

## Reassessment of mud crab (*Scylla* spp.) taxonomic identity in Segara Anakan Lagoon, Cilacap, Indonesia

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Due to high morphological similarity, taxonomic misidentification of the commercially important mud crabs from the genus *Scylla* is common. Studies from Segara Anakan Lagoon (SAL) (Cilacap, Indonesia) mostly recognised *Scylla serrata* as the only existing mud crab species in the area. Misidentification of *Scylla* spp. derived from only using a morphological approach to identify the species. This study aimed to reassess mud crabs (*Scylla* spp.) in SAL using morphometrical analysis, complemented with DNA barcoding. One hundred and seven specimens were collected from SAL in March-June 2021. Fourteen morphometric parameters were measured using a digital vernier caliper (0.01 mm). The DNA barcoding targeted a fragment of the mitochondrial cytochrome oxidase I (mtCOI) gene, which was amplified by PCR using the primers mtd10 5'TTGATTTTTGGTCATCCAGAAGT 3' and C/N 2769 5' TTAAGTCCTAGAAATGTTTRGGGA 3'.

The Neighbour-Joining Tree (NJT) of the COI sequences clustered the four species of *Scylla*. However the Non-Metric Multidimensional Scaling (nMDS) showed no clusters of the morphometrical data. Regardless the similarity in the morphometrics, the mtCOI sequences revealed that four species of *Scylla* spp. were present in SAL, contrasting previous findings that only *Scylla serrata* is present. Sequences-based NJT showed four distinct clades (bootstrap value = 100). Each clade corresponded to different Barcode Identifier Number (BIN) codes obtained from the Barcode of Life Data System (BOLD) during genetic identity verification. The genetic distance (Ds) values between species were higher compared to the within species (0.068-0.173 > 0.002 to 0.004), confirming there were no cryptic species found in the samples. This study indicated that all four *Scylla* species, i.e. *S. serrata*, *S. olivacea*, *S. tranquebarica*, and *S. paramamosain* were present in SAL.

### Keywords

Taxonomic Misidentification; Morphometrical Analysis; DNA Barcoding