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Natural features and oil and gas structures influence the movement of whale sharks across the seascape

Whale sharks are drawn to natural underwater features such as seamounts and canyons as well as artificial features like offshore oil and gas platforms, with both acting as migratory “stepping stones”, a [new study](#) has found.

Led by scientists from the Australian Institute of Marine Science (AIMS) and The University of Western Australia (UWA), the study showed that natural and artificial features and structures offered foraging opportunities and increased prey availability.

Lead author Ben D’Antonio, a PhD candidate from the [AIMS@UWA](#) program, said the study analysed satellite tracking data from 78 whale sharks tagged over 14 years at Ningaloo Reef and Shark Bay off the Western Australian coast.

“We mapped their movements across the eastern Indian Ocean and the North West Shelf. The latter area in particular features a number of oil and gas platforms and associated infrastructure,” he said.

“Whale sharks travel huge distances across the oceans, and our study illustrates that they tend to use undersea pinnacles and sea mounts as stepping stones on these journeys because the currents that flow around these features help to enhance food availability like plankton.

“The same is true for the industrial infrastructure found off the north-west coast of Australia. But while seamounts and pinnacles can take up huge areas of up to tens of kilometres across, oil and gas platforms are comparatively small, and yet could provide similar levels of prey availability. There is evidence for example that plankton are attracted by the artificial lights on these platforms.”

Mr D’Antonio said the findings may have implications for the decommissioning of oil and gas platforms.

“The removal of platforms at the end of their productive life may change seascape connectivity by removing migratory stepping stones that link important habitats for whale sharks,” he said.

“There is still a need to understand the detail in the relationships between whale sharks and individual oil and gas platforms, like how often and for how long they visit.

“The research highlights the importance of considering the influence of both natural and artificial structures on the movement patterns, habitat use, and connectivity of marine megafauna like whale sharks, particularly when developing conservation and management strategies such as Marine Protected Areas, and in decommissioning decision-making.”

There are also risks for whale sharks associated with oil and gas platforms. AIMS scientist and co-author Dr Luciana Ferreira said the major threats to whale sharks around oil and gas platforms came from ship strikes from service vessels and the effects of pollutants from discharges and spills.

“There are records of fatal interactions between whale sharks and vessels and a considerable portion of the whale shark population at Ningaloo Reef have scars attributed to vessel strikes,” she said.

“The presence of the platforms may also have indirect implications by altering migration patterns and disrupting the movements of whale sharks between natural features.

“Having said that, whale sharks are at risk across large areas of their distribution from ship strike and fishing bycatch and entanglement, and we need to do more research to better understand the threats.”

The research was published in *Diversity and Distributions: [Natural and Artificial Structures Influence the Movement and Habitat Connectivity of Whale Sharks \(Rhincodon typus\) Across Seascapes - D'Antonio - 2025 - Diversity and Distributions - Wiley Online Library](#)*

Other co-authors on this study were from The Australian National University, ECOCEAN, The University of Queensland and Murdoch University.

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