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A new species of moray eel (Anguilliformes: Muraenidae) from Taiwan, with comments on related elongate unpatterned species

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Abstract

The following nine elongate unpatterned muraenid species of the subfamily Muraeninae, including one new species, are recognized from Taiwan and adjacent waters: *Gymnothorax albimarginatus* (Temminck & Schlegel), *G. dorsalis* Seale, *G. melanosomatus* Loh, Shao & Chen, *G. phasmatodes* (Smith), *G. prolatus* Sasaki & Amaoka, *G. sagmacephalus* Böhlke, *Pseudechidna brummeri* (Bleeker), *Strophidon sathete* (Hamilton) and *G. pseudomelanosomatus* new species, described from two specimens. This new moray eel is distinguished from its similar species, *G. melanosomatus*, by the following features: grey brown body (vs. black), snout length 20.5% (vs. 17.8%) of head length, smaller eye diameter 8.2% (vs. 10.0%) of head length; preanal length 49.5% (vs. 58.5%) total length, and preanal vertebrae 89–89 (vs. 105–109). Phylogenetic relationships of the nine species were examined using nucleotide sequence data from partial sequences of mitochondrial ND5 gene (600 bp), and seven species form COI (600 bp). The genetic analyses suggest that *G. pseudomelanosomatus* is distinct from *G. melanosomatus* and the other six species of *Gymnothorax*. Morphological features and mitogenetic affinities strongly suggest that “*G.*” *dorsalis* should be placed in *Strophidon* rather than in *Gymnothorax*. The results also suggest that employment of ND5 and COI gene sequences are rather useful for identification of species and for obtaining reasonable insights into the phylogeny of the muraenid species.

Key words: Muraenidae, taxonomy, new species, phylogeny relationships, ND5

Introduction

The Muraenidae is a diverse family of eels found around the world, about 15 genera and 197 species (Smith, 2012). More than 40 species of the family Muraenidae are indigenous to Taiwan (Chen et al., 1994; Shao et al., 2008; Loh et al., 2014). During his research into some elongate unpatterned morays, the first author (KHL) discovered two specimens similar to *Gymnothorax melanosomatus* Loh, Shao & Chen (2011) but with some observed differences. These specimens had similar but distinctly different body proportions from *G. melanosomatus* and the other elongate unpatterned Indo-Pacific muraenid species (Böhlke, 1997). Molecular analyses based on partial sequences of the mitochondrial COI and ND5 genes show differences from other similar moray species. Based on distinct morphological differences, as well as molecular analyses, we propose and describe it here as a new species in Taiwan.

Materials and methods

All moray specimens were collected by longline. The fresh specimens were stored in refrigerator for transfer to the