Clarification on México Yucatán Peninsula Blue Crab (*Callinectes sapidus*)– dipnet-pot/trap transition scores to MSC v2.0

A preliminary Assessment of the Fishery against the MSC & criteria for Seafood Watch ratings was developed by sustainability Incubator in 2013. The final report was received before the MSC CR version 2.0 were released to the public on 1st October 2014 and became effective on 1st April 2015 (see MSC CR v.2.0, page 6).

The MSC CRv2.0 brings the change of assessing non-target species depending on whether they are under management (primary) or not (secondary), instead of on whether they are retained or discarded. Therefore, old Performance Indicators related to components 2.1 (retained non-target species) and 2.2 (bycatch species) had to be re-assessed in order to have scores that reflect the situation of the fishery against the current requirements.

Given all the above, the decision was made to use a precautionary approach when transitioning scores from v1.3 to 2.0: The scores of similar PIs in the Retained and Bycatch components in the original MSC PA were compared, and the most precautionary score was taken as valid for both the Primary and Secondary PIs. In this way, scores are never overestimated.

Primary Species

The blue crab fishery in the Yucatan Peninsula is a single species *fishery* based on *Callinectes sapidus*. This species has a broad latitudinal distribution, from Nova Scotia, to northern Argentina including Bermuda, the West Indies and Carribbean Sea (FAO Species Fact Sheets, accessed July, 2019). The bycatch using rings and scoops (dipnets) is practically nonexistent (Seafood Watch, 2018).

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Traps & dipnets used by fishermen

The species mentioned as "retained" in the pre-assessment report (2013) is *Menippe mercenaria*, though report mentions also *Callinectes rathbunae* (Sharptooth swimming crab) as part of the catches.

The pre-assessment report (2013) establishes that bycatch is minimal and no species listed on the IUCN are caught, but no species are mentioned.

According to MSC v 2.0 primary species are those where management tools and measures are in place, intended to achieve stock management objectives reflected in either limit or target reference points.

Catches of *Menippe mercenaria* (cangrejo moro) are regulated by mexican law NOM-045-PESC-2007, (published in 30/09/2010); and its Proyect of Modification (published in 24/07/2015). Nevertheless, this law does not include limit or target reference point so *Menippe mercenaria* can not be considered as Primary species. *Callinectes rathbunae* (jaiba prieta or Sharptooth swimming crab) is mentioned as an associated species (DOF, 2018) but there is no limit or target reference point established. Thus, none of these species can be considered as Primary. Concluding that there are no Primary species for the blue crab fishery.

Since there are no species considered as Primary species, Performance Indicator of Primary species management (PI 2.1.2) would score GREEN instead of not being scored.

Primary species information is scored YELLOW instead of GREEN considering a precautionary approach in order to improve the information about non target species.

This gives as a result the scores provided in the Indicator Section of the FIP profile available online at FisheryProgress.com, as follows:

- PI 2.1.1 GREEN staying WITHOUT CHANGE
- PI 2.1.2 GREEN instead of NOT SCORED
- PI 2.1.3 YELLOW instead of GREEN

Secondary Species

Since *Menippe mercenaria* and *Callinectes rathbunae* are not Primary species, they are considered as Secondary species.

Catch composition of the fishery is not updated. However, some qualitative information is available through the FIP. Species reported in the reception center of the FIP are. *C. rathbunae*, and *C. similis* (pata seca).

When fishermen find *Callinectes similis* it is discarded alive in the fishing ground, since it has no commercial interest. However, sometimes it can be seen in the reception center either dead or alive where it is released in very small quantities.

According to fishermen, *C rathbunae* is found in some areas of the fishing grounds, during some months of the year. Due to its dark color, this is not an objective species, nor intentionally caught, though sometimes it manages to arrive to the processing plant in very small quantities (less than 1%). Available Official information of *C. rathbunae* catch composition is reported for 2006 as around 8% of total catches. *C. rathbunae* is recognized by fishermen and it is known locally as "jaiba prieta".

Most of the catches is released alive. It includes some crabs, hermit crabs, and small fish. When caught, small fish sometimes are used as bait.

Occasionally, it has been observed some fishermen to have less than five Menippe mercenaria crab hands hidden in their boats. Fishing license for this species is rare so these catches are illegal for most fishermen, thus, this is uncommon to find.

Diamondback terrapins are not distributed within the FIP area, so there is no impact of the fishery on terrapin populations.

Since quantitative information is needed to determine without any doubt if species found in the catches are Main or Minor Secondary species but it is likely to be above biologically based limits PI 2.2.1 would score YELLOW.

Currently, there is no management strategy in place for species that could be considered as Secondary within this fishery. In the case that no secondary species are retained, management strategy should not be required at the 80 level. However, further evaluation is needed. Bycatch strategy is rated as "highly effective" for these fisheries (Seafood Watch, 2018). Therefore, using the precautionary approach this PI would score YELLOW instead of GREEN.

A catch composition program is currently being implemented to confirm the amount of retained and impact of the catch on these species thus until preliminary results are obtained PI 2.2.3 would not be scored.

- PI 2.2.1 YELLOW instead of GREEN
- PI 2.2.2 YELLOW instead of GREEN
- PI 2.2.3 **NOT SCORED** instead of GREEN

Images of some species found in the catches, most of them are delivered alive to the fishing ground, thus can not be considered as retained species. Fish may be used as bait.

ETP Species

The pre-assessment report (2013) establishes that bycatch is minimal and no species listed on the IUCN are caught, but no species are mentioned. The most recent official report from managers was developed in 2006. No interactions with ETP were reported (in Flores Moreno, 2018) nor observations of the FIP have found ETP interactions. Other articles about the fishery confirmed that no interactions with ETP occur within the fishery. The bycatch using rings and scoops (dipnets) is practically nonexistent and it was rated as highly effective (Seafood Watch, 2018).

Given all of the above, following a precautionary approach, scores are changed as follows.

- PI 2.3.1 GREEN instead of NOT SCORED
- PI 2.3.2 GREEN instead of NOT SCORED
- PI 2.3.3 YELLOW instead of NOT SCORED

Habitat & Ecosystem

Blue crab species live in sandy and muddy habitats. Pot traps, ring traps and dipnets have been found to have a low impact on the physical and biological structures on the seafloor, with minimal dragging on the bottom (Balmori et al. 2012; Nakamura, et al. 2013; Flores Moreno, 2018: Seafood Watch, 2018; among others),

A study developed in one of the most important blue crab fishing areas known as Sabancuy did not found interactions within the fishery and the habitat as a major factor of vulnerability (Gonzales & Torruco, 2001).

Traps, ring nets and dipnets are fishing gears that are not dragged along the bottom and are not used on sensitive habitats, scoring as (3) Moderate Concern in Criterion 4 of Seafood Watch criterion. (Seafood Watch, 2004 & 2018)

Giving all of the above, it is highly unlikely that the UoA reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm. Thus PI 2.4.1 scores would score SG 80 (GREEN).

Current regulations in swimming crabs of the Gulf of Mexico are the number of permits allowed and the characteristic gears used. Since there are measures in place, that are expected to achieve Habitat Outcome 80, since the impact of the fishery seems to be minimal, and are considered likely to work, based on general experience, but there is not a partial strategy in place PI 2.4.2 would score SG 60-79 (YELLOW).

The ecological conditions of the Sabancuy estuary (Gonzales and Torruco, 2001) and Laguna de Términos (Ramos et al, 2015) have been described along the years in regard of species distribution, ecology, habitats. The interactions of the fishing gears and the habitat have not been identified as a major factor of vulnerability. Instead, coastal development and pollution have a significant role. Thus, the types and distribution of the main habitats are broadly understood, & information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including special overlap of habitat with fishing gear. This PI 2.4.3 would score as 60-79 (YELLOW).

Given all of the above, following a precautionary approach, scores are changed as follows.

- PI 2.4.1 GREEN instead of NOT SCORED
- PI 2.4.2 YELLOW instead of NOT SCORED
- PI 2.4.3 YELLOW instead of NOT SCORED

The most important area of the fishery is located in Laguna de Términos, Campeche. Since the 80´s, several studies reported fish species and its changes along time in the area. These studies suggest that changes are driven by the industrial, agricultural and livestock increase in the area. Arreguin-Sanchez and Arcos-Huitron (2011) described the Campeche bank ecosystem and its role in fisheries dynamic, but did not mention specifically if crab fishery may drive changes in the ecosystem although mentioned food web impacts due to this fishery are not apparent, thus detrimental food web impacts are not likely. There are no policies in place to protect species´ ecological roles and ecosystem functioning, however detrimental food web impacts are not likely. Seafood Watch (2004 & 2008) rated Criterion 4 as Moderated Concern.

Ecosystem PI`s are not rated. Even though there is information about the fishing area including trophic structure and function, biodiversity, community composition among others, there is no information that specifically addresses the potential impacts of blue crab fishery. Therefore, more information is needed in order to score PI 2.5.1, 2.5.2, & 2.5.3

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