

Environmental Research, Technology Demonstration and Conference Project

ECF Project:	ECF 2019-101
Project Title:	Monitoring the amount and composition of macro- and microplastic in a biodiversity reservoir – The mangrove forests of Hong Kong
Principal Investigator:	Dr Stefano Cannicci, School of Biological Sciences and Swire Institute for Marine Science, The University of Hong Kong
Total Approved Grant:	\$1,695,200
Duration:	1/7/2020 to 30/10/2022
Project Status/Remarks:	Completed
Project Scope:	<p>Marine debris and plastic pollution affect all coastal habitats, worldwide. As forests located at river mouths, mangroves are often overlooked as potential traps for debris from both terrestrial and marine sources. Hong Kong is not an exception to this rule and, although it has been recognised as a hotspot for marine plastic pollution, the amount of plastic debris in mangroves is unknown.</p> <p>Crabs and gastropods are a dominant component of the mangrove food web and play a critical role to maintain ecosystem functioning and health. Due to their feeding behaviour, they are likely to be impacted by the subtle presence of microplastic in the system. Understanding the amount and composition of microplastic within these key organisms will help assessing the overall impact of plastic pollution at ecosystem scale.</p> <p>The present project aims to estimate the amount and composition of macro- and microplastic found in the mangroves and in the gut of keynote mangrove invertebrates in Hong Kong, respectively. The results will gather information on the impact of plastic on this vulnerable environment, ultimately helping stakeholder and decision makers to adopt specific conservation actions to protect Hong Kong coastal habitats.</p>
Summary of the Findings/Outcomes:	<p>The present project aimed to characterise the abundance, distribution and impact of macro- and microplastic pollution across mangrove ecosystems in Hong Kong. We provided trends of plastic accumulation across Hong Kong mangroves, necessary to organise efficient cleaning efforts in these critical habitats. We determined that plastics are the most common material of debris entering Hong Kong mangroves and both plastic and non-plastic items deriving from domestic use cover the most surface area of mangrove sediment. We found that the level of macrodebris pollution in Hong Kong had a negligible impact over the medium term on the flora and invertebrate fauna but waste still needed to be properly managed to avoid reaching tipping points that will transcend into negative impacts. We identified that larger plastic fragments deposited in the habitat are the major sources of the microplastic entering the ecosystem, of which film is the most dominant material category. Film was also the dominant material of microplastics entering the mangrove food web. Our results will enable more efficient planning of clean-up activities and provides a baseline for monitoring the measures introduced to reduce plastic and non-plastic waste that has the</p>

	potential to make its way into and impact the environment.
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