

## Molecular Systematics of the Thornfishes Genera *Terapon* and *Pelates* (Perciformes: Teraponidae) with Reference to the New Genus *Pseudoterapon*

Sin-Che Lee\* and Mung-Pei Tsai

Institute of Zoology, Academia Sinica, Taipei, Taiwan 115, R.O.C.

(Accepted March 24, 1999)

**Sin-Che Lee and Mung-Pei Tsai (1999)** Molecular systematics of the thornfishes genera *Terapon* and *Pelates* (Perciformes: Teraponidae) with reference to the new genus *Pseudoterapon*. *Zoological Studies* 38(3): 279-286. The aim of this study is to clarify whether the systematic status of 3 externally similar thornfishes can be resolved to posit them at specific or generic levels by using allozyme electrophoresis and partial 12S rRNA sequences of mitochondrial DNA. Three externally similar thornfishes, *Terapon jarbua*, *T. theraps*, and *Pelates quadrilineatus*, can be distinguished by several fixed isozyme loci: *IDHP-2\**, *LDH-A\**, *LDH-B\**, *MDH-1\**, *MDH-2\**, *SDH-1\**, *SOD-1\**, *SOD-2\**, and *SOD-3\**. Nei's unbiased genetic identity of isozymes ranged 0.321-0.454 (or distance 0.790-1.137), and the nucleotide base difference of mtDNA ranged 7.3%-10.9% among the 3 species, enabling them to posit as 3 separate genera. Nei's genetic similarity between congeneric *T. theraps* and *T. jarbua* (0.441) is very low. The position of *T. theraps* with *T. jarbua* on the trees constructed from both isozyme and mtDNA data show similar profiles of grouping on separate nodes. This may support *T. theraps* being removed from the genus *Terapon* as an independent new genus, *Pseudoterapon*. The main diagnostic morphological characters distinguishing *Pseudoterapon* from *Terapon* are: larger scales, absence of teeth on vomer and palatines, and horizontal dark stripes on body sides.

**Key words:** Thornfishes, *Pseudoterapon* n. gen., Allozyme, mtDNA.

Fishes of the family Teraponidae (thornfishes, grunters, or tiger perches) are Indo-West Pacific fishes, living in marine coastal, brackish, and freshwater habitats, with 16 genera and about 45 species (Vari 1978, Nelson 1994). Some species are restricted to freshwaters of Australia, New Guinea, Indonesia and the Philippines (Heemstra 1986). In Taiwan, there are 4 species included in 2 genera, *Pelates* (*P. quadrilineatus*) and *Terapon* (*T. cancellatus*, *T. jarbua*, and *T. theraps*) (Shen et al. 1993). For years, these 2 genera were recognized as valid by several authors because their external features resembled each other, except for the provision of a serrated posterior margin of the post-temporal bone (or suprascapula) in the genus *Terapon* (Weber and de Beaufort 1931, Lindberg and Krasnyukova 1969, Heemstra 1986), while species of the genus *Pelates* have an entire posterior margin of

the post-temporal bone. A third genus, *Pseudoterapon* represented by *Terapon theraps* described in this paper is extracted from *Terapon*. Though both share a serrated post-temporal bone, they differ in scale size, tooth forms, and body stripe feature, as well as possessing unusually low isozyme and mtDNA genetic similarities.

*Pelates* was erected as a genus by Cuvier and Valenciennes (1829), but authors like Bleeker (1873-1876) and Klunzinger (1884) treated them as a subgenus under *Terapon*, recognizing their close resemblance in appearance. However, its systematic status will be clarified from molecular data.

During our investigation of molecular systematics of several thornfishes, we found that discrepancies existed between 2 *Terapon* species as to morphological and molecular criteria. This prompted us to reevaluate the phylogenetic relationships among

\*To whom correspondence and reprint requests should be addressed. Tel: 886-2-27899520. Fax: 886-2-27858059.  
E-mail: sclee@gate.sinica.edu.tw