

A New Record of The *Parapenaeus Fissuroides* Crosnier, 1986(Decapoda, Penaeidae), From Pakistan Arabian Sea

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ABSTRACT

Introduction: DNA barcoding is a very unique technique, any small fragment of DNA sequence can be used for specific organisms' identification up to the specie level. It is used worldwide for forensic identification as well .it could be a bit controversial but it has a lot of potential in recognition of species. it involves a sequencing of mitochondrial DNA COI sequence (Hebert *et al.*, 2003; Will *et al.*, 2005; Waugh, 2007; Ekrem *et. al.*, 2007; Zhang and Hanner, 2011;). Within Penaeidae, an unforeseen new *Parapenaeus* shrimp species has arrived to the coastal water of Pakistan. Morphological examination and DNA barcode study were conducted for the confirmation of species identification. The taxonomic identification revealed Branchiostegal spine was present, as a major identification tool. In males, petasma with sub disto-lateral lobes bifurcate, in female median part of thelycum bearing a pair of longitudinal swellings. Such research requires international efforts to deal with the global and regional level.

Objectives: In this study, the DNA barcode study based on mitochondrial (COI) genes including phylogenetic investigation was carried out to confirm the molecular identity and phylogeny of *Parapenaeus fissuroides*.

Methods: The shrimp species were found in the fisheries catch from a range of coastal areas through purchasing randomly from the collection during 2018 and 2019. In the present study, the 100+ samples of *Parapenaeus fissuroides* were gathered from different coastal vicinity and evaluated through DNA extraction kits. Samples were sent for sequencing after successful PCR results. Software MEGA was used for analysis of accepted and submitted samples in GenBank. dendrograms were made via procuring Accession numbered submitted sequences from NCBI.

Results: The results revealed that the Indo-West Pacific species, *Parapenaeus fissuroides* Crosnier, 1986 confirmation, is now included as a new addition to the previously found local penaeidae species; *Parapenaeus longipes* and *Parapenaeus fissurus*. The observance and collection of Population of *Parapenaeus fissuroides* Crosnier, 1986 by the fishermen from the different coastal waters during the study period (2018 - 2019), indicates the expansion of its range in the area. Molecular analysis assessed using the cytochrome c oxidase 1 gene. The gene COI was amplified using universal primers. Nucleotide composition was found as T(U) 27.4 %; C 17.1; A 31.7 ; G 23.8 (Total 656) in samples done. It could be a great way of the prediction for future new species appearance.

Conclusion: The COI gene confirmed the identity of the species and using DNA quantitation and making phylogenetic trees can be helpful for evolutionary relationships.

Keywords: DNA, Penaeid shrimp, Pakistan, Phylogeny, Evolutionary relationship

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