Abstract

The shells of strombid gastropods show a wide variety of forms, ranging from small and fusiform to large and elaborately ornamented with a strongly flared outer lip. Here, we present the first species-level molecular phylogeny for strombids and use the resulting phylogenetic framework to explore relationships between species richness and morphological diversity. We use portions of one nuclear (325 bp of histone H3) and one mitochondrial (640 bp of cytochrome oxidase I, COI) gene to infer relationships within the two most species-rich genera in the Strombidae: *Strombus* and *Lambis*. We include 32 species of *Strombus,* representing 10 of 11 extant subgenera, and 3 of the 9 species of *Lambis,* representing two of three extant subgenera. Maximum likelihood and Bayesian analyses of COI and of H3 and COI combined suggest *Lambis* is nested within a paraphyletic *Strombus*. Eastern Pacific and western Atlantic species of *Strombus* form a relatively recent monophyletic radiation within an older, paraphyletic Indo-West Pacific grade. Morphological diversity of subclades scales positively with species richness but does not show evidence of strong phylogenetic constraints.