Great Hammerhead Shark Status Review Report: ID266

Peer Review Comments

We solicited review of the Draft Great Hammerhead Shark Status Review Report from five potential reviewers. Three people agreed to be reviewers and provided reviews. Reviewer comments are compiled below from comments on drafts of the manuscript and are not in the order of the reviewer identification list below.

Reviewers (listed alphabetically):

Mr. Mika Diop
Program Office at SRFC;
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General Comments

Reviewer #1:

I read the report and once again it was a very thorough piece of work. I had no issues with the analysis and all the references seemed up to date. I do find it a little concerning that a species for which we know has high post-release mortality is so data deficient especially with regards fishing pressure, but the team has gathered all the available data.

This has been a very thorough review of the status of the great hammerhead and contains the latest and most up to date published information (as far as I am aware). The review team provided good evidence that the historical population size of the great hammerhead has always been naturally low. My only concern is the uncertainty in terms of the fishing pressure faced by this species is low and when combined with the high post-release mortality, this species may face higher risk than predicted. The review team has addressed this as thoroughly as possible, but

note the lack of data for some of this evaluation. One last question: how does this status report tie in with the just published paper on extinction risks faced by elasmobranchs (Dulvy et al.,)?

Reviewer #2:

For a species with data poor fishery information, the report on the assessment of extinction risk acknowledges the deficiency in the data, and the uncertainties around the data. The uncertainties were clearly accounted for as can be seen by the precautionary approach taken on the overall risk summary. In which most of the weight is given towards the lower values.

Reviewer #3:

The Status Review report and Assessment of Extinction Risk are well done and supported by good and practical scientific and commercial information. Based on that, the results and conclusions are supported by the best available scientific and commercial information.

Specific Responses to Terms of Reference Questions

Reviewer #2:

Status Review of the Great Hammerhead Shark
Evaluate the adequacy, appropriateness and application of data used in the Status Review document.

1. *In general, does the Status Review include and cite the best scientific and commercial information available on the species, its biology, stock structure, habitats, threats, and risks of extinction?*

The reviewer was provided with an ample volume of complete references regarding information on the available science and commercial information on *Sphyrna mokarran*, as well as from other hammerhead shark species.

In the reviewer's opinion, this Review Report included and cited information available on the species, its biology, stock structure, habitats, threats, and risks of extinction. It was noted throughout the report that there is very limited information on most of the critical aspect in the life history of *S. mokarran*, as well as commercial data. The author compensated this deficiency of information with the available information from other hammerhead shark species that would allow inferring on critical information when it was absent or sketchy for *S. mokarran*.

2. *Are the scientific conclusions factually supported, sound, and logical?*

It is not clear what is meant by "…scientific conclusions …."; because in the sections on Life History, Distribution, and Analysis of the ESA, this Review Report provides an account of scientific facts supported by the literature review that are sound and logical, but it is missing the scientific conclusion of those accounts. The only scientific conclusion that is factually

supported, sound and logical is the one that appears as the last paragraph on **Reproduction and Growth** (page 6)**, Demography** (page 7). Also, regarding maturity in Table 1, the L_{50} estimate should be stated where appropriate, in cases where a range of sizes is given, a clarification of what is mean by that would help. This Review Report would benefit if this type of conclusion were expressed in the different sections, in particular, summarizing reproduction information (*i.e.*, maturity and fecundity) which is important in ERA's.

An additional comment is that the Report should reconcile the measuring scales (*i.e.*, Metric and English/American). It would be advisable to use the equivalent measure in parenthesis when appropriate. It confuses the reader when it shifts from using the metric system and then later in the document offering figures in inches or pounds.

3. *Where available, are opposing scientific studies or theories acknowledged and discussed?*

In those occasions when opposing scientific studies or theories when encountered the Report acknowledges and discussion was fulfilled to the extent possible.

4. *Are uncertainties assessed and clearly stated?*

In general, uncertainties were acknowledged and in most cases were stated. However, Table 1 would benefit if variability around point estimates were provided.

Assessment of Extinction Risk for the Great Hammerhead Shark
Evaluate the findings made in the Assessment of Extinction Risk.

1. *Are the methods used for the Extinction Risk Analysis valid and appropriate?*

   Yes, the methods used for the Extinction Risk Analysis valid and appropriate.

2. *Are the results and conclusions of the Extinction Risk Analysis supported by the information presented?*

   Yes, the results and conclusions of the Extinction Risk Analysis supported by the information presented.

3. *Are uncertainties assessed and clearly stated?*

   Yes, the uncertainties were considered and clearly stated.

Reviewer #3:

Status Review of the Great Hammerhead Shark
Evaluate the adequacy, appropriateness and application of data used in the Status Review document.

1. *In general, does the Status Review include and cite the best scientific and commercial information available on the species, its biology, stock structure, habitats, threats, and risks of extinction?*

The Status Review includes and cites the best available scientific and commercial information on the Hammerhead Shark, *Sphyrna mokarran,* particularly for the West Africa Coast.

2. *Are the scientific conclusions factually supported, sound, and logical?*

The scientific conclusions are factually supported and logical because they are based on correct and practical available information.

3. *Where available, are opposing scientific studies or theories acknowledged and discussed?*

(No response)

4. *Are uncertainties assessed and clearly stated?*

All uncertainties are assessed and well-stated.

Assessment of Extinction Risk for the Great Hammerhead Shark
Evaluate the findings made in the Assessment of Extinction Risk.

1. *Are the methods used for the Extinction Risk Analysis valid and appropriate?*

   The methods for the Extinction Risk Analysis are scientifically acceptable and appropriate.

2. *Are the results and conclusions of the Extinction Risk Analysis supported by the information presented?*

   The results and conclusions of the Extinction Risk analysis are very well supported by the presented information.

3. *Are uncertainties assessed and clearly stated?*

   All uncertainties are clearly assessed and stated.

Editorial Comments

Reviewer #2:

Page 11, in Trinidad and Tobago as well as in eastern Venezuela the majority of the hammerhead shark trunks commercialized in local markets is *S. lewini.* This species is commonly caught by artisanal fisheries from both countries fishing in the Gulf of Paria and off the Orinoco river delta.

In the subsection on **Disease or Predation** should include a comment on the predation on juveniles and in nursery areas; as well as a comment on potential degradation of nursery areas.

In Tables 11, 12 & 13, the source: HSI 2012 is non-existent in the References. Do not know what it means. In this regard, for Tables 11 and 13, you may want to include Venezuela's recent Regulation on Shark fisheries that entered in force on June 2012 and appeared in the Venezuelan National Gazette (≈ US Federal Register), attached.

Figure 40 is very illustrative, but is there a similar map showing the decline after 2006?

The last paragraph in page 78 seems vague for a paragraph that is the end of the section. The Report should offer a sound and full summary of sound conclusions.

<u>Reviewer #3:</u>

I propose that you should add scientific information for West Africa (abundance indices) on page 39. Independent data (research direct surveys data) in Mauritania showed that the abundance indices declined drastically (Dia et al. 2012) [add Figure: Change in average abundance indices (Kg/30mn) of genus *Sphyrna sp in* research surveys in Mauritanian waters from 1982 to 2010 from (Dia et al. 2012)].

I also made a suggestion on the table 13, in page 76:

Guinea-Bissau	2009	Ban on shark fishing in Marine Protected Areas (two parks covering 2,077 km^2).