



Design of a fish-specific cytochrome b marker and its utility as DNA barcoding in commercial marine fish from Senegal

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Abstract

DNA barcoding is a procedure based on short diagnostic sequences of DNA used for rapid species identification, delimitation and discovery. Over the last decade, the COI mitochondrial marker has received much attention and is often used routinely on teleosts. However, the cytochrome b (cyt b) gene is still largely used for species identification in fish. The objectives of the study were: 1) to provide cyt b primers specific to teleosts and 2) to evaluate the utility of this marker in DNA barcoding of a few commercially important fish species from Senegal which have been caught during ECOAO scientific survey carried out off the south coast of Senegal. We generated sequences for a total of 8 species (*Caranx rhonchus*, *Engraulis encrasicolus*, *Pagellus bellottii*, *Pomadasys jubelini*, *Pomatomus saltatrix*, *Sardina pilchardus*, *Sphyraena guachancho* and *Trachurus trachurus*) and compared this to data available on Genbank. This study is the first to generate sequence data for *P. jubelini* and *S. guachancho*. In most cases, the results show an assignment to the correct species (e.g. *E. encrasicolus*, *P. bellottii*, *P. saltatrix*, *S. pilchardus*) but in one case, it identified a potential misidentification i.e. *Trachurus trachurus* specimens cluster with *T. trecae*. The comparison with other species within targeted genus shows some cases of ambiguities (*Pomadasys jubelini* vs. *P. perotaei*), suggesting the need for taxonomic assessment. Finally, we detected some cases of deep divergences along the West coast of Africa e.g. *Caranx rhonchus*, *P. saltatrix*. This first survey applied to Senegal commercial fish shows that the cyt b marker can be used for species identification and illustrates the utility of DNA barcoding in biodiversity assessment as well as for traceability of fishing product exported outside Senegal.

Keywords: DNA barcoding, species identification, mitochondrial marker, cytochrome b, Genbank, taxonomic assessment, traceability.



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