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Evolution of Troglomorphisms among Hypogean Fishes do not Occur in Parallel

Many hypogean species exhibit a series of features associated with the subterranean environment referred to as troglomorphisms. These characters most commonly include reduction and/or loss of eyes and pigmentation. In cave dwelling fishes, a reduction in number and complexity of scales has also been reported. Though not all hypogean fish species exhibit troglomorphisms, those that do often show a great variance in reduction of the characters, even within the same species. We performed an analysis of these variations for eye development, pigmentation and scales. To that end, we compared those features for the 298 species of cave fishes described to date. These characters were quantified for each species and used to analyze evolutionary patterns. We found that the reduction/loss of these features do not occur in parallel. We propose that such a finding is the result of a combination of varying environmental conditions as well as the phylogenetic history of these species.