

Scalloped Hammerhead, *Sphyrna lewini*

Report Card assessment	Depleted		
IUCN Red List Australian Assessment	Refer to Global Assessment	IUCN Red List Global Assessment	Endangered
Assessors	Heupel, M.		
Report Card Remarks	Listed on CITES Appendix II, CMS Appendix II, significant declines in populations		

Summary

The Scalloped Hammerhead is a coastal and semi-oceanic species that is found in warm temperate and tropical waters. All life stages are vulnerable to capture in target and bycatch fisheries. A large number of juveniles are taken in inshore coastal waters, while adults are typically taken along the edge of the continental shelf and offshore in oceanic waters. Hammerhead shark fins are highly valued, which has led to increased targeting in some areas. The



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habit of the species to aggregate in large schools also increases its vulnerability to fisheries. It takes the Scalloped Hammerhead up to 15 years to reach reproductive age, therefore its resilience to fishing is relatively low. Recent estimates suggest there has globally been a 50-90% decrease in Scalloped Hammerhead and total hammerhead shark abundance over the past 32 years in South Africa, the central Atlantic and Brazil. In Australia, continued take in commercial fisheries in Queensland and the Northern Territory, catches in shark control programs, Illegal, Unregulated and Unreported (IUU) fishing, and linkages with Indonesian populations where there is intense fishing pressure, have led to considerable declines in Australian populations. Therefore, the species is assessed globally as Endangered (IUCN) and in Australia, Overfished (SAFS). It is listed as Conservation Dependent under EPBC legislation, allowing continued take under strict management conditions that should allow recovery. The species is listed on CITES Appendix II, CMS Appendix II.

Distribution

The Scalloped Hammerhead is found in warm temperate and tropical coastal seas around the world (Compagno 1984). In Australia, the species is found in New South Wales (NSW), Queensland, the Northern Territory, and Western Australia (Compagno 1984, Last and Stevens 2009). The Australian population is believed to be primarily composed of males and juvenile females, while adult females of the stock are suspected to segregate from the males and may use Indonesian waters more than Australian waters (White et al. 2008). Genetic evidence suggests linkages between Indonesia, Papua New Guinea and Australia, but further work is needed to adequately understand the complexities of the population and extent of connectivity to Australia's regional neighbours.

Stock structure and status

Recent studies indicate that the Indo-Pacific population (which includes Australian populations) is genetically distinct from the Northwest Atlantic, Caribbean Sea and Southwest Atlantic populations. Populations in Australia and Indonesia cannot be genetically differentiated, suggesting they are the same stock (Ovenden et al. 2009, 2011). Continuous shallow water habitats along northern Australia and Torres Strait likely facilitates this connection (Chin et al. 2017).

Australian Scalloped Hammerhead shark populations and the total take in Australian fisheries is difficult to determine as logbook data do not differentiate between different hammerhead species (Koopman and Knuckey 2014). However, species-specific catch data reported by Koopman and Knuckey (2014) showed Australian Scalloped Hammerhead shark catch increased to a peak of approximately 260 tonnes in 2006, followed by a decline to under 100 tonnes in 2013. Declines in Australian populations have been reported on both the east and west coast. In northwest Australia, Scalloped Hammerhead populations declined between 58 and 76% from 1998-1999 to 2005-2006 (Heupel and McAuley 2007). Shark Control Program data from Queensland revealed declines of 67-84% from 1966 to the early 1990s (Simpfendorfer et al. 2011).

Fisheries

In Australian waters, Scalloped Hammerheads are taken in many commercial gillnet (e.g. Queensland East Coast Inshore Finfish Fishery, Gulf of Carpentaria Inshore Finfish Fishery, Northern Territory Offshore Net and Line Fishery), trawl (e.g. Northern Prawn Fishery), line fisheries in northern Australia, as well as shark control programs and recreational fisheries. All life stages are caught by these fisheries, however given the size, location and gears employed, the majority of Australian catch is juveniles (of both sexes) and adult males (Harry et al. 2011, Simpfendorfer et al. 2011). The NSW Ocean Trap and Line Fishery takes large individuals, but the catch is mostly males (Macbeth et al. 2009). There is also been a significant amount of IUU fishing in northern Australia. Increased foreign fishing, composed of Indonesian, Chinese, and Taiwanese fleets, was observed between 2001 and 2005 (Field et al. 2009). Small scale IUU vessels were estimated to have harvested between 300 and 1,100 tonnes of shark (all species) in 2006 (Marshall 2011). Fishing in neighbouring countries may also have implications for Australian fisheries as recent genetic analysis indicates Indo-Pacific populations are a single stock (Ovenden et al. 2009, 2011). The lack of adult female Scalloped Hammerheads in Australian fisheries and high catches in Indonesia may be the direct result of population connectivity and sex segregation. Intense fishing in Indonesia could disproportionately deplete females within the Indo-Pacific stock and therefore directly affect Australian populations.

Globally, the main threat to Scalloped Hammerhead is the currently wide spread, targeted, and intense fisheries for the species throughout its range. Scalloped Hammerhead sharks are taken as both target and bycatch by trawl, purse seine, gillnet, fixed bottom longline, pelagic longline and inshore artisanal fisheries. Scalloped Hammerhead fins are highly valued and therefore they are targeted to supply the global demand for shark fins. Therefore, intense fishing pressure can rapidly deplete regional stocks, and re-colonization of depleted areas from neighbouring regions is expected to be a slow and complex process.

Habitat and ecology

This is a coastal and semi-oceanic pelagic shark, found over continental and insular shelves and in deepwater, ranging from the intertidal zone to at least 275 m depth (Compagno 1984). Newborn Scalloped Hammerhead sharks tend to stay in coastal zones (Clarke 1971, Bass et al. 1975, Castro 1983). Maximum size reported by different studies ranged from 219 to 340 cm total length (TL) for males and 296 to 346 cm TL for females (Clarke 1971, Bass et al. 1975, Klimley and Nelson 1984, Branstetter 1987, Chen et al. 1988, Stevens and Lyle 1989, Chen et al. 1990). Maximum age is estimated as 21 years for males (Harry et al. 2011) and 35 years for females (Drew et al. 2015).

Longevity and maximum size	Longevity estimated: males 21 years, females 35 years Max size: males 340 cm, females 346 cm TL
Age and/or size at maturity (50%)	Males: 5.7-8.9 years, 147-204 cm TL Females: estimated 200 cm TL

Link to IUCN Page: <http://www.iucnredlist.org/details/39385/0>

Link to page at Shark References: <http://shark-references.com/species/view/Sphyrna-lewini>

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