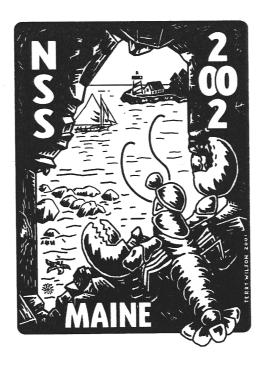
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When Cave Fish See the Light: Reaction Norm to Light Exposure During Development in Epigean, Troglomorphic, and Hybrids of Astyanax Fasciatus (Characidae)

Aldemaro Romero William R. Jeffery Yoshiyuki Yamamoto Environmental Studies Program Macalester College 1600 Grand Ave., St. Paul, MN 55105 romero@macalester.edu

The study of phenotypic plasticity among hypogean (cave, karst, and artesian) fauna has been virtually ignored. Anecdotal accounts suggested that the development of troglomorphic features such as blindness depigmentation could be epigenetically influenced by exposure to light. We conducted a series of experiments to ascertain the reaction norm to light on eyes, pigmentation, among epigean (eyed, pigmented), behavior troglomorphic (blind, depigmented), and hybrids (epigean X troglomorphic) individuals of Astyanax fasciatus (Pisces: Characidae). Results show that light (or its absence) can strongly influence the development of pigmentation in the regressed eye and swimming behavior of different stocks of this fish species. These results may have important implications in the understanding of the reduction or loss of features during evolution. The ability to respond to changes in light regimes may explain the different phenotypes among many taxa that can be found in the hypogean environment. Further, this phenotypic plasticity may be an adaptive feature on which natural selection acts to determine survivability in the cave environment.