

How we can further develop a risk assessment framework for fisheries species and then apply the framework to fished shark species.

Marine Theme Objective: Human pressures and impacts on the marine environment

What's the problem?

Over-exploitation of fish species has been identified as the dominant direct driver of biodiversity loss in the marine environment. The limitation of fisheries management alone to protect fish stocks has led to increasing calls from for the application of multilateral environmental agreements (MEAs), such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS), to support the management of marine species. It is in this context that the Joint Nature Conservation Committee (JNCC) identified the need for a systematic review of commercially exploited fish species in order to identify those species for which the application of CITES or CMS may make a tangible difference to conservation and sustainable use.

What are the aims of the project?

This project will combine results of an assessment of intrinsic risk to sharks with the actual risks under fisheries management in place. The results will identify species most at risk and the areas of management that could be addressed to reduce this risk. The assessment of management and compliance will be developed to ensure transparency in scoring. It will also allow for assessments to be repeated in future years to assess whether changes in management have reduced the risk.

The method developed will be available to apply to other marine taxa, but the risk ratings found for each of the species assessments conducted as part of this project should be regarded as preliminary, pending further consideration by experts in the science and management of those species / stocks.

The outputs of this work, and earlier work through JNCC (Sant *et al.*, 2012 & Oldfield *et al.*, 2012) can then be considered during subsequent meetings of relevant MEAs with a view to guiding governments in their efforts to assess and identify aquatic species in trade that are at risk of over-exploitation and determine the most effective ways of reducing that risk.

The project develops further a method of assessing the risk of over-exploitation for aquatic species in trade. The output will be a written report for publication. It is anticipated that this report, like the earlier work, will be shared with certain MEAs such as CITES and CMS, and further distributed to the main audience which is the governmental resource management policy sector.

Figure 1: Oceanic whitetip shark *Carcharhinus longimanus* and Pilot Fish, Central Pacific Ocean

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Which policy areas will the research inform?

This project will provide a framework for identifying priority species and help target management action. It is intended to promote the assessment and revised methodology for application under different MEAs such as CITES and CMS which routinely identify species which might be a priority for consideration for additional measures.



Department
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What are the results from the project and how will they be used?

The results of this project will:

1) Develop a transparent exposure risk assessment framework, based on the discussions at the Aberdeen peer review workshop (Fleming *et al.*, 2012) and test this by application to one taxonomic group (sharks are the identified candidate group) for exposure (generating a score based on the scale of the fishery as well as the value (and other related factors) and then combine that score in a meaningful (weighted) way with a score for management and compliance risk (M-Risk). The M-Risk will be assessed on the basis of factors such as:

- Is there a stock assessment?
- Are there appropriate management controls to constrain catch levels?
- Are scientific recommendations on catches adopted and implemented?
- Are there compliance measures to address IUU fishing?
- Are harvest rates reduced appropriately at low stock sizes?
- Are landings monitored?

2) Produce draft exposure case study assessments for five species (Porbeagle *Lamna nasus*, Scalloped Hammerhead *Sphyrna lewini*, Oceanic Whitetip *Carcharhinus longimanus*, Spiny Dogfish *Squalus acanthias* & Kitefin *Dalatias licha*). These would be in a format that is brief (two pages) and summarises the rationale for the assessment against each M-Risk factor.

3) Convene two day workshop with invited experts to consider the framework and case study assessments to finalise the framework structure and scoring method and review the five draft exposure assessments in order to guide development of the exposure risk assessment framework.

4) Assess the remaining 42 medium and high risk species identified in the assessment of intrinsic risk of sharks (Oldfield *et al.*, 2012) against the revised exposure risk assessment framework (developed in 3) to assess overall risk.

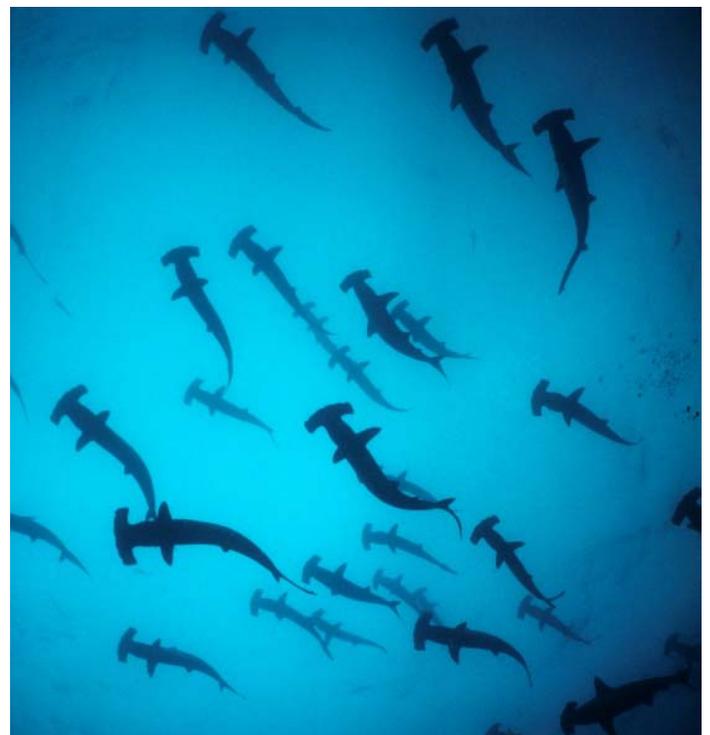
5) Produce a written report with the findings from 1 - 4 above and include a chapter discussing how combining a vulnerability and exposure assessment of risk can inform risk management.

References

Sant, G., Goodman, G., Crook, V., Lack, M. and Oldfield, T.E.E. (2012). *Fish and Multilateral Environmental Agreements: developing a method to identify high risk commercially-exploited aquatic organisms in trade and an analysis of the potential application of MEAs*. JNCC Report No. 453. Joint Nature Conservation Committee, Peterborough. Available at <http://jncc.defra.gov.uk/page-6120>

Fleming, L.V., Goodman, G., Williams, J., Crook, V., Littlewood, A., Oldfield, T. and Sant, G. (2012). *Fish and Multilateral Environmental Agreements: developing a method to identify high risk commercially-exploited aquatic organisms in trade and an analysis of the potential application of MEAs. Report of an expert review workshop: Aberdeen, Scotland - 26 & 27th September 2011*. JNCC Report No. 453 Addendum. Available at <http://jncc.defra.gov.uk/page-6120>

Oldfield, T.E.E., Outhwaite, W., Goodman, G. and Sant, G. (2012). *Assessing the intrinsic vulnerability of harvested sharks*. JNCC. Available at: <http://www.cites.org/common/com/AC/26/E26-09i.pdf>



Where can I find further information about this and related research?

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Alternatively, please contact Defra's Marine and Fisheries Science Unit:

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