

## Article

# Advancing DNA Barcoding to Elucidate Elasmobranch Biodiversity in Malaysian Waters

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**Simple Summary:** One-third of shark and ray species are threatened due to overfishing, but a lack of information on each species makes conservation decisions difficult. To address this issue, we conducted a study to identify the different species of sharks and rays in Malaysian waters using DNA barcoding of the CO1 gene, which is akin to DNA fingerprinting for species. We collected 175 individuals between June 2015 and June 2022, randomly selecting up to six specimens from each species. We successfully generated DNA barcodes for 67 species, belonging to 44 genera, 20 families, and 11 orders. Accurate species identification will improve species-specific catch landing data and accelerate the identification of use and illegal trade in Malaysia.



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**Abstract:** The data provided in this article are partial fragments of the Cytochrome c oxidase subunit 1 mitochondrial gene (CO1) sequences of 175 tissues sampled from sharks and batoids collected from Malaysian waters, from June 2015 to June 2022. The barcoding was done randomly for six specimens from each species, so as to authenticate the code. We generated barcodes for 67 different species in 20 families and 11 orders. DNA was extracted from the tissue samples following the Chelex protocols and amplified by polymerase chain reaction (PCR) using the barcoding universal primers FishF2 and FishR2. A total of 654 base pairs (bp) of barcode CO1 gene from 175 samples were sequenced and analysed. The genetic sequences were blasted into the NCBI GenBank and Barcode of Life Data System (BOLD). A review of the blast search confirmed that there were 68 valid species of sharks and batoids that occurred in Malaysian waters. We provided the data of the COI gene mid-point rooting phylogenetic relation trees and analysed the genetic distances among infra-class and order, intra-species, inter-specific, inter-genus, inter-familial, and inter-order. We confirmed the addition of *Squalus edmundsi*, *Carcharhinus amboinensis*, *Alopias superciliosus*, and *Myliobatis hamlyni* as new records for Malaysia. The establishment of a comprehensive CO1 database for sharks and batoids will help facilitate the rapid monitoring and assessment of elasmobranch fisheries using environmental DNA methods.

**Keywords:** cytochrome c oxidase 1; species identification; DNA barcode; reference library; phylogenetic tree; shark and ray