

Molecular phylogeny and biogeography of caecilians from Southeast Asia (Amphibia, Gymnophiona, Ichthyophiidae), with special reference to high cryptic species diversity in Sundaland

Abstract

We investigated the phylogenetic relationships and estimated the history of species diversification and character evolution in two ichthyophiid genera: *Caudacaecilia* and *Ichthyophis*. We estimated the phylogenetic relationships of 67 samples from 33 localities in Southeast Asia from 3840-bp sequences of the mitochondrial 12S rRNA, 16S rRNA, and *cyt b* genes using Bayesian inference, maximum likelihood, and maximum parsimony methods. The Southeast Asian samples formed a well-supported clade differentiated from a South Asian sample. The Southeast Asian clade was divided into two subclades, one containing samples from South China, Indochina, Malay Peninsula, and Java. The other consisted of samples from Borneo and the Philippines. Neither *Caudacaecilia* nor *Ichthyophis* was monophyletic, nor did samples with or without light stripes lateral to the body form clades. We found several distinct sympatric lineages and undescribed species, especially from Sundaland.