

The impacts of whale shark mass tourism on the coral reefs in the Philippines

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Whale shark getting fed in Tan-awan, Oslob over the shallow reef. Credit: LAMAVE

The collaborative research among The University of Hong Kong (HKU), the University of Guam (UoG), and the Large Marine Vertebrates

Research Institute Philippines (LAMAVE) shows that whale shark tourism in Tan-awan, Oslob, Philippines has led to degradation of the local coral reef ecosystem. This study, which provides the first documentation of such ecological impact locally in Tan-awan, has recently been published in the scientific journal "*Environmental Management*", and provided baseline data to measure future tourism management intervention and the shift towards a more sustainable tourism model.

The Coral Biogeochemistry Lab in the School of Biological Sciences at HKU, one of the top Institutions in Asia, led a research expedition to Oslob in 2015 in collaboration with the University of Guam, the Large Marine Vertebrates Research Institute Philippines and the Local Government Unit of Oslob. This small municipality on the south coast of Cebu, has become a domestic and international tourism hotspot since 2011, attracting over 300,000 visitors in 2015 and doubled since then. The mass tourism phenomenon is fueled by the year-round presence of whale sharks along the local shallow reef. This unusual aggregation is maintained by the local tourism association provisioning (feeding) the whale sharks with up to 50 tons of Uyp (sergestid) shrimps annually. While most of the studies to date focus on the whale shark population and tourism perception, this is the first study that investigates the impacts of intensive provisioning and concentrating tourism activities on the health of the largely understudied yet highly vulnerable local reef ecosystem.

The data presented in the paper shows that in comparison to a reference site further south the coast, Tan-awan is affected by greater impacts of degradation as indicated by higher macroalgae and lower coral density as well as a less diverse coral community dominated by weedy corals (Pocillopora) and stress-tolerant (Porites) corals. Furthermore, using the advanced technique of stable isotope analysis on the individual growth ring (biogenic archives) of the species studied, preliminary results reveal

anthropogenic nitrogen inputs in Tan-awan.



A handful of Uyap (sergestid) shrimps in the water ©Inga Conti-Jerpe. Credit: Inga Conti-Jerpe

"It is vital for all stakeholders to understand that the environmental and societal well-being go hand in hand. I hope that everyone can come to the table to contribute to management and [conservation efforts](#) to reverse the trend of reef degradation in Tan-awan". -Martin Wong, University of Hong Kong.

The finding of reef degradation in Tan-awan is alarming and requires

immediate attention given reef health underpins the ecosystem services afforded to the local communities, including the important tourism sector. As the whale shark tourism is projected to grow continuously in the foreseeable future, the research team urges the need for [local authorities](#) to implement proper management strategies to mitigate the problems and risks associated with the rapid tourism development.

This collaborative research effort to document the state of reef health and nitrogen pollution sources also provide an ecological baseline for future data to compare with. Having such critical information, further monitoring programs can be carried out in order to keep reef health in check and evaluate the effectiveness of any mitigation and management measures towards [reef](#) conservation.

"Let this be a new beginning. We are positive that with this [baseline data](#) at hand the local authorities will look further into the long term and broader ecological impact of mass tourism activities, in Oslob as in many other areas in the country and put a priority into the conservation of their marine resources, shifting towards sustainable tourism and ensuring the local food security through the conservation and restoration of healthy marine ecosystems.—Dr. Ponzio Large Marine Vertebrates Research Institute Philippines.



Tourists and feeder boat in Tan-awan, Oslob ©Inga Conti-Jerpe. Credit: Inga Conti-Jerpe

More information: C. W. Martin Wong et al, Whale Shark Tourism: Impacts on Coral Reefs in the Philippines, *Environmental Management* (2018). [DOI: 10.1007/s00267-018-1125-3](https://doi.org/10.1007/s00267-018-1125-3)

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