

**MOLECULAR IDENTIFICATION OF SELECTED  
OCTOPUS SPECIES IN SRI LANKA USING DNA  
BARCODING REGION**

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by

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## Abstract

There are numerous commercially important Octopus species which have cosmopolitan distribution. Seven species of Octopus have been reported in Sri Lankan waters. Recently, presence of a new Octopus species, namely, *Cistopus taiwanicus* has been recorded in Sri Lanka. The objective of this study was to distinguish Octopus species by using morphological and molecular approaches to overcome difficulties arising in morphological identification. Octopus samples were collected from Kalpitiya, Negombo and Jaffna regions and those species were identified morphologically as far as possible using external features. The partial COI gene region of the mitochondrial DNA was amplified and sequenced. The obtained sequences were analyzed using BIOEDIT program and matched with barcoding data available in the Barcoding of Life database (BOLDSYSTEM) and the National Center for Biotechnology Information (NCBI). Genetic distances and the phylogenetic relationships among species were analyzed using MEGA7 software. All collected samples were genetically distant with more than 2% of p-distance value. OCTK\_2 sample collected from Kalpitiya was identified as *Cistopus taiwanicus* and phylogenetically related to Indian samples. Another sample from Kalpitiya region was suspected as *Cistopus indicus* or *Cistopus taiwanicus* and it was not phylogenetically similar with other samples. Two samples (OCTJ\_1 and OCTJ\_2) collected from Jaffna were identified as *Octopus aegina* found in Taiwan. A single sample (OCTN\_1) collected from Negombo which was morphologically identified as *Octopus vulgaris* was identified as *Octopus cyanea* found in Japan by DNA barcoding. Some Octopus species may co-occur in near-shore shallow reef habitats across the Southwestern Indian Ocean. Paralarval lifestyles of cephalopods give information on both their ecology and related geographic and vertical distribution of species. However, the presence of *Cistopus taiwanicus*, *Octopus cyanea* and *Octopus aegina* in Sri Lankan waters can be concluded. Further, this study suggests a larger sample size and more collection sites around Sri Lanka to detect strong relationship of Octopus species in the Indian Ocean.