



Pyrosequencing Serranids of Iskenderun Bay Using Environmental DNA

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Abstract

Assessment of marine fish are mostly conducted using selective and invasive methods, which are restricted to areas where commercial fisheries is going on and areas with more favorable conditions. Also, misidentification of species is a major problem when making identifications based on morphological traits. Recently, environmental DNA is becoming a reliable tool in bio-assessment studies for identification of target species or complete fauna/flora, without any prior knowledge on the species inhabiting the environment. eDNA as a bio-assessment tool has a great potential in terms of its precision rate when dealing with rare species or species with low population densities. In this study, we designed an eDNA pyrosequencing assay specific to serranid species which will target DNA's found in marine environment using water samples filtered through Sterivex filters. In order to determine the species according to sampling stations, pyrosequencing assay has been enhanced with tagged fusion primers were used for molecular monitoring of the target species. Approximately 130 base pairs long fragments of mitochondrial cytochrome b gene were amplified to make species level molecular identification of serranid species. Our results were indicating existence of 5 species from *Epinephelus* and *Serranus* genus with a strong proof of concept. Results of this study is clearly indicating that the environmental DNA pyrosequencing approach found to be an efficient molecular tool in bio-assessment studies and applicable to any taxon with designing the proper primers according to target species.

Keywords:

Serranidae, pyrosequencing, environmental DNA, molecular bio-assessment, cytochrome b
