



ANALYSIS OF DATA ON HAMMERHEAD ABUNDANCE, DISTRIBUTION AND HARVEST IN AUSTRALIAN FISHERIES SINCE IMPLEMENTATION OF THE 2014 HAMMERHEAD SHARK NON-DETRIMENT FINDING.

- Three species of hammerhead shark, scalloped hammerhead shark (*Sphyrna lewini*), great hammerhead shark (*S. mokarran*) and smooth hammerhead shark (*S. zygaena*), became listed under Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in March 2013. The listings came into effect on 14 September 2014.
- Before an Appendix II listed species may be exported, the CITES Scientific Authority of the country of export must determine that the proposed export will not be detrimental to the survival of the species. This is referred to as a non-detriment finding (NDF).
- The Australian CITES Scientific Authority within the Department of Environment and Energy (the Department) made a non-detriment finding (NDF) covering hammerheads in September 2014. This NDF was published on the Department's website and is available to the public¹.
- The executive summary of the NDF states that it "is made for a period of three years from 14 September 2014 unless reviewed earlier". This has set an expectation that the Australian CITES Scientific Authority will review the NDF in 2017.
- The NDF goes on to say "...if further information on individual species abundance, distribution and harvest becomes available through a review of trade data, ecological risk assessment or through research projects, the harvest levels contained in this NDF may be reviewed".

Harvest data and management information

- In August 2016 the Department contacted state, territory and Commonwealth fisheries agencies to determine if any additional information has been obtained on hammerhead shark distribution and abundance. The request also asked for information on any new management practices put in place by each jurisdiction that would affect hammerhead shark stocks (A summary of actions undertaken by each jurisdiction is provided in Annex 1).
- All jurisdictions provided updated catch figures for hammerheads. Catch figures are not directly comparable across jurisdictions as the Australian Fisheries Management Authority (AFMA) (Commonwealth fisheries) and Western Australia have reported by financial year while all other jurisdictions have reported by calendar year.
- National catch figures cannot be completely attributed to the species level with an acceptable level of certainty as the data supplied by Queensland, Western Australia and Commonwealth managed fisheries include the category 'unspecified hammerhead species'.
- South Australia reported all catch to species level (as only smooth hammerheads are known to occur in this jurisdiction). The Northern Territory reported aggregate figures for great and smooth hammerhead sharks with a statement that the two species are estimated

¹ Non-detriment finding for five CITES Appendix II shark species - <http://www.environment.gov.au/biodiversity/wildlife-trade/publications/non-detriment-finding-five-shark-species>

to be caught in found in equal abundance. Queensland, Western Australia and Commonwealth Fisheries reported to species level where possible with the rest of their catch data attributed to hammerheads as a group (unspecified hammerhead species). Catch for each jurisdiction by species is given in attached Annex 1.

- Take of great and scalloped hammerheads has substantially decreased over time since 2012 in the Northern Territory. Take of scalloped and unspecified hammerhead species in Queensland decreased from 2006/07 to 2010 and has remained at this level to date. Smooth hammerhead take in South Australia has remained at a very low level and has not changed significantly over time. The take of smooth hammerhead in WA has remained relatively stable from 2004/05 to 2014/15 averaging at 61.5 tonnes per year.
- The national annual catch total of each species falls below the relevant limit set in the NDF (Figure 5 of Annex 1).
- Queensland reported the largest proportion of unspecified hammerhead species catch, accounting for 95% of national unspecified catch by volume since the NDF came into effect. As smooth hammerheads only occur in subtropical and temperate seas (as far north as Brisbane, Queensland and Geraldton, Western Australia), the unspecified hammerhead catch in Queensland is more likely to be either from scalloped or great hammerhead. If the majority of unspecified hammerhead take is not attributable to smooth hammerhead this means take is below the harvest limit for each year set under the NDF since it came into effect.
- If the national unspecified hammerhead take is completely attributed to either scalloped or great hammerheads the take is still below the harvest limit set by the NDF for both species.
- Some states and territories have begun to reform management practices, but these are yet to be formalised and implemented. These reforms should provide improved certainty in reporting of catch and discards.

International trade export data

- Acquitted Australian export permit data for the three hammerhead species from September 2014 (the date of listing) to March 2017 was provided by Australian CITES Management Authority (Figure 6 of Annex 2).
- Exported product was reported to be almost entirely made up of fins of scalloped, great and smooth hammerhead shark. A small number (12 specimens) of live scalloped hammerhead shark were exported from Australia to the United Arab Emirates during this period.
- With the exception of the live export to the Arab Emirates, trade data showed that all other hammerhead exports are fins shipped to Hong Kong. Total export of great hammerhead fin from 2014/15 to 2016/17 is reported as 1400kg. The exports have shown an increasing trend: 140kg in 2014/15, to 550 kg in 2015/16 and then 720kg in 2016/17. Total export of smooth hammerhead was around 70kg: 65kg exported in 2015/16 and only five kg exported in 2016/17. Scalloped hammerhead fins were only reported as exported in 2016/17; a total of 140 kg.
- Permit holders must demonstrate that exported hammerhead products are legally sourced from a managed fishery. However, the current permit system does not allow reliable

reporting on the fishery of origin of exported fins. The CITES Management Authority of Australia is considering mechanisms to improve the traceability of exported hammerhead shark fin.

Research undertaken since the listings came into place

- A project was undertaken by the National Environmental Science Programme (NESP) Marine Biodiversity Hub on establishing the status of Australia's hammerhead sharks. The project report delivered in December 2015 found that, based on the current data, it is unclear how much individuals move between regions and what is causing differences in size and sex class distributions. This lack of data precludes any estimation of connectivity within and beyond Australia.
- A stock assessment of whaler and hammerhead sharks in Queensland was undertaken by The Queensland Department of Agriculture and Fisheries. The assessment included data on the species composition of commercial shark catches collected as part of the Fishery Observer Program (FOP) which was run by Fisheries Queensland between 2006 and 2012. The report highlighted concerns about data quality and the availability of data on shark discard rate. The report recommended future stock assessments would benefit from improved catch composition data. An independent review of the assessment commissioned by the Queensland Department of Agriculture and Fisheries found that given concerns over existing catch data, results should be treated with caution. The review further recommended that there should be no increase in total take of sharks in QLD until a more reliable data set is collected and assessed.
- No other significant relevant research was undertaken since the NDF was made in September 2014.

Conclusion

There has been some effort through projects undertaken by NESP and the Queensland Government to obtain additional information on hammerhead shark stock levels. Those studies found that there is not yet enough data to have confidence in population models for hammerhead shark species in Australian waters and more broadly in the Asia Pacific region.

Due to the low volume of export in these species to date, none of the catch figures exceeding NDF limits, lack of confidence in population data that has become available since the 2014 NDF was made and limited changes in available information since 2014, the Department has decided that a review of the NDF is not warranted at this time.

Recommendations

As insufficient new data to have confidence in hammerhead shark population models or stock assessments has been produced, the 2014 NDF should be extended until such time as relevant additional information becomes available, or until it is otherwise decided to review the NDF.

To provide a greater level of certainty around harvest levels jurisdictions should ensure records of hammerhead take are given at the species level. This should be reflected in the conditions of relevant Wildlife Trade Operations for fisheries approved under the *Environment Protection and Biodiversity Conservation Act 1999*.



Annex 1

Table 1. Summary of Actions of jurisdictions on hammerhead shark management since the 2014 NDF came into place.

	NT	QLD	SA	WA	Commonwealth (AFMA)
2014	<p>Major review of management arrangements.</p> <ul style="list-style-type: none"> - Development of management plan in consultation with industry - NESP Hammerhead stock structure project participation 	<p>QLD DAF commissioned assessment of shark stocks</p>	<p>No changes to management arrangements (The South Australian Research and Development Institute (SARDI) has not undertaken an assessment of the hammerhead shark population due to negligible catches).</p>	<p>Status of four indicator species given as adequate/sustainable (gummy and whisky sharks) and recovering (sandbar and dusky sharks).</p> <p>Draft harvest strategy produced as part of the Marine Stewardship Council (MSC) (Formalising the harvest strategy is being considered).</p> <p>A constant catch harvest strategy has been developed to avoid recruitment overfishing.</p>	<p>No information on changed management arrangements provided.</p> <p>Take has reduced further since NSW ban on the sale of hammerhead shark (approx. 5 t per year).</p>
2015	<p>Stock assessment of whaler and hammerhead sharks in Queensland published (Agri-science Queensland – QLD DAF)</p> <p>QLD DAF commissions independent review of stock assessment report</p>	<p>McAuley et al 2015 states that the four indicator species above may be used as an indicator of hammerhead stocks.</p>			
2016	<p>Desk review of Queensland shark stock assessment for fisheries Queensland.</p> <p>QLD Government releases green paper on fisheries management reform.</p> <p>ECIFFF WTO approved by DoEE.</p>				

Annex 1 – Reported commercial catch data of hammerhead sharks in Australian waters

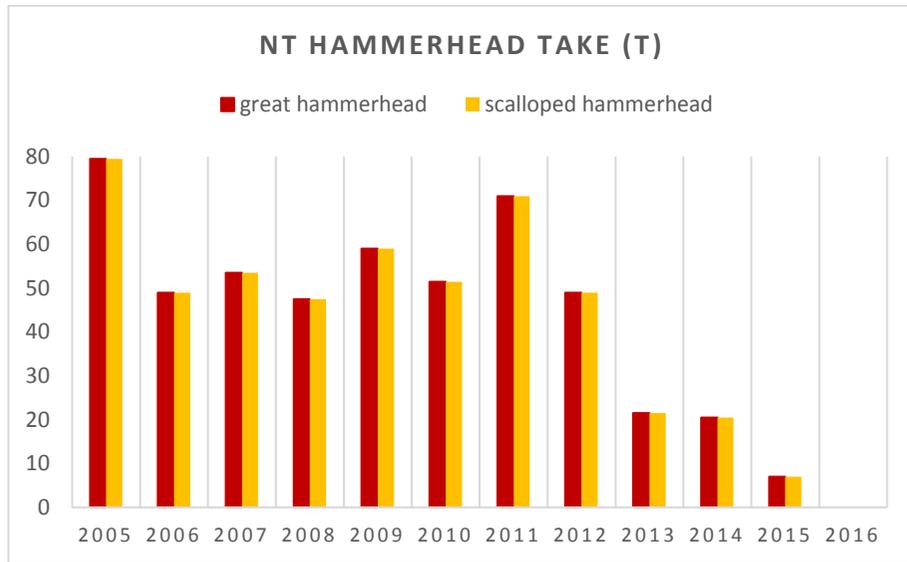


Figure 1. Take of great and smooth hammerhead in NT (2005 to 2015)

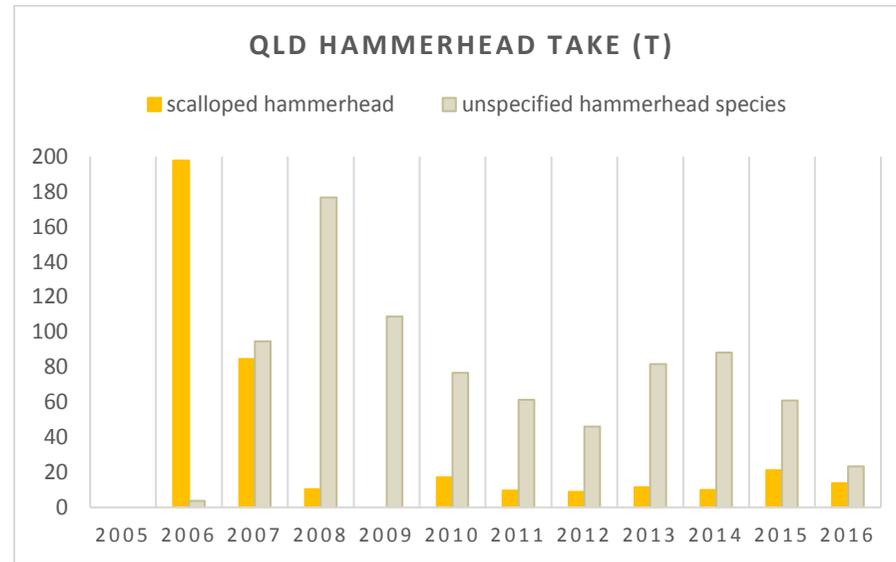


Figure 2. Take of scalloped and unspecified hammerhead in QLD (2006 to 2016)

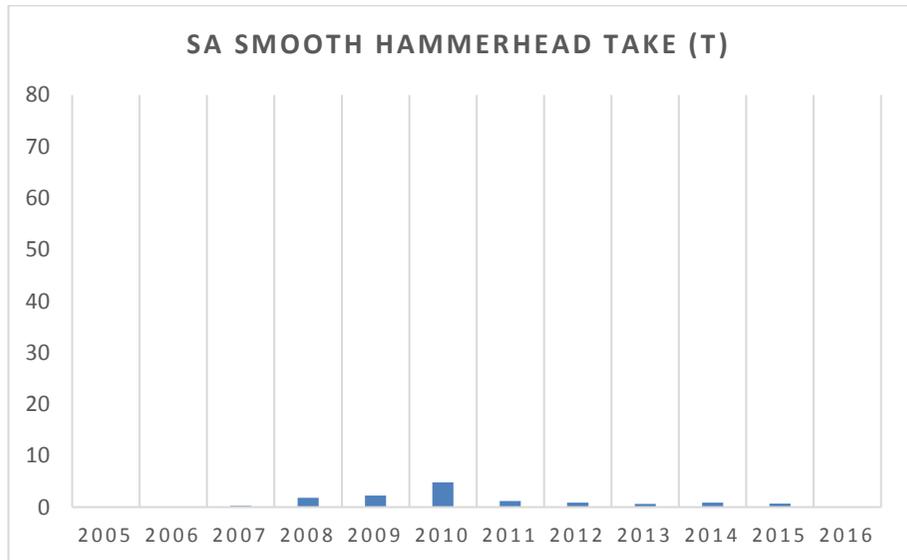


Figure 3. Take of smooth hammerhead in SA (2008 to 2015)

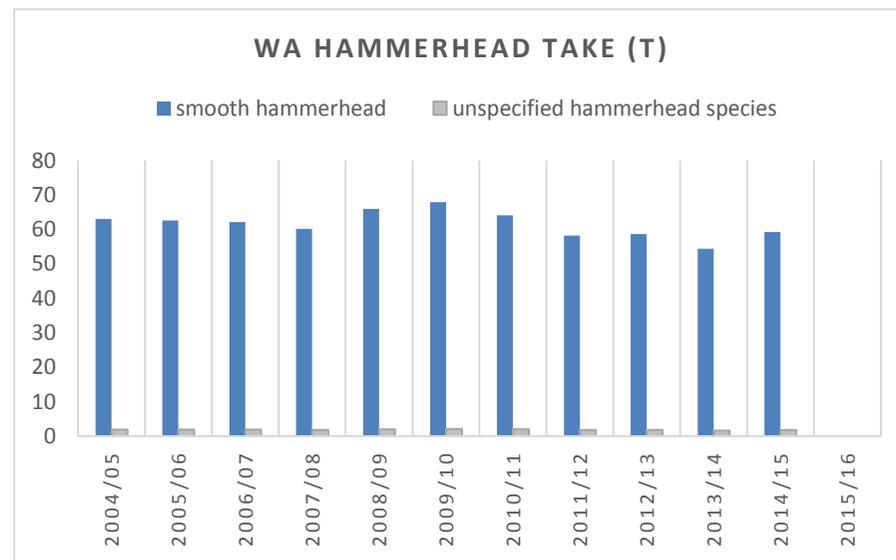


Figure 4. Take of smooth and unspecified hammerhead in WA (2004/05 to 2014/15)

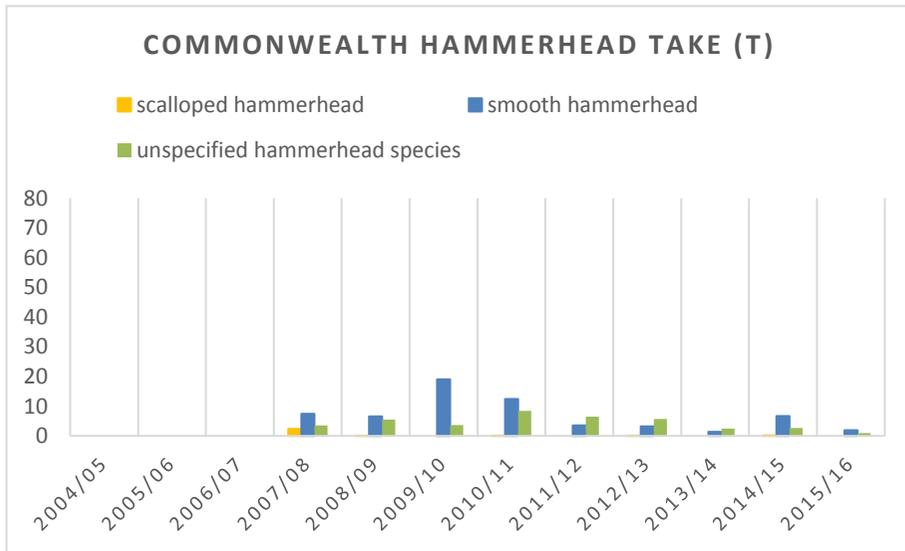


Figure 4. Take of scalloped, smooth and unspecified hammerhead in Commonwealth fisheries (2007/08 to 2015/16)

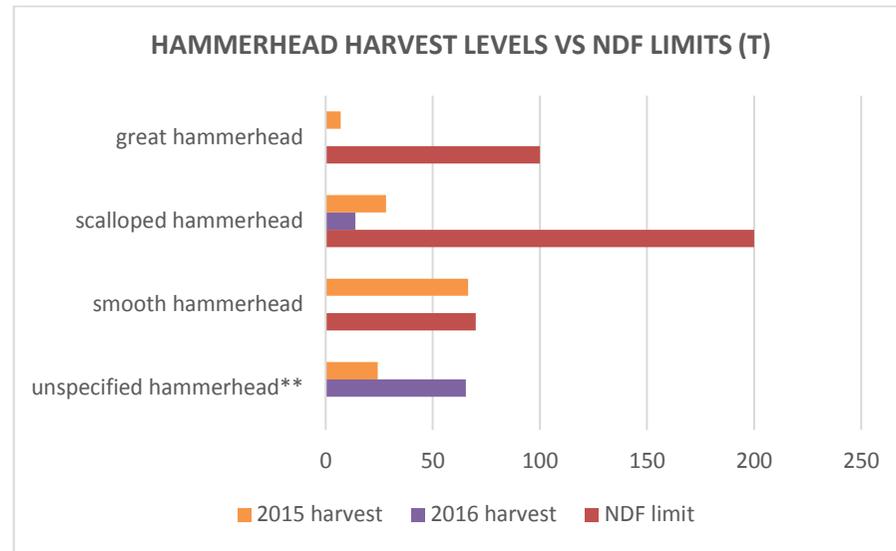


Figure 5. National hammerhead catch in Australia vs NDF limits (2015 - 2016)

- * To allow an annual national total to be calculated Commonwealth and WA fisheries financial year data have been treated as if they are calendar years (e.g. 2014/15 = 2015, 2015/16= 2016).
- * 2014 catch data is excluded as the NDF came into place in September 2014 and NDF limits are annual
- * 2016 catch data for the NT was not available at the time it was received by the Department in late 2016
- ** Unspecified hammerhead catch shown separately here is more likely attributable to great and scalloped hammerheads (further discussed in the text) the addition of total unspecified catch to either species does not exceed NDF limits.

Annex 2 – Reported export of hammerhead shark fins from Australia

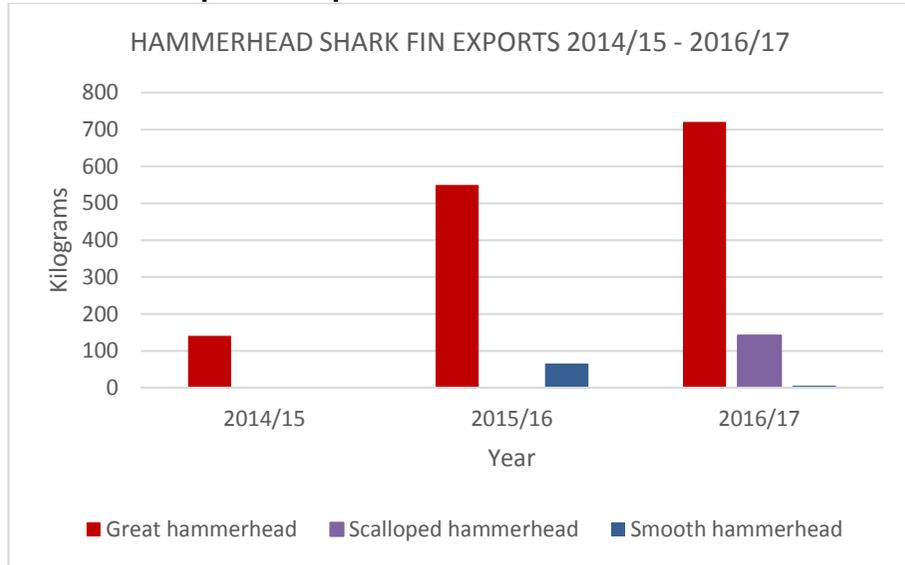


Figure 5. Exports of great, scalloped and smooth hammerhead from Australia (2014/15 to 2016/17)