

Identification of dominant sesarmid crab species of a mangrove ecosystem in Southern Sri Lanka using DNA barcoding

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Among the herbivorous macroinvertebrates, sesarmid crabs play an important role in maintaining the stability of the mangrove ecosystems. The taxonomic identification of sesarmid crabs in Sri Lankan mangroves is important in establishing conservation priorities in ecosystem management. A few studies have dealt with the sesarmids in Sri Lanka, but no proper study has been conducted to reveal their correct taxonomic identification. Hence, this study attempts to determine the taxonomic status of the common sesarmid species from the Galle-Unawatuna mangrove forest (06°01'N, 80°14'E) using the mitochondrial DNA barcoding gene region. Three dominant sesarmid genera (*Neosarmatium*, *Perisesarma*, and *Episesarma*) were identified using their morphological characters. DNA was extracted from three samples of each suspected genus. The mitochondrial cytochrome *c* oxidase subunit 1 gene (~710 bp) was amplified and sequenced. The consensus sequences were compared with the NCBI database using the BLAST option. The phylogenetic tree was constructed with the support of most similar sequences downloaded from the database, and the nucleotide divergence levels were acquired using MEGA 11 software. The results confirm the morphological identification is accurate for *Neosarmatium* sp. (*p*- distance 3.0%) and *Perisesarma* sp. (*p*- distance 2.4%). The morphological identification was not congruent with the genetic analyses for three individuals of *Episesarma*. Accordingly, the results reveal the importance of DNA barcoding to confirm the identification of sesarmids in case of morphological overlapping, and further evaluate the need for their valid identification in future conservation priorities.

Keywords: Cytochrome Oxidase I, mangroves, *p*-distance, sesarmid crabs

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