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## **Sharp increase in Ningaloo whale shark injuries might be due to boat encounters**

**Scarring and major lacerations due to vessel collisions becoming more common, study finds.**

**Photo and video footage available (details below)**



The tail of a whale shark (*Rhincodon typus*), showing massive scarring. Image: Jess Hadden.

Almost one-fifth of the whale sharks (*Rhincodon typus*) in Western Australia's Ningaloo Reef Marine Park show major scarring or fin amputations, with the number of injured animals increasing in recent years, new research reveals.

Distinctive scar patterns strongly suggest many of the injuries are caused by boat collisions, says whale shark scientist Emily Lester from the Australian Institute of Marine Science (AIMS).

To make the finding, Ms Lester, a PhD candidate at the University of Western Australia (UWA), and colleagues from AIMS and the Department of Biodiversity, Conservation and Attractions (DBCA), reviewed still and moving images of 913 whale sharks taken by Ningaloo tour boat operators between 2008 and 2013.

Of these, 146 or about 16% showed some form of serious injury.

“Some of the major scars were probably bite marks from predators, but most were the marks of blunt trauma, lacerations or amputations arising from encounters with ships, particularly propellers,” Ms Lester said.

Whale shark diving is an important part of the Western Australian tourism industry, delivering an estimated at \$12.5 million in economic activity for the Ningaloo Reef region.

However, because the species swim for thousands of kilometres beyond the marine park boundaries exactly where the injuries were sustained is unknown.

“Mitigating the impact of scarring from vessel collisions is challenging, particularly outside of our jurisdiction of State waters,” said DBCA research scientist and co-author Dr Holly Raudino.

The results of the research show injuries recorded during 2012 and 2013 almost doubled compared to 2011.

“One possible explanation is that there is an increase in shipping activity throughout the whale sharks’ range – inside Ningaloo and out – and collisions are becoming more frequent,” said Ms Lester.

The data in the study cannot reveal the number of fatal ship collisions, because whale sharks are ‘negatively buoyant’, meaning that when they die they sink to the ocean floor.

“A collision between a large ocean-going vessel and a whale shark wouldn’t be felt by the ship, as a result, it’s likely that we’re underestimating the number of mortalities from ship strike, since our study could only document sharks that survived their injuries,” Ms Lester said.

Dr Raudino, whose expertise is marine fauna, added that the first step in reducing these interactions would be by “identifying hotspots of where these collisions are occurring through spatial modelling”.

The [research is published](#) in the [\*Marine Ecology Progress Series\*](#).

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#### **Media contacts:**

Emily Lester, Australian Institute of Marine Science: +61 456 387 038;  
[emily.lester@research.uwa.edu.au](mailto:emily.lester@research.uwa.edu.au) (UTC+8)

John Liston, Australian Institute of Marine Science: +61 407 102 684;  
[j.liston@aims.gov.au](mailto:j.liston@aims.gov.au) (UTC+8)

Holly Raudino, Western Australian Department of Biodiversity, Conservation and Attractions: [holly.raudino@dbca.wa.gov.au](mailto:holly.raudino@dbca.wa.gov.au) +61 8 9219 9754 (UTC+8)

**Further assistance:**

Andrew Masterson, Science in Public: +61 488 777 179;  
[andrew@scienceinpublic.com.au](mailto:andrew@scienceinpublic.com.au) (UTC+11)

**Photo and video captions**

**Photo:** The tail of a whale shark (*Rhincodon typus*), showing massive scarring.  
Image: Jess Hadden

**Video:** B-roll footage at <https://cloudstor.aarnet.edu.au/plus/s/3EOEIIsEJCBBXfk>  
Credit: Australian Institute of Marine Science

Details:

MP4: 4:17 seconds; 303MB  
003-045: AIMS research vessel Solander  
0460-110: AIMS researchers in dinghy above Ningaloo Reef  
110-230: AIMS researchers up close and personal with whale sharks  
230-317: Researchers taking reef samples  
318-348: Ext Solander; int onboard laboratory  
349-405: Whale shark swimming

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AIMS science leads to healthier marine ecosystems; economic, social and environmental benefits for all Australians; and protection of coral reefs from climate change. More here: <https://www.aims.gov.au/>

**Paper/author details**

***Multi-year patterns in scarring, survival and residency of whale sharks in Ningaloo Marine Park, Western Australia***

Authors:

Emily Lester: Australian Institute of Marine Science; University of Western Australia, Indian Ocean Marine Research Centre

Mark G. Meekan: Australian Institute of Marine Science

Peter Barnes: Department of Biodiversity, Conservation and Attractions, Exmouth District, Parks and Wildlife Service

Holly Raudino: Department of Biodiversity, Conservation and Attractions, Exmouth District, Parks and Wildlife Service

Dani Rob: Department of Biodiversity, Conservation and Attractions, Exmouth District, Parks and Wildlife Service

Kelly Waples: Department of Biodiversity, Conservation and Attractions, Exmouth District, Parks and Wildlife Service

Conrad W. Speed: Australian Institute of Marine Science

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