

**Rapid and simultaneous identification of body parts from the morphologically similar sharks *Carcharhinus obscurus* and *Carcharhinus plumbeus* (Carcharhinidae) using multiplex PCR.**

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**ABSTRACT:**

Many commercially exploited carcharhinid sharks are difficult to identify to species due to extensive morphological similarities. This problem is severely exacerbated when it comes to identifying detached shark fins, and the finless and headless shark carcasses typically sold in markets. To assist in the acquisition of urgently needed conservation and management data on shark catch and trade, we have developed a highly streamlined multiplex PCR-based approach that uses species-specific primers derived from nuclear ribosomal ITS2 sequences to achieve rapid species identification of shark body parts. Here we demonstrate the utility of this approach for identifying fins and flesh from two globally distributed, morphologically very similar carcharhinid sharks (*Carcharhinus obscurus* and *C. plumbeus*) intensively targeted in fisheries worldwide, and often confused for each other even as whole animals. The assay is conducted in a 4-primer multiplex format that is structured to simultaneously achieve the following efficiency and cost-reduction objectives: it requires only a single-tube amplification reaction for species diagnosis, it incorporates an internal positive control to allow detection of false-negative results, and it is novel in that it allows species identification even when DNAs from two species are combined in the same tube during the PCR reaction. The latter innovation reduces the required effort for screening a set of unknown samples by fifty percent. The streamlined approach illustrated here should make it amenable for use in a shark conservation and management context where large numbers of samples typically need to be screened; the approach shown may also provide a model for a rapid diagnostic method potentially applicable to species identification in general.