

A case study for application of DNA barcoding in identifying species and genetic diversity of fish from the Suez city market, Egypt



The Red Sea is one of the key areas of biodiversity in the world. It is a hotspot for speciation and biological invasions. In the current work, a pilot, random sampling trial was carried out to characterize some species in the landings reaching the fish market in Suez city, which is one of the largest fish markets in the Northern Red Sea. Samples of different fish species were subjected to the standard procedures of DNA barcoding, applying the sequencing of the cytochrome oxidase subunit 1 mitochondrial gene (COI). DNA barcoding could successfully identify all the targeted fishes to the species-level (>98%). The results exhibited a taxonomically-versatile commercial trends in this market, being the collected species belonging to 7 different fish families and 3 orders. These species were *Coris aygula*, *Papilloculiceps longiceps*, *Priacanthus sagittarius*, *Gerres longirostris*, *Alepes djedaba*, *Psettodes erumei* *Cheilinus trilobatus*, *Calotomus viridescens*, and *Pardachirus marmoratus*. Haplotype diversities in the first six species were moderate.

However, their nucleotide diversities were low. This may have resulted from fishing from bottlenecked populations, or from areas that do not hinder the genetic flow. Also, possible cryptic speciation could be detected in *P. sagittarius*, *P. erumei* and *G. longirostris*. Applying the DNA barcoding for species identification in Suez city fish market could then detect various aspects of fish species diversity. More works using the applied analyses can be strongly recommended to aid proper conservation and management of economic fisheries in the Red Sea.

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