

## The PacMAN project: Building capacity in pacific small island developing states on marine bioinvasions

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The introduction of non-indigenous species (NIS) to new marine environments is one of the main threats to biodiversity. Small Islands Developing States, SIDS (or better called large ocean states) are particularly vulnerable, because they are highly dependant on the marine environment. Novel technologies in environmental DNA (eDNA) analyses could allow the rapid and cost-effective evaluation of biodiversity in hotspots with elevated threat of NIS invasions, which in turn can greatly facilitate environmental management practices. The Pacific Islands marine bioinvasions Alert Network (PacMAN) project aims to build capacity in the SIDS for monitoring and evaluating the state of their marine environment through eDNA analyses.

This 3-year project funded by the Government of Flanders (Kingdom of Belgium) and the Richard Lounsbery foundation, started in September 2020. The OBIS secretariat hosted at the IOC Project Office in Oostende (Belgium) will be responsible for the overall coordination and implementation of the project, supported by a local project team hosted at the University of the South Pacific in Suva, Fiji. Through engagement of scientists and local stakeholders an initial bioinvasions monitoring plan will be developed based on a comprehensive needs assessment of the local community. The monitoring plan will comprise of protocols for sampling, sample handling, as well as bioinformatics analyses and data management workflows, based on current best practices in marine sciences. The collected data will be absorbed into the global OBIS database while conserving links to other global data infrastructures storing standardized metadata, sequence data and taxonomic information. Based on the output data stored in OBIS, a decision-support tool will provide the observations in a user-friendly dashboard indicating the presence of invasive species to support local management. Early warnings will be generated and will provide a service for local managers and decision makers to set up targeted monitoring programmes.

The project will enter the operational phase by training local researchers and environmental managers, and will enable the long-term monitoring of the state of the marine environment in these tropical hubs of marine biodiversity. This capacity can ultimately deliver policy relevant science-based services that can trigger a rapid response at national and regional management level, which is crucial to secure the Islands biosafety.

Keywords: Marine; Invasive species; Environmental DNA; Pacific small island developing states; Decision-support; Biodiversity