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The larval, juvenile, and adult stages of the Caribbean goby, *Coryphopterus kuna* (Teleostei: Gobiidae): a reef fish with a pelagic larval duration longer than the post-settlement lifespan

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Abstract

Additional larval, juvenile, and adult specimens and live photographs of the Caribbean Kuna Goby, *Coryphopterus kuna*, expand the known geographic range for the species and allow a comprehensive description of all the life stages for this recently-discovered species, including age and growth estimates from daily otolith increments. The Kuna Goby is found widely throughout the tropical western Atlantic, including southern Florida, Quintana Roo on the Yucatan Peninsula of Mexico, Belize, Honduras, Panama, San Andres Island, Bonaire, and Guadeloupe. The additional specimens indicate that *C. kuna* has a pelvic frenum and that females have a black flag on the outer portion of the first two spinous dorsal-fin membranes, while males have a dark stripe along the mid-length of the spinous dorsal fin. The development of melanophores on pelagic larvae through the transition to settled juvenile is described. The Kuna Goby is a notably small goby: larvae settle around 7–9 mm SL, adults mature at 10–11 mm SL and then only attain about 17 mm SL. Kuna Gobies settle after a 60-day pelagic larval life, and mature rapidly. They are reproductive in as few as three weeks and live for about two months after settlement. This is the first reported fish in which the pelagic larval duration is generally longer than the post-settlement lifespan.

Key words: Kuna Goby, Gobiidae, gobies, larvae, pelagic larval duration, distribution, biogeography, Caribbean, Atlantic, fishes, DNA, barcode, otoliths, aging, life history

Introduction

The Kuna Goby, *Coryphopterus kuna*, was recently described on the basis of a single preserved adult specimen from Panama along with a transitional larva from Banco Chinchorro (Quintana Roo, Mexico) (Victor 2007). The larva was matched to the adult by DNA barcode sequencing and the Kuna Goby was the first new species description for a vertebrate that included the COI barcode as an integral part of the description (Ward *et al.* 2009). Since then, photographs of living Kuna Gobies have been assembled from several parts of the tropical Western Atlantic, juveniles and adults have been captured on reefs in Utila (Honduras), and pelagic larvae have been identified from waters off of Xcalak (Quintana Roo, Mexico). These specimens allow a more comprehensive description of this elusive species, with some corrections and clarifications of geographic range, habitat preference, pelvic-fin morphology, and markings of all life stages for the species. In addition, the age and growth can be estimated from daily otolith increments- in this case revealing the remarkably short life span of adult Kuna Gobies.

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