

Erection of a new genus: A total evidence approach to tapeworm systematics
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New tapeworm species are continually being discovered and described from a variety of vertebrate hosts. Traditionally, all taxonomic assessments have been based on morphology alone. Recently an increase in tapeworm molecular sequence data has made it possible to construct molecular phylogenies to confirm morphological hypotheses and thus incorporate a total evidence approach to tapeworm systematics. In the current study the elasmobranch host *Pristis clavata* Garman, 1906 (dwarf sawfish) was examined for a unique tapeworm complex suspected to be a genus new to science. Traditional morphological techniques were used to erect the new genus and to describe three new species. Molecular sequence data from the nuclear ribosomal subunit 28S were generated for at least two individuals of each putative new species. Bayesian inference and maximum parsimony were used to analyze the dataset within a much larger phylogenetic framework. The morphological results led to the erection of a new genus and three new species. The molecular results confirmed the presence of three species. Each hypothesized morphological species formed a clade distinct from the other two species. The molecular results however did not support the placement of all three species in a single genus. In both parsimony and Bayesian analyses species A and B formed a clade phylogenetically distinct from the most closely related genera, however species C was always sister taxon to the genus *Acanthobothrium*. The results of these molecular analyses suggest that the cestode species parasitizing sawfish are some of the most basal lineages of a very interesting clade including *Acanthobothrium* (parasites of elasmobranchs), *Proteocephalidea* (parasites of fresh water teleosts) and *Potomotrygonocestus* (parasites of fresh water rays in South America). This is a very diverse group of parasites in which each genus has at least some affinities to freshwater. This is in contrast to their closest relatives, which are found entirely parasitizing elasmobranchs in marine environments. These new species may be the key to understanding the origin and diversification of the group.