

## Environmental Research, Technology Demonstration and Conference Project

<b>ECF Project:</b>	ECF 2021-82
<b>Project Title:</b>	Invasive species of Hong Kong – Understanding the current distribution, spread, and ecological impacts
<b>Principal Investigator:</b>	Dr Laura Jane Falkenberg, School of Life Sciences, Faculty of Science, The Chinese University of Hong Kong
<b>Total Approved Grant:</b>	\$492,400
<b>Duration:</b>	1/6/2022 to 14/7/2023
<b>Project Status/Remarks:</b>	Completed
<b>Project Scope:</b>	<p>Invasive species are key drivers of global biodiversity decline and threats to marine conservation. Hong Kong, being a trade and transport hub with large volumes of shipping traffic, is particularly susceptible to marine bioinvasions and subsequent impacts on local ecology. Of particular concern are the invasive bivalves that have been recorded in Hong Kong (specifically the mussel <i>Xenostrobus securis</i>), however, their current geographic distribution and population characteristics have not been documented. Further, knowledge of interactions between invasive and native species remains limited, thus the impacts of invasive species on local ecosystems and biodiversity are not well understood. Here, we will use field surveys to document and quantify the spread of this invasive mussel, as well as identifying its population characteristics (e.g. size-frequency analysis, condition index). The project team will also conduct tank-based experimental investigations to identify the effects of competitive interactions of the invasive species with similar native species on growth rates and condition indices. The resulting field data will provide knowledge as to the occurrence, reproduction, and recruitment pattern of the species, while experimental approaches will indicate the local ecosystem effects. This information can assist stakeholders to develop and implement action plans regarding the control and removal of invasive populations.</p>
<b>Summary of the Findings/Outcomes:</b>	<p>Invasive species are key drivers of global biodiversity decline and threats to marine conservation. Hong Kong, with large volumes of shipping traffic, is particularly susceptible to marine bioinvasions and subsequent impacts on local ecology. While invasive bivalves have been recorded in Hong Kong, notably the mussel <i>Xenostrobus securis</i>, they had not been recently documented. Here, we used field surveys to update occurrence records of this mussel, and found it now occurs in additional sites where it had not been identified previously. In addition, we quantified population characteristics and found that at established sites these have also changed over time. Notably, during the surveys we identified a mussel species remains limited, we used tank-based experiments to examine the competitive interactions between the invasive mussel <i>X. securis</i> and a similar native species (<i>Brachidontes variabilis</i>) finding that co-occurrence can influence survival, growth, and condition index. Together, these results provide insight to the occurrence, recruitment pattern, and species</p>

	interactions of this important invasive species.
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