



Conference Abstract

Development of eDNA tools for the detection of marine invasive non-native species to support European flat oyster (*Ostrea edulis*) restoration projects.

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Abstract

The European flat oyster (*Ostrea edulis*) is an important keystone species in Scottish coastal waters. However due to anthropogenic pressures, significant reductions to oyster beds have been observed across Europe. In Scotland, several projects are currently aiming to restore European flat oyster habitats through the translocation of juvenile oysters from various sources including hatcheries and aquaculture. However, translocation of shellfish is not risk free and can increase the risk of accidental translocation of invasive non-native species (INNS). If INNS become established outside of their native range they can cause irreversible harm to native organisms and habitats. This study aims to develop molecular tools to detect environmental DNA of INNS which can be potentially associated with the translocation of live shellfish stocks. We have developed a species-specific real-time PCR assay for detection of Pacific oyster (*Crassostrea gigas*) and tested its sensitivity in a large-scale replicated mesocosm based experiment with varying densities of *C. gigas*. A secondary objective of the experiment was to assess the detection of another invasive species, the carpet sea squirt *Didemnum vexillum* which was cohabited with *C. gigas*. We

aim to quantify the detection probability of increasing densities of *C. gigas* from repeat water samples and qPCR replicates. This project also aims to investigate the feasibility of using portable, real-time sequencing technologies such as the Oxford Nanopore MinION to develop robust tools to support native oyster restoration programmes.

Keywords

Environmental DNA (eDNA)

Invasive non-native species (INNS)

qPCR

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