

Defining the connectivity of Australia's hammerhead sharks

Defining the boundaries of hammerhead shark populations will bring scientists closer to assessing the status of these unique and susceptible species.

Hammerhead sharks are known to swim large distances, including across the open ocean. Sharks from Australia may therefore mix with sharks from Indonesia, Papua New Guinea and islands of the Pacific.

Understanding these connections is central to providing information on the status of hammerhead shark populations to support Australian and international conservation and management initiatives.

A project led by the Australian Institute of Marine Science will use tagging and genetic sampling to see how hammerhead shark populations are connected. The findings will be combined with biological, ecological and fisheries data to assess the potential stock structure and

population status of hammerhead sharks in Australian waters.

The project is part of the National Environmental Science Programme (NESP) Marine Biodiversity Hub, an Australian Government initiative that aims to improve the knowledge of key marine species and ecosystems to underpin their management and protection.

National and global conservation status

Hammerhead sharks are highly susceptible to capture due to their uniquely shaped head. Their fins are prized for shark fin soup, and even if they are released intact, their rates of survival are low.

Three of Australia's four hammerhead species – scalloped (*Sphyrna lewini*), great (*Sphyrna mokarran*) and smooth (*Sphyrna zygaena*) hammerheads – are being considered for listing under the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Under International Union for Conservation of Nature Red List Criteria, scalloped and great hammerheads are listed as Endangered globally, the smooth hammerhead is listed as Vulnerable, and the fourth Australian resident, the winghead hammerhead (*Eusphyra blochii*), is Near Threatened.

Scalloped, great and smooth hammerhead sharks were added to the Convention in International Trade in



ABOVE: A free-swimming great hammerhead shark fitted with an identification tag. Image: Andrew Chin, James Cook University

Endangered Species (CITES) Appendix II in March 2013. As such, their international trade requires documentation about the sustainability of their harvest. Australia allows limited international trade in these CITES-listed species.

Scalloped and great hammerheads were added to Appendix II of the international Convention on the Conservation of Migratory Species of Wild Animals in December 2014. This obliges member nations to work together to address conservation issues. (The Australian Government has taken a reservation on this listing at the present time to ensure fishers are not prosecuted for unintentional capture.)

Tagging, genetic and cultural research

The NESP research project will collect tissue samples collected from scalloped and great hammerheads in Queensland, the Northern Territory, Western Australia, Indonesia, Papua New Guinea, Hawaii and other Pacific islands. The tissue samples will be used to assess genetic connectivity across these regions.

Identification tags, and satellite tags programmed to release and transmit their location after a set time period, will be used to track the sharks' monthly and yearly movements.

The project will also explore the cultural value, traditional use and Indigenous knowledge of hammerhead sharks in Queensland and Torres Strait where these species are an iconic totem animal. Indigenous knowledge may be used where culturally and ethically appropriate to help identify important habitats.

Supporting national and international conservation

Results of the project will help to guide effective conservation management by contributing to:

- the National Plan of Action for sharks and considerations of species listings under the EPBC Act;
- Australia's actions and reporting obligations required under the Convention on Migratory Species;
- shark management plans and policies developed by Commonwealth and state agencies, and commercial and recreational fisheries;
- revisions of hammerhead listings under CITES;
- species protection policies developed by the Great Barrier Reef Marine Park Authority; and
- assessments of Australian fisheries for Wildlife Trade Operation certification.



A great hammerhead shark captured in the Great Barrier Reef for satellite tracking. Image: Fernanda de Faria, James Cook University



The NESP Marine Biodiversity Hub is funded by the Australian Government's National Environmental Science Programme. Our goal is to assist decision-makers to understand, manage and conserve Australia's environment by funding world-class biodiversity science.

Further information

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