

Identification of *Lethrinus nebulosus* (Lethrinidae: Spariformes) in Iraqi Marine Waters Using Mitochondrial COI Gene Sequence

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ABSTRACT

Spangled emperor *Lethrinus nebulosus* is one of the commercial fish species in Iraqi marine fisheries northwest the Arabian Gulf. This fish species was studied in Iraq and identified using morphological characteristics. To get accurate species identification, the genetic composition was analyzed. The mitochondrial cytochrome C oxidase was used as a DNA barcode for *L. nebulosus* identification. The mtCOI gene fragment has been amplified by PCR technique utilizing a common primer and sequenced. The result of sequencing after trimming was 583 bp in length, then matching with similar data in the NCBI-Blast was done. The alignment with the recorded sequences of the same species of the surrounding countries' coasts reveals the genetic similarity with the Iraqi species specimen. The phylogenetic tree showed the Iraqi *L. nebulosus* mtCOI gene sequence clustered with the sequences of the Arabian gulf countries. Ultimately, the sequence was deposited in the gene bank with accession number OQ525800.

INTRODUCTION

The spangled emperor, *Lethrinus nebulosus* (Forsskal 1775), is a species of marine fish belonging to the family Lethrinidae, which includes emperors and emperor breams. This species (*L. nebulosus*) is widely distributed in the Indo-West Pacific region, from the Red Sea and East Africa to Japan, Samoa and Australia (Bray, 2025; Damadi *et al.*, 2025). Additoanlly, it was recorded in the Arabian Gulf waters (Grandcourt *et al.*, 2006a; Grandcourt *et al.*, 2010b; Jawad, *et al.*, 2018; Taghavi *et al.*, 2020). The spangled emperor are found in various habitats, such as coral and rocky reefs, lagoons, seagrass beds, mangroves, and nearshore sandy and rocky areas (Al-Bulushi, 2019). It is a carnivorous fish that feeds mainly on echinoderms, molluscs, crustaceans, worms, and other fishes (Ali *et al.*, 2016; Resen *et al.*, 2023). This lethrinid fish species is one of the economic commodities in Iraqi marine fisheries. Accurate identification of *Lethrinus nebulosus* is important for sustainable fisheries management and stock assessment and in