



Conference Abstract

Phytoplankton assessment and Non-Indigenous species monitoring through eDNA metabarcoding in marine ecosystems

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Abstract

Invasive Alien Species (IAS) are one of the most contributing constituents of biodiversity loss with the distribution range of an increasing number of IAS being artificially re-shaped by human activities. Rapid and effective tools are therefore needed in order to monitor changes in biodiversity and the dispersal of IAS. Molecular tools such as environmental DNA metabarcoding are being progressively included in the tool kit for IAS monitoring, however, the literature is largely focused on metazoans markers targeting regions such as COI and 18S and scarce studies include a marker for plants or algae. Here, we have tested a marker in ribulose-1,5-bisphosphate carboxylase-oxygenase chloroplast region to assess phytoplankton through environmental DNA metabarcoding. Several sample types (low and high-volume water filtration, sediment grabs, net tows) were deployed at twelve study sites along the Irish coast to determine which technique would perform better for the targeted group. A total of eleven NIS were detected during the study. Low-volume surface water filtering exceeded in NIS detection and recovered the highest diversity with 123 species detected. High volume samplers were the ones recovering the lowest number of OTUs (N= 53). Western sites (Galway Bay) had greater diversity and the highest number of total NIS compared to eastern sites in Carlingford, Dublin and Waterford. These results have shown the need for a specific IAS surveillance and has served as a basis to

implement the use of eDNA metabarcoding and algae markers in future monitoring programs.

Keywords

eDNA metabarcoding; RbcL; Non-Indigenous Species

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