weight (tonnes) – Whole	8.14
	Year	2017	Landed weight (lbs.) – Tails	3,567,435
			Landed weight (lbs) – Whole	22,377
			Landed weight (tonnes) – Tails	1618.16
			Landed weight (tonnes) – Whole	10.15

3.1.2 Summary of conditions

Condition number	Condition	Performance Indicator (PI)	Status before audit	Status after audit	PI original score	PI revised score
1	Information needs to be collected such that there is good information on all other fishery removals from the stock (unreported local and foreign IUU catch of spiny lobster in The Bahamas).	1.2.3 – Information and monitoring	Open	Open	75	Not revised
2	For condos, information needs to be collected on the quantity deployed, location of deployment and eventual fate (removed vs. lost) sufficient to i) provide reliable information on the spatial extent of interaction, the timing	2.4.3 – Habitats information	Open	Open	65	Not revised

	and location of use of the fishing gear; and ii) to detect any increase in risk to the main habitats (if any) from condo deployment. For traps, information needs to be collected on the number of traps in use and the main areas of deployment of traps, as well as trap loss rates, for the same purpose.					
3	Information needs to be collected on the quantity deployed, location of deployment and eventual fate (removed vs. lost) of condos, sufficient to evaluate the on-going risk and detect any increase in risk level (if any) to ecosystems from condo deployment.	2.5.3 – Ecosystem information	Open	Open	75	Not revised
4	The monitoring, control and surveillance system needs to be improved such that there is no evidence of systematic non-compliance (systematic, wide-scale IUU; and other non-compliance / non-enforcement issues).	3.2.3 – Compliance and enforcement	Open	Open	75	Not revised

3.1.3 Recommendations

Recommendation number	Recommendation
1 (NEW)	The client should, in the years following the year 1 surveillance audit, collect sufficient robust data to determine the MSC designation of *Pterois volitans* (Lionfish) as a bycatch species (whether it is to be considered "main" or "minor"). Further quantification of bycatch in this fishery would allow future assessment teams to ascertain the designation of lionfish without ambiguity.

3.2 Conditions

Table 10. Condition 1

Performance Indicator	1.2.3: Relevant information is collected to support the harvest strategy
Score	75
Justification	1.2.3c: There is good information on all other fishery removals from the stock. There are many potential fishermen providing lobsters for subsistence / to local markets that are unreported. Furthermore, foreign IUU is a problem, as noted above

	and estimated increases in Dominican landings in 2011 that were suspected of originating from The Bahamas would prevent effective implementation of the new 5 million lb. HCR. SG80 is not met.
Condition	Information needs to be collected such that there is good information on all other fishery removals from the stock (unreported local and foreign IUU catch of spiny lobster in The Bahamas).
Milestones	By the Year 1 audit, a research process would have been developed that is capable of estimating removals from foreign IUU and from unreported Bahamian fishing within the fishery. Score: 75 By the Year 2 audit, the process will have been initiated, with data collection in process. Score: 75 At the Year 3 audit, the initial results will be presented to demonstrate progress. Score: 75 or higher By the Year 4 audit, the data collected will have been analysed and best estimates of removal from the fishery presented. There should be good information on these "other fishery removals on the stock" by this audit. Score: 80
Consultation on condition	Bahamas Marine Exporters Association is dependent upon involvement and resources of the Bahamas Department of Marine Resources (DMR) to gain information on foreign IUU and unreported Bahamian fishing within the fishery. DMR have been fully involved in the certification and auditing process and the Audit Team is satisfied that there has been appropriate allocation of time and resources directed towards this task, and that this is sufficient for closure of the condition within the required time frame. 30 new staff members have been hired to undertake fishery monitoring activities throughout the islands in the locations where fishing is occurring, and a further 7 staff are due to be recruited. Training of these staff is underway. There has been some delay and re-direction of resources following Hurricane Dorian, but current and projected staff levels and monitoring plans outlined by DMR are sufficient to characterise and quantify unrecorded landings. Hurricane Dorian caused some loss of DMR vessels, but these are expected to be replaced soon. Information on foreign commercial scale poaching also depends on coordination between DMR and the Defence Forces. Two Defence Force staff attended the Site Visit for the Year 1 audit, and it was clear to the Team that they are actively engaged with DMR on this task. See also Gascoigne et al. (2018) on consultation with DMR.
Progress on Condition (Year 1)	DMR have targeted four sources of catch to quantify: • *Subsistence landings*. DMR staff have already started to interview fishers about landings retained for personal or family consumption. A raising factor for these landings will be estimated based on the proportion of fishers sampled in their communities. It is also planned to sample smaller (<20 ft) vessels opportunistically when DMR staff inspect commercial fishers, and this element of landings will also be included in the raising factor. • *Sales to restaurants*. DMR staff will conduct interviews at restaurants throughout the islands, asking for estimates of the amount of lobster purchased directly from fishers. This is planned to be undertaken once per year at the end of the fishing season. DMR staff will estimate the proportion of restaurants sampled to develop a raising factor for this element of unreported landings. • *Foreign recreational landings.* DMR staff will interview foreign vessel operators at least once per month (no such monitoring is currently undertaken). The Customs Department will be asked to request sports-fishing permit applicants to complete a voluntary questionnaire to document catches.

	These two data sources will be compared to evaluate accuracy and representativeness and to inform the ongoing design of the sampling programme. • *Foreign commercial scale poaching.* This catch element will be estimated using average catch per vessel from DMR arrest reports, Defence Force records on numbers of poaching vessels and DMR records on the proportion of these vessels that catch lobster. The Year 1 milestone specifies that a research process should have been developed that is capable of estimating these elements of the catch of spiny lobster in The Bahamas. It is clear from the information on presented at the Site Visit that this milestone has been met, and to some extent exceeded as some elements of the research (subsistence landings and foreign commercial scale poaching) are already underway. As the process becomes fully integrated, it will be important to demonstrate (a) that the interview processes for DMR staff are sufficiently standardised to allow systematic collection of comparable, high quality data across all of the islands, and (b) that approaches to quantifying removals by foreign commercial scale poaching takes account of the structure of the poaching fleet and how this is evolving in response to increased enforcement effort by the Defence Force.
Status	On target
Additional information	It is relevant to note that the draft fisheries act has provisions that could be used to compel all commercial fishers in The Bahamas, including smaller vessels, to provide information on catches. Also relevant to this condition, it was also noted that The Nature Conservancy (coordinators of the Fishery Improvement Project) are developing a pilot scheme with fishers for obtaining data on unrecorded landings. This trial has been delayed owing to Hurricane Dorian, but potentially could be used to deliver data for an updated stock assessment. Clearly, it will be important to coordinate and compare this exercise with monitoring activities by DMR.

Table 11. Condition 2

Performance Indicator	2.4.3
Score	65
Justification	SIb: … there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. SIc: Adequate information continues to be collected to detect any increase in risk to the main habitats. In relation to SG80 … it is clear we do not have '*reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear*', either for traps or condos (taking condos for this purpose to constitute fishing gear, although technically they are not). On this basis, SG80 is not met. Although the risk to habitats from this fishery at present is small (see 2.4.1), the information being collected at present is not adequate to detect changes in this risk. Specifically, there is no evidence that the number of condos will not continue to increase, and there is also no information about how many are removed when broken vs. allowed to break up in the environment, creating debris. Although the risk to habitats is not likely

	to increase significantly in the near future, we do not have the information to make any on-going quantitative evaluation of changes in risk from condos. Not met for condos. For traps, the number of traps is much smaller than condos, and is stable or decreasing, on this basis there is not likely to be any increase in risk from traps; however, information is also not gathered on the number of traps. Not met for traps.
Condition	For condos, information needs to be collected on the quantity deployed, location of deployment and eventual fate (removed vs. lost) sufficient to i) provide reliable information on the spatial extent of interaction, the timing and location of use of the fishing gear; and ii) to detect any increase in risk to the main habitats (if any) from condo deployment. For traps, information needs to be collected on the number of traps in use and the main areas of deployment of traps, as well as trap loss rates, for the same purpose.
Milestones	By the Year 1 audit, a research process would have been developed that can estimate spatial extent of the interaction between gears (condos and traps), timing and location of gear use within the fishery. Score: 65 By the Year 2 audit, the process will have been initiated, with data collection in process to demonstrate information gathering on extent of interactions. Score: 75 At the Year 3 audit, the initial results will be presented to demonstrate progress. Score: 75 or higher By the Year 4 audit, the data collected will have been analysed to give estimate of spatial extent, as well as numbers in use/deployed/lost. There should be adequate information to allow detection of any increase in risks to main habitats in the fishery. Score: 80
Consultation on condition	Consultation with DMR. See Gascoigne et al. 2018
Progress on Condition (Year 1)	The following is a DMR statement presenting the research process developed over the past year: ***2.2.3 Number of condos and change in numbers*** *Two strategies will be used to estimate the number of condos and change in numbers by year. These include counting of condos that are deployed prior to the start of the lobster season and asking applicants for fishing vessel licences to supply this information at the time of application.* *As previously mentioned, there has been an increase in the number of DMR staff members and a further increase is expected. This will facilitate improved data collection to address Condition 2. DMR officers will conduct counts of the number of condos at condo storage and construction sites prior to the start of each lobster season. This will account for newly deployed condos only. However, due to the fiveyear lifespan of condos, the counts of newly deployed condos should reflect all condos in use after five years of counts. Given that condos are likely a low risk to the environment, summaries of the number of condos in use will be given in five year groupings, i.e., summed over five year periods. The initial five-year estimate will take 5 years to be provided as it will depend on the completion of five years of counts. However, additional five year estimates can be provided every year thereafter by adding the condos for each additional year and subtracting those deployed six years ago. These estimates can be described by the following mathematical representation.* *Number of condos in use in 2024 = condo count 2020 + condo count 2021+ condo count 2022+ condo count 2023+ condo count 2024* *Number of condos in use 2025 = Number of condos in use 2024 + condo count 2025 – condo count 2020.* *After the initial five years of counts, additional years can also be treated as changes in risk reflected on a year to year basis.* *In tandem with efforts to count newly deployed condos at storage/construction sites, applicants for fishing vessel permits will be asked to state how many condos they have in use and how much they will be deploying for the new season. This information will be*

	compared to the condo counts in an effort to evaluate the accuracy of both data streams. It should be borne in mind that the provision of the number of condos in use by fishermen when applying for licences is not mandatory. As such, a raising factor may be necessary and can be estimated based on the percentage of fishers that share information. *There are also plans for processing plants to obtain information from fishers at the time of purchasing fisheries products.* ***2.2.4 Spatial distribution of condos*** *During the application process for commercial fishing vessel permits, applicants will also be asked to state where their condos are deployed and where they plan to deploy condos. Data supplied through catch certificates also has data on fishing grounds. As the use of condos is the most popular fishing method, it is expected that the data on the location of fishing grounds should also represent the relative distribution of condos. Catch certificate data will be analysed to determine the relative number of condos by location. Shifts in the location of fishing effort are also expected to reflect changes in the location of condo deployments.* *It is also important to ascertain the risk to the fishery due to lost condos. DMR officers that collect data at landing sites will now routinely ask about and document how many condos were lost. Attempts will be made to ascertain whether the lost condos were due to weather, theft or other causes. Whether or not condos are lost, it will be assumed that all condos deployed are still active as a part of tracking overall risks to the fishery in a precautionary manner. The same assumption will be made when hurricanes displace fishing gear.* ***2.2.5 Number of traps*** *Unlike condos, applications are made to the DMR to utilize lobster traps. This allows the number of traps that are used during each season to be tracked. The shortcoming of this method of tracking is that there is no verification of whether the number of traps stated in applications is accurate. To address this issue DMR officers will visit trap construction sites just prior to the opening of the season to conduct counts of the numbers of traps.* *The numbers of traps lost during the season will also be estimated through landing site interviews routinely conducted by DMR officers. It is also expected that processing plants will assist with the collection of this information at the time they purchase lobsters from fishermen.* ***2.2.6 Spatial distribution of traps*** *Similar to efforts to attain the numbers of traps in use, the spatial distribution of traps can be attained from applications to use traps submitted by fishermen. This information will also be compared with information from catch certificates.* As evidenced through the plan set out above (full document addressing conditions for the year 1 surveillance audit is provided in Appendix 2), the year 1 milestone is met, and as such, progress against the condition is deemed to be on target for this year's surveillance audit.
Status	On target
Additional information	The CAB notes that the plan set out above involves data collection over a period of 5 years before a base of information on the spatial extent, interaction, timing and location of fishing gear is ascertained. While the development of a plan means that the condition milestone for year 1 is met. However if this plan is followed, it would mean that the resolution of this condition would fall behind schedule in the later years of the certificate. In essence, the timelines set out by the research process do not match the condition milestone timelines. This will require attention from the client and stakeholders involved in drafting the research process.

Table 12. Condition 3

Performance Indicator	2.5.3
Score	75
Justification	SIe. Adequate data continue to be collected to detect any increase in risk level. … The team noted, however, that (despite the analysis in Callwood, 2016) there is no systematic attempt to quantify the number of condos in the system, nor the year-on-year increase in condos, nor the rate of recycling vs. break-up into the ecosystem, nor the fate and break-down rate of this debris in the environment. The team did not think that this was likely to result in unacceptable impacts (see 2.5.1), but an on-going uncontrolled expansion in the use of condos will result in incremental increase in ecological risk, and this is not quantified in this fishery at all. On this basis, SG80 is not met.
Condition	Information needs to be collected on the quantity deployed, location of deployment and eventual fate (removed vs. lost) of condos, sufficient to evaluate the on-going risk and detect any increase in risk level (if any) to ecosystems from condo deployment.
Milestones	By the Year 1 audit, a research process would have been developed that is capable of estimating risk to the fishery ecosystem from condo deployment, use and removal. Score: 75 By the Year 2 audit, the process will have been initiated, with data collection in process to demonstrate information gathering on condo deployment and use in the fishery Score: 75 At the Year 3 audit, the initial results will be presented to demonstrate progress. Score: 75 or higher By the Year 4 audit, the data collected will have been analysed to give estimate numbers of condos in use/deployed/lost/recycled. There should be adequate information to allow detection of any increase in ecological risks in the fishery. Score: 80
Consultation on condition	Consultation with DMR. See Gascoigne et al. 2018
Progress on Condition (Year 1)	The following is a DMR statement presenting the research process developed over the past year: *The plans to obtain data to address Condition 2 are expected to also address Condition 3.*
Status	On target
Additional information	See the note in “additional information” for condition 2.

Table 13. Condition 4

Performance Indicator	3.2.3
Score	75
Justification	There are not large-scale outlets of illegal fishery products. However, open access to the fishery by all Bahamians and limited resources to assess their compliance with the size limit demonstrates some potential for systematic non-compliance. Under-sized lobsters are commonly seen when day boats return to port and are for sale to locals and tourists. Whilst this is outside the scope of the assessment (only legally sized and caught lobsters are sold through the BMEA), there are still illegal removals from the Bahamas lobster fishery overall.

	Although IUU has been much reduced since new resources were provided to the Defence Force and is not considered to pose a threat to the stock (Medley, 2017), there are still likely to be systematic incursions into the waters of the southern Bahamas by IUU vessels. There are also some more minor elements where the regulations and the practice do not align; notably in theory the use of compressors for diving is only permitted between 30 and 60 feet, while in practice this is not fully enforced, for safety reasons, and to protect critical shallow water ecosystems.
Condition	The monitoring, control and surveillance system needs to be improved such that there is no evidence of systematic non-compliance (systematic, wide-scale IUU; and other non-compliance / non-enforcement issues).
Milestones	Year 1: Engagement with other organisations (police, judiciary) on the issue of enforcement and sanctions for landing of undersized lobster. On-going at-sea enforcement efforts against IUU. Review of regulation and practices which are not currently aligned in the fishery. Score: 75. Year 2: Agreement on appropriate enforcement and sanctions for non-compliance with lobster management regulations. On-going at-sea enforcement efforts against IUU. Consultation process to investigate and discuss options for alignment of regulations and practice (for example in relation to use of compressors by depth). Score: 75. Year 3: Evidence that agreed sanctions are being implemented. On-going at-sea enforcement efforts against IUU. IUU risk assessment underway. On-going consultation to discuss options for alignment of regulations and practice (for example in relation to use of compressors by depth). Score: 75. Year 4: IUU risk assessment shows improvement compared to baseline data established. Agreement on changes to regulations and/or practice to avoid systematic non-compliance by the UoA (e.g. in relation to use of compressors). Score: 80.
Consultation on condition	Consultation with DMR. See Gascoigne et al. 2018
Progress on Condition (Year 1)	The client action plan in Year 1 included: Continue to improve dialogue and collaboration between enforcement agencies concerning IUU detection and sanction options, including consideration of systematic non-compliance risks, and timelines to implement sanctions. This includes consideration of alignment of regulations and enforcement practices, such as issues surrounding the use of compressors outside of lawful depth limits. Continue to collaborate concerning independent and joint enforcement operations on the seas and at landing sites. Continue efforts to have the revised Fisheries Act finalised which includes measures to increase fines for various aspects of poaching including foreign poaching, fishing during closed seasons and employment of Bahamians who are non-Bahamian. Agreements made and progress with enforcement will be presented to the CAB at the annual surveillance audit. DMR to plan IUU risk assessment study in consultation with RBDF, BSLWG and BMEA. The development of indicators of fishing activity and IUU indicators as part of IUU risk assessment will also be explored. Develop and/ or revise education and awareness programme for local fishers related to lobster catches, in particular problems related to undersized, berried lobsters and the use of air compressors. Specific progress in year 1 included: A 6-month plan to approve a revised Fisheries Act. The revised Fisheries Act was submitted to the attorney general for review. The implementation of data collection, economic and IUU measures, and condo management is planned by 2021. The Fisheries Act remains in review and has not been implemented, but measures in the Act include a broad range of aspirational measures including: IUU fishing is being address through direct enforcement with the hiring of 30 DMR technical officers with the addition of 7 more planned. Foreign access to the fishery continues to be addressed by the improved capacity of the BDF. Attempts to circumvent access restrictions to the legal-commercial fishing by foreign nationals includes

	temporary action by Bahamian immigration services to prevent immediate access to the commercial fishery by new immigrants. Fishery laws now also required fishery products are landed in the Bahamas. Access to the fishery by foreign recreational fishing vessels, primarily from the US, remain unresolved. Access to the fishery by foreign commercial vessels continues to evolve and now reportedly includes primarily small vessels making daytrips from 'mother ships' located outside Bahamian waters. Assessment of IUU fishing remains elusive. Other elements in the revision of the fisheries Act may include: (1) Mandatory consultation with Fishery Advisory Committee (2) Power to declare Endangered, Threatened, and Protected species (3) Mandatory survey and data collection (logbook) compliance (4) Revision of Harvest Control Rule to include licenses for all fishermen to facilitate monitoring of harvest (5) Inclusion of Marine protected areas, co-management plan for these areas, and a research pal (Ecological Gap Assessment) to identify the suitability of these MPAs for fisheries management. Other active measures this year to improve the management system and legal framework include the BMEA zero tolerance policy signed by all BMEA members, an unsigned but functional MOU with Cuba for high-seas enforcement, inclusion of Turks and Caicos enforcement officers on RBDF patrols. Cooperative agreements and actions with the Dominican Republic are not forthcoming.
Status	On target
Additional information	-

3.3 Client action plan

No updates to the client action plans (set out after the initial certification audit) were found to be necessary during the year 1 surveillance audit. A revision of the research plan (set out for conditions 2 and 3) established over the course of this year may be required in order to align with the condition 2 and 3 milestones.

3.4 Rescoring Performance Indicators

No rescoring was deemed necessary at the year 1 surveillance audit.

3.5 Principle level scores

Table 14. Principle level scores

Principle	UoA 1 Score	UoA 2 Score
Principle 1 – Target Species	83.3	83.3
Principle 2 – Ecosystem Impacts	88.0	84.7
Principle 3 – Management System	82.7	82.7

Table 15. Performance Indicator scores

Principle	Component	Wt	Performance Indicator (PI)		Wt	UoA 1 Score	UoA 2 Score
One	Outcome	0.33	1.1.1	Stock status	0.5	70	70
			1.1.2	Stock rebuilding	0.5	80	80
	Management	0.67	1.2.1	Harvest strategy	0.25	95	95
			1.2.2	Harvest control rules & tools	0.25	80	80
			1.2.3	Information & monitoring	0.25	75	75
			1.2.4	Assessment of stock status	0.25	100	100
Two	Primary species	0.2	2.1.1	Outcome	0.33	100	100
			2.1.2	Management strategy	0.33	100	100
			2.1.3	Information/Monitoring	0.33	100	100
	Secondary species	0.2	2.2.1	Outcome	0.33	100	90
			2.2.2	Management strategy	0.33	100	80
			2.2.3	Information/Monitoring	0.33	90	80
	ETP species	0.2	2.3.1	Outcome	0.33	90	80
			2.3.2	Management strategy	0.33	80	80
			2.3.3	Information strategy	0.33	80	80
	Habitats	0.2	2.4.1	Outcome	0.33	95	95
			2.4.2	Management strategy	0.33	80	80
			2.4.3	Information	0.33	65	65
	Ecosystem	0.2	2.5.1	Outcome	0.33	80	80
			2.5.2	Management	0.33	85	85
			2.5.3	Information	0.33	75	75
Three	Governance and policy	0.5	3.1.1	Legal &/or customary framework	0.33	80	80
			3.1.2	Consultation, roles & responsibilities	0.33	85	85
			3.1.3	Long term objectives	0.33	80	80
		0.5	3.2.1	Fishery specific objectives	0.25	90	90

Principle	Component	Wt	Performance Indicator (PI)		Wt	UoA 1 Score	UoA 2 Score
	Fishery specific management system		3.2.2	Decision making processes	0.25	80	80
			3.2.3	Compliance & enforcement	0.25	75	75
			3.2.4	Monitoring & management performance evaluation	0.25	90	90

4 References

Albins, M.A. and Hixon, M.A., 2008. Invasive Indo-Pacific lionfish Pterois volitans reduce recruitment of Atlantic coral-reef fishes. *Marine Ecology Progress Series*, *367*, pp.233-238.

Gittens, Lester G. "The Effect of "Casitas" on Lobster Biology and Fishery Sustainability in the Bahamas" (2017). Doctor of Philosophy (PhD), dissertation, Biological Sciences, Old Dominion University, DOI: 10.25777/2pc4-3t27 https://digitalcommons.odu.edu/biology_etds/18

Gascoigne, Jo, Matthews, T., and Groeneveld, J. MSC Public certification report, The Bahamas spiny lobster fishery August 2018 https://fisheries.msc.org/en/fisheries/the-bahamas-spiny-lobster-fishery/@@view

5 Appendices

5.1 Appendix 1 Evaluation processes and techniques

Appendix 1.1 Site visits

The site visit was held at the BAIC training center in Nassau, New Providence, on the 1st November 2019. The individuals met during the site visit and their roles in the fishery are listed in Table 16.

Table 16. List of attendees at the on-site meetings.

Name	Position	Type of consultation
Henry Ernst	CU Pesca assessment team	n/a
Dr Michael Bell	CU Pesca assessment team	n/a
Tom Matthews	CU Pesca assessment team	n/a
Mia Isaacs	BMEA/ Heritage Seafood (Client)	On site discussions
Karen Rahming	BMEA/ Tropic Seafood Ltd	On site discussions
Glenn Pritchard	BMEA/ Tropic Seafood Ltd	On site discussions
Dr Lester Gittens	DMR	On site discussions
Gloria Coldbrooke	Heritage Seafood	On site discussions
Natalie Miaoulis	The Nature Conservancy	On site discussions
Casuarina McKinney-Lambert	BREEF	On site discussions
Lieutenant Commander Stephen Rolle	Royal Bahamas Defence Force	On site discussions
Lieutenant Commander Floyd Moxley	Royal Bahamas Defence Force	On site discussions

Appendix 1.2 Stakeholder participation

The stakeholders in attendance for this surveillance audit are listed in Table 16. Stakeholders were made aware of the year 1 surveillance audit when the fishery was announced on the MSC website on the 30th July 2019. A stakeholder email was sent in tandem of the announcement on the website. Along with an announcement of the fishery, a notification was sent to stakeholders detailing that the year 1 surveillance audit would take place after the certificate anniversary due to client, stakeholder and data availability being more favourable after the certificate anniversary. Stakeholders were immediately alerted to the change in surveillance schedule when the decision was made to postpone the site visit because of hurricane Dorian. Client representatives were present to provide updates on exports, recovery after hurricane Dorian, and traceability within the processing plants. Dr Lester Gittens was able to provide updates on progress against conditions, updates on the Department of Marine Resources activities, as well as the amendments and potential ramifications of the fisheries Act that is currently being revised. Natalie Miaoulis provided a presentation on the implementation of an e-traceability system in the Bahamas, as well as future perspectives involving data collection from data deficient areas, and a future condo (casita) management plan. Casuarina McKinney-Lambert was present during the meetings principally as an observer, but also provided valuable input on MPAs in Bahamian waters. Lieutenant Commander Floyd Moxley and Lieutenant Commander Stephen Rolle presented recent efforts in mitigating IUU, the latest developments and commitments of the Royal Bahamas Defence Force.

Appendix 2 Stakeholder Input

Plan to Address Marine Stewardship Council Conditions
Bahamas Spiny Lobster
Department of Marine Resources
August 2019

1.0 Introduction

The Bahamas spiny lobster fishery received Marine Stewardship Council (MSC) certification during August 2018. Certification indicates that the lobster fishery has satisfied criteria pertaining to the status of the lobster fishery, the broader environmental impact of the fishery and governance of the fishery. However, there is significant room for improvement in the management of the fishery. Among the areas for improvement, four Conditions will need to be addressed in order for certification to be maintained. Each Condition should be addressed over a period of four years, with milestones achieved during each of the years. This plan focuses on internal activities that the DMR will conduct to address the Conditions. The existence of this plan also partially satisfies the year-1 milestones required to meet the Conditions. Additional activities are expected to be conducted with partner organizations (example: BMEA, TNC) but will not be thoroughly described here.

2.0 Conditions, Milestones and Plans

All Conditions and Milestones below are as they appear in the report *Marine Stewardship Council (MSC) Final Report-The Bahamian Spiny Lobster Fishery*, as authored by the conformity assessment body Control Union PESCA Ltd. and published during July 2018.

Plans to achieve the milestones, meet the Conditions and execute other aspects of the DMR's mandate will depend on the availability of resources. The Department of Marine Resources (DMR) has begun to address this by hiring over 30 technical staff within recent years. Resources have also been allocated towards the hiring of approximately 37 more technical staff. New staff members are expected to greatly improve the enforcement, data collection and monitoring abilities of the DMR.

The revision of the fisheries act is also expected to support the DMR's efforts to address the Conditions and improve the management of the fishery overall. This includes the mandatory supplying of data from all fishers if necessary and revised fines that act as a greater deterrent to law infringement. The revision of the fisheries act is at an advanced stage.

All activities stated below will be initiated during 2019/2020 except where actions have already been initiated.

2.1 Condition 1

Information needs to be collected such that there is good information on all other fishery removals from the stock (unreported local and foreign IUU catch of spiny lobster in The Bahamas).

2.1.1 Condition 1 Milestones

By the Year 1 audit, a research process would have been developed that is capable of estimating removals from foreign IUU and from unreported Bahamian fishing within the fishery. By the Year 2 audit, the process will have been initiated, with data collection in process. At the Year 3 audit, the initial results will be presented to demonstrate progress. By the Year 4 audit, the data collected will have been analyzed and best estimates of removal from the fishery presented. There should be good information on these "other fishery removals on the stock" by this audit.

2.1.2 Condition 1 Plan

The plan for Condition 1 will address four sources of removals from the stock that are possibly significant but not recorded in commercial catch statistics. These include catches retained for subsistence by commercial fishermen, catches retained for subsistence, sales directly to restaurants that were not previously recorded, foreign recreational fishing and foreign commercial scale poaching.

2.1.3 Subsistence Fishing by Commercial Fishers

At present, in most instances, only commercial catch is recorded by DMR data collectors. During landing site interviews, DMR staff will routinely ask about the quantities of fisheries products retained for personal or family consumption on commercial boats. A form will be created to record the species and amounts that are retained for subsistence.

One concern is the representativeness of the data collected by DMR staff as not all fishers will be sampled. It is expected that an increase in DMR staff throughout the islands will allow for improved sampling coverage. DMR staff will also assist with the development of raising factors. This will be completed by asking officers to estimate or otherwise determine what percentage of fishers they have sampled in their communities. These estimates should be fairly accurate due to the local knowledge of officers in the various communities. Fishers will also be asked where they sell their products to assist with 2.1.4 below.

Vessels smaller than 20ft in length and vessels not suspected of collecting commercial quantities will be targeted opportunistically at landing sites when data collectors inspect commercial fishers. The data collectors will also be asked to make an educated estimate of what percentage of small vessels and subsistence fishers they sample. This will be used to develop a raising factor to estimate the total catch from these sectors.

It should be noted that the draft fisheries act has provisions that enable the Director of Fisheries to make it mandatory that fisheries data is supplied if it is deemed necessary. This includes vessels smaller than 20ft.

2.1.4 Data from Restaurants

DMR staff will conduct interviews at restaurants located in various communities or islands. Restaurant operators will be asked to estimate the amount of lobster and other key species

that have been purchased directly from fishers. Purchases from processing plants will be excluded as this information will already be recorded in processing plant purchase reports. This will be combined with inventory checks. The interviews and checks will be conducted once per year (mid-April to mid-May) at minimum in order to detect year to year variations and to assist with counteracting systematic non-compliance issues such as the possession of fresh crawfish during the summer without permission. The restaurants identified in 2.1.3 by fishers will also inform the sampling design for restaurants in each community. However, restaurants not identified by fishers will also be sampled.

DMR staff in each community will also estimate the percentage of restaurants that they have sampled in order to develop a raising factor to estimate the total amount of lobster sold directly to restaurants by fishers.

2.1.5 Data from Foreign Recreational Fishers

Department of Marine Resources officers will interview foreign vessel operators at marinas and inspect foreign vessels at sea (where DMR vessels exist) as well as in port to estimate how much lobster is caught as well as improve overall enforcement. This will be conducted on a one day per month minimum with greater frequency at hotspots. The frequency of sampling will be evaluated and revised after one year.

The Customs Department will be asked to request that sports-fishing permit applicants complete a voluntary questionnaire to document catches. The questionnaire will focus on amounts caught during the most recent trip, bearing in mind that there isn't a requirement to clear customs when departing The Bahamas and the most recent trip could be months or a year ago. In addition, respondents will be asked to report their catches online after their current trip has been completed. Response rates for both strategies will be evaluated and the best method of collection continued.

The data gathered through interviews by DMR staff and through voluntary completion of questionnaires will be compared for accuracy, representativeness and to evaluate the necessity of continuing both activities or expanding sampling efforts.

Bahamian owned vessels that are rented and used for fishing will also be sampled by DMR staff to estimate how much lobster is caught by this category of fishers.

2.1.6 Data from Foreign Commercial Scale Poaching Vessels

Estimates of total catch by foreign commercial scale poaching vessels will be calculated by using the average catch per interdicted vessel and the total number of escaped or reported vessels using the formula: -

Total catch = average catch per vessel X number of vessels poaching per year X percent of poaching vessels that catch lobster.

The average catch per vessel will be calculated from DMR arrest reports. The arrest reports will also be used to calculate the percentage of poaching vessels that contain lobster. The number of vessels poaching per year will be estimated from Defence Force records. The DMR will formally request that this information is supplied by the Defence Force on a regular basis. An estimate of the percentage of reports that are false alarms will also be attained from the Defence Force. A log of all incidents on DMR files between 2012 and 2017 has already been created.

2.2 Condition 2

For condos, information needs to be collected on the quantity deployed, location of deployment and eventual fate (removed vs. lost) sufficient to i) provide reliable information on the spatial extent of interaction, the timing and location of use of the fishing gear; and ii) to detect any increase in risk to the main habitats (if any) from condo deployment.

For traps, information needs to be collected on the number of traps in use and the main areas of deployment of traps, as well as trap loss rates, for the same purpose.

2.2.1 Condition 2 Milestones

By the Year 1 audit, a research process would have been developed that is capable of estimating spatial extent of the interaction between gears (condos and traps), timing and location of gear use within the fishery. By the Year 2 audit, the process will have been initiated, with data collection in process to demonstrate information gathering on extent of interactions. At the Year 3 audit, the initial results will be presented to demonstrate progress. By the Year 4 audit, the data collected will have been analyzed to give estimate of spatial extent, as well as numbers in use/deployed/lost. There should be adequate information to allow detection of any increase in risks to main habitats in the fishery.

2.2.2 Condition 2 Plan

The plan to address Condition 2 will consist of separate activities that collectively address this Condition. The separate activities will estimate the number of condos in use, the spatial distribution of condos, the number of traps in use, the spatial distribution of traps and the rate at which traps and condos are lost.

2.2.3 Number of condos and change in numbers

Two strategies will be used to estimate the number of condos and change in numbers by year. These include counting of condos that are deployed prior to the start of the lobster season and asking applicants for fishing vessel licences to supply this information at the time of application.

As previously mentioned, there has been an increase in the number of DMR staff members and a further increase is expected. This will facilitate improved data collection to address Condition 2. DMR officers will conduct counts of the number of condos at condo storage and construction sites prior to the start of each lobster season. This will account for newly deployed condos only. However, due to the five year lifespan of condos, the counts of newly deployed condos should reflect all condos in use after five years of counts. Given that condos are likely a low risk to the

environment, summaries of the number of condos in use will be given in 5 year groupings, i.e., summed over five year periods. The initial five-year estimate will take 5 years to be provided as it will depend on the completion of five years of counts. However, additional 5 year estimates can be provided every year thereafter by adding the condos for each additional year and subtracting those deployed six years ago. These estimates can be described by the following mathematical representation.

Number of condos in use in 2024 = condo count 1920 + condo count 1921+ condo count 1922+ condo count 1923+ condo count 1924

Number of condos in use 2025 = Number of condos in use 2024 + condo count 1925 – condo count 1920.

After the initial five years of counts, additional years can also be treated as changes in risk reflected on a year to year basis.

In tandem with efforts to count newly deployed condos at storage/construction sites, applicants for fishing vessel permits will be asked to state how many condos they have in use and how much they will be deploying for the new season. This information will be compared to the condo counts in an effort to evaluate the accuracy of both data streams. It should be borne in mind that the provision of the number of condos in use by fishermen when applying for licences is not mandatory. As such, a raising factor may be necessary and can be estimated based on the percentage of fishers that share information.

There are also plans for processing plants to obtain information from fishers at the time of purchasing fisheries products.

2.2.4 Spatial distribution of condos

During the application process for commercial fishing vessel permits, applicants will also be asked to state where their condos are deployed and where they plan to deploy condos.

Data supplied through catch certificates also has data on fishing grounds. As the use of condos is the most popular fishing method, it is expected that the data on the location of fishing grounds should also represent the relative distribution of condos. Catch certificate data will be analysed to determine the relative number of condos by location. Shifts in the location of fishing effort are also expected to reflect changes in the location of condo deployments.

It is also important to ascertain the risk to the fishery due to lost condos. DMR officers that collect data at landing sites will now routinely ask about and document how many condos were lost. Attempts will be made to ascertain whether the lost condos were due to weather, theft or other causes. Whether or not condos are lost, it will be assumed that all condos deployed are still active as a part of tracking overall risks to the fishery in a precautionary manner. The same assumption will be made when hurricanes displace fishing gear.

2.2.5 Number of traps

Unlike condos, applications are made to the DMR to utilize lobster traps. This allows the number of traps that are used during each season to be tracked. The shortcoming of this method of tracking is that there is no verification of whether the number of traps stated in applications is accurate. To address this issue DMR officers will visit trap construction sites just prior to the opening of the season to conduct counts of the numbers of traps.

The numbers of traps lost during the season will also be estimated through landing site interviews routinely conducted by DMR officers. It is also expected that processing plants will assist with the collection of this information at the time they purchase lobsters from fishermen.

2.2.6 Spatial distribution of traps

Similar to efforts to attain the numbers of traps in use, the spatial distribution of traps can be attained from applications to use traps submitted by fishermen. This information will also be compared with information from catch certificates.

2.3 Condition 3

Information needs to be collected on the quantity deployed, location of deployment and eventual fate (removed vs. lost) of condos, sufficient to evaluate the on-going risk and detect any increase in risk level (if any) to ecosystems from condo deployment.

2.3.1 Condition 3 Milestones

By the Year 1 audit, a research process would have been developed that is capable of estimating risk to the fishery ecosystem from condo deployment, use and removal. By the Year 2 audit, the process will have been initiated, with data collection in process to demonstrate information gathering on condo deployment and use in the fishery Score. At the Year 3 audit, the initial results will be presented to demonstrate progress. By the Year 4 audit, the data collected will have been analyzed to give estimate numbers of condos in use/deployed/lost/recycled. There should be adequate information to allow detection of any increase in ecological risks in the fishery.

2.3.2 Condition 3 Plans

The plans to obtain data to address Condition 2 are expected to also address Condition 3.

2.4 Condition 4

The monitoring, control and surveillance system needs to be improved such that there is no evidence of systematic non-compliance (systematic, wide-scale IUU; and other non-compliance / non-enforcement issues).

2.4.1 Condition 4 Milestones

Year 1: Engagement with other organizations (police, judiciary) on the issue of enforcement and sanctions for landing of undersized lobster. On-going at-sea enforcement efforts against IUU. Review of regulation and practices which are not currently aligned in the fishery. Year 2: Agreement on appropriate enforcement and sanctions for non-compliance with lobster

management regulations. On-going at-sea enforcement efforts against IUU. Consultation process to investigate and discuss options for alignment of regulations and practice (for example in relation to use of compressors by depth). Year 3: Evidence that agreed sanctions are being implemented. On-going at-sea enforcement efforts against IUU. IUU risk assessment underway. On-going consultation to discuss options for alignment of regulations and practice (for example in relation to use of compressors by depth). Year 4: IUU risk assessment shows improvement compared to baseline data established. Agreement on changes to regulations and/or practice to avoid systematic non-compliance by the UoA (e.g. in relation to use of compressors by depth).

2.4.2 Condition 4 Plan

Revision of the fisheries act has advanced significantly since July 2018. Thus has been significant engagement with the fishing industry as well as law enforcement agencies, the Attorney General's office and NGOs to revise the fisheries act. This includes revisions aimed at aligning penalties with the severity of offences. The draft act is at an advanced stage of revision and the Ministry of Agriculture and Marine Resources continues to urge that the revision of the act be completed.

The Department of Marine Resources has also significantly increased its compliment of officers and will soon further increase the number of officers as previously mentioned. Over 30 new officers from throughout the islands have been trained in various aspects of law enforcement related to the fisheries act and the Marine Mammal Protection Act. The level of monitoring has already increased and further improvements are expected. A consequence of this will be improved detection of law infractions on land and at sea as well as improved compliance. At sea detections are also expected to be bolstered by the acquisition of new patrol crafts. Two have been acquired over the last year and sent to critical locations. Funds have also already been identified to obtain an additional craft during the current budget year. The Defence Force also has comprehensive plans to improve interdiction capabilities. These will not be described here.

There have also been a series of fisheries related law enforcement workshops conducted on a number of major islands with the assistance of NGOs. These involved the simultaneous education of DMR officers as well as local law enforcement groups including the Defence Force and Royal Bahamas Police Force. This includes a major workshop hosted by the Defence Force and BREEF. Multi-agency enforcement operations have also increased with additional efforts planned.

The law pertaining to depth restrictions for the use of the compressor remains in place and is expected to be enforced. Nonetheless, discussions within the BSLWG have been initiated to explore whether the restriction should remain and the form it should take. There are also plans to have the newly active Fisheries Advisory Council also consider this issue. The public has also been advised that the depth restrictions for compressor use are in effect.

3.0 Conclusion

Based on the human resources available to the DMR, the above-described plan can largely be completed. Nonetheless, the plan can be executed with greater efficiency and greater ease with additional training as well as resources, especially vehicles and vessels. The DMR will continue to make improvements in these respects. The DMR will also continue to work closely with partner organizations.