

Biological identifications through mitochondrial and nuclear molecular markers: the case of commercially important crabs from Indian EEZ

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Abstract — The ability of a 600- 700 base pair section of mitochondrial and nuclear molecular markers (COI, 16S & ITS-I) to provide species level identifications has been demonstrated for large taxonomic assemblages of animals such as insects, birds, fishes and crustaceans. In the Indian context, there had been no comprehensive attempt to determine the molecular systematics, evolutionary relationships or phylogeny within the crabs of genera *Scylla*, *Portunus* and *Charybdis* which support the commercial fisheries. The present study is the first attempt to test the suitability of using a DNA barcode approach to discriminate accurately the edible marine crabs from Indian waters. Partial sequence of COI, 16S and ITS-I revealed distinct species specific profiles supporting the morphological data with low levels of intraspecific genetic diversity. Differentiation of two species of *Scylla*, *Scylla serrata* and *S. tranquebarica* using taxonomic tools is problematic especially based on the adult morphology. DNA barcoding using COI and other regions such as 16SrRNA and nuclear ITS fragment proved to be efficient in discriminating the species. The study revealed that mitochondrial and nuclear molecular genes will be an effective tool for discriminating species of commercial importance and thus aiding in scientific management of marine fishery resources.

Index Terms — molecular markers, crabs, fishery, Indian Ocean.

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