Environmental Research, Technology Demonstration and Conference Project

ECF Project:	ECF 2021-11
Project Title:	Feasibility of using nanopore sequencing technology to detect and identify CITES-listed shark species
Principal Investigator:	Mr Wan Cheung Kuen, Department of Health and Life Sciences, Hong Kong Institute of Vocational Education (Sha Tin), Vocational Training Council
Total Approved Grant:	$321,500
Duration:	1/1/2023 to 30/6/2024
Project Status/Remarks:	On-going
Project Scope:	Hong Kong is one of the major shark fin markets in the world. Currently, visual morphology method and various molecular-based methods such as DNA barcoding and loop-mediated isothermal amplification (LAMP) have been suggested to identify and detect illegal trade of CITES-listed shark species. However, identification by such PCR-based method is tedious, infrastructure-dependent and time-consuming especially when the inspections must be conducted in a limited time-frame. Therefore, a portable, faster, reliable, field-based and cost-effective identification method is in demand. Recent innovative approach, which known as Oxford Nanopore Technologies (ONT), allows on-site sequencing with no cold storage required. This technology shows huge potential in facilitating the authorities to curb the illegal trade of CITES-listed shark species at low cost and timely manner. This study aims to evaluate the feasibility of using ONT on-site to detect CITES-listed shark species. Different sample preparation methods would be performed. The sequence accuracy will also be compared with conventional sequencing method in order to devise an optimal method. This study will provide alternative approach for rapid identification assay for other endangered species in order to enforce the regulations.
Summary of the Findings/Outcomes:	To be available upon completion of the project