

## Phylogeography of the Endemic Goby, *Rhinogobius maculafasciatus* (Pisces: Gobiidae), in Taiwan

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**Hui-Ling Cheng, Shong Huang, and Sin-Che Lee (2005)** Phylogeography of the endemic goby, *Rhinogobius maculafasciatus* (Pisces: Gobiidae), in Taiwan. *Zoological Studies* 44(3): 329-336. Genetic diversity within and among populations of the spot-banded goby, *Rhinogobius maculafasciatus*, in Taiwan was studied by analyzing mitochondrial DNA sequences. The sequence length varied from 2124 to 2126 bp and included the complete cytochrome b gene, 2 tRNA genes, and the control region of mitochondrial DNA (mtDNA). Forty-one haplotypes were identified from 60 specimens. Sequence analysis indicated that 2 distinct clades exist in *R. maculafasciatus*, and that each clade is divided into 2 subgroups. The 3 populations of the Kaoping River were not included in the same clade. The population sampled from the Lanyang River in northeastern Taiwan probably originated from the eastern coast of China and is connected with populations in southwestern Taiwan by the Coastal Current which flows along the western coast of Taiwan. A hierarchical examination of 6 populations in 3 drainage basins using analysis of molecular variance indicated high genetic differentiation (68.37%) among populations within basins. The results support the hypothesis that the current genetic structure was strongly affected by changes in drainage patterns due to geomorphological processes that occurred in the recent past when the main island of Taiwan formed and separated from the Asian continent 0.55 My before the present. <http://zoolstud.sinica.edu.tw/Journals/44.3/329.pdf>

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Members of the *Rhinogobius brunneus* species complex (Gobiidae), which includes *R. rubromaculatus* and some closely related members of the genus *Rhinogobius*, are widely distributed and common freshwater fishes in Taiwan. According to the time-series changes in strontium (Sr)-to-calcium (Ca) ratios from the primordium to the edge of the otolith, species in the complex are grouped into the 2 life history-based categories of fluvial and amphidromous types (Shen et al. 1998). The fluvial fish was recognized and described as a distinct species, *R. rubromaculatus*, based on morphological and molecular (allozyme) evidence by Lee and Chang (1996). Furthermore, recent detailed examinations have revealed that at

least 8 species included in the complex should be considered to occur in Taiwan based on morphometric data and some ecological considerations (Chen and Shao 1996). Nevertheless, molecular evidence of the *Rhinogobius* is scant or lacking.

*Rhinogobius maculafasciatus* is an endemic freshwater fish found only in middle and lower drainages of southern Taiwan, such as the Tsengwen and Kaoping Rivers (Chen and Shao 1996). This species can be distinguished by the lower counts of longitudinal scale rows and scales between the original 1st dorsal fin and pectoral fin among all species of the *R. brunneus* complex from Taiwan. However, the population genetic structure has not been described to date. During

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