Environmental Research, Technology Demonstration and Conference Project

ECF Project:	ECF 2019-106
Project Title:	The forgotten ecosystem – An assessment of the marine biodiversity associated with remnant oyster habitats in Hong Kong
Applicant:	Dr Bayden D. Russell, The Swire Institute of Marine Science, The University of Hong Kong
Total Approved Grant:	$1,823,700
Duration:	3/8/2020 to 2/8/2022
Project Status/Remarks:	Completed
Project Scope:	The present study aims to document the biodiversity associated with both oyster and soft sediment habitats in the low intertidal and shallow subtidal waters of Hong Kong. The study will cover both major habitat forming species from the estuarine estuarine-influenced western and oceanic oceanic-influenced eastern waters regions. The project team will compile a novel and up to date inventory of the faunal diversity which is associated with oyster and adjacent soft sediment habitats, develop a species DNA bank, and update the Hong Kong Register of Marine Species. Taking a landscape landscape-scale approach, the project team will also document the abundance and distribution of threatened or endangered species (e.g. horseshoe crabs) adjacent to oyster habitats. Overall, this project will establish the first comprehensive dataset for fauna associated with these remnant oyster habitats and provide a baseline from which to manage them into the future.
Summary of the Findings/Outcomes:	This study documents the biodiversity associated with both oyster and soft sediment habitats in the low intertidal and shallow subtidal waters of Hong Kong. The study covered all of the major habitat-forming species from the estuarine-influenced western and oceanic-influenced eastern waters regions. We compiled the first inventory of the faunal diversity which is associated with oyster and adjacent soft sediment habitats and developed a species DNA bank, which can be used for further research and restoration initiatives in Hong Kong. Overall, this project established the first comprehensive dataset for fauna associated with these remnant oyster habitats and provides a baseline from which to manage them. A total of 243 species from 79 different families were identified using morphological analysis and confirmed with DNA barcoding. We demonstrate an effective use of eDNA techniques using the soft sediment to discover fish species associated with the reefs and identified the Magallana and Saccostrea oyster species which dominate these habitats. Overall, there was 152 species found in the adjacent soft-sediment habitat, and 212 species found in the oyster habitat. This project highlights the importance of oyster habitats not only for the direct influence on local species biodiversity, but also the indirect effect on the surrounding soft-sediment habitat.