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A LARVA OF THE ATLANTIC FLASHLIGHT FISH, *KRYPTOPHANARON ALFREDI* (BERYCIFORMES: ANOMALOPIDAE), WITH A COMPARISON OF BERYCIFORM AND STEPHANOBERYCIFORM LARVAE

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ABSTRACT

The first wildcaught larva of a flashlight fish is described from a single specimen of *Kryptophanaron alfredi,* 6.2 mm NL, collected with a midwater trawl in the Tongue of the Ocean, Bahamas. The larva lacks light organs, but an antrorse projection on each side of the snout represents at least the stalk of an incipient light organ. Other distinguishing features of larval *Kryptophanaron* include an elongate, heavily pigmented pelvic fin; a patch of pigment on and between the anteriormost dorsal-fin spines; numerous melanophores covering the head and trunk (but conspicuously absent on the caudal peduncle); prominent head spines and spiny scales. The distribution of head spines among larvae of major acanthomorph lineages is confusing phylogenetically, and larval specializations do not help resolve current controversy about "beryciform" monophyly. Larval morphology provides some support for a close relationship between the Berycidae and other berycoid families and corroborates hypotheses based on adult characters that: Anoplogastridae, Diretmidae, Anomalopidae, Trachichthyidae, and Monocentridae form a natural assemblage; anoplogastrids and diretmids are sister taxa; and trachichthyoids (anomalopids, trachichthyids, and monocentrids) are monophyletic. Larval features highlight a need to reassess relationships among trachichthyoids.

Kryptophanaron alfredi Silvester and Fowler is the only known Atlantic representative of the flashlight fish family Anomalopidae. It has been collected off Jamaica, Puerto Rico, Grand Cayman Island, Curacao, and the Bahamas (Colin et al., 1979; Johnson and Rosenblatt, 1988). A second species of *Kryptophanaron,* the eastern Pacific *K. harveyi* Rosenblatt and Montgomery, 1976, was made the type of a distinct genus, *Phthanophaneron,* by Johnson and Rosenblatt (1988). Adult anomalopids are characterized by the presence of a subocular light organ, which contains symbiotic luminescent bacteria (Harvey, 1921, 1922, 1925; Haneda and Tsuji, 1971; Leisman et al., 1980; Haygood et al., 1984) and can be occluded by downward rotation, erection of a ventral "shutter" of elastic skin, or by some combination of the two methods (Johnson and Rosenblatt, 1988). Reared yolksac larvae (3.3–3.8 mm NL) of the Pacific anomalopid *Anomalops katoptron* were described and illustrated by Colin (1989). Larger larvae are undescribed, and thus the ontogeny of the luminous organ is unclear.

Two recent studies of beryciform phylogeny (Johnson and Patterson, 1993; Moore, 1993) have proposed different classifications. We follow Johnson and Patterson (1993) in recognizing two orders: Beryciformes (Anomalopidae, Anoplogastridae, Berycidae, Diretmidae, Holocentridae, Monocentridae, and Trachichthyidae) and Stephanoberyciformes (Barbourisiidae, Cetomimidae, Gibberichthyidae, Hispidoberycidae, Megalomycteridae, Melamphaidae, Rondeletiidae, and Stephanoberycidae). *Sorosichthys,* previously considered to constitute a monotypic family, was relegated to the Trachichthyidae by Kotlyar (1992), and *Paradiretmus,* formerly the sole member of the Paradiretmidae, was synonymized with the pomacanthid genus *Centropyge* (Allen et al., 1976).

In their review of beryciform ontogeny, Keene and Tighe (1984) noted that