Article

Reclassification of the Indo-Pacific Hawkfish *Cirrhitus pinnulatus* (Forster)

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Abstract

The hawkfish *Cirrhitus pinnulatus* Forster (in Bloch & Schneider 1801) was regarded as one wide-ranging Indo-Pacific species, from the Red Sea and east coast of Africa to the Hawaiian Islands and the islands of French Polynesia. Schultz (1950) resurrected the name *C. alternatus* Gill for the population in the Hawaiian Islands and Johnston Atoll, and described the Red Sea population as a new species, *C. spilotoceps*, based on morphological data. Randall (1963) confirmed the differences that Schultz used to separate *Cirrhitus pinnulatus* into three species, but preferred to regard them as subspecies. We examined more specimens, colour photographs, and used genetic comparisons to determine the validity of the three species recognized by Schultz (1950). Combining mitochondrial cytochrome oxidase I and cytochrome *b* sequence data from specimens of *C. pinnulatus pinnulatus* from the Indo-Pacific, *C. spilotoceps* from the Red Sea, and *C. pinnulatus maculosus* from Hawai'i, we detected levels of sequence divergence (5–12%) that support the species-level designation of *C. spilotoceps*. We detected no genetic differentiation but maintain the subspecies designation of the Hawaiian form based on morphological and colour differences. We found a third genetic lineage in the Indian Ocean and Western Pacific that is 5% divergent from *C. spilotoceps*. We refrain from designating this group as a separate subspecies until further morphological and genetic study can be completed.

Key words: Cirrhitidae, *Cirrhitus*, Indo-Pacific, Red Sea, endemic, DNA

Introduction

Cirrhitus pinnulatus Forster (in Bloch & Schneider 1801), known by the common name Stocky Hawkfish, was regarded as one wide-ranging Indo-Pacific species, from the Red Sea and east coast of Africa to the Hawaiian Islands and the islands of French Polynesia. Schultz (1950) resurrected the name *C. alternatus* Gill 1862 from the synonymy of *C. pinnulatus* for the population in the Hawaiian Islands and Johnston Atoll, and described the Red Sea population as a new species, *C. spilotoceps*. He distinguished the three based on colour and slight differences in lateral-line scale and gill-raker counts. He also described *Cirrhitus albopunctatus* as a new species from Niuafoou Island, Tonga, *C. nigropunctatus* from Mauritius, and recognized *C. rivulatus* Valenciennes as a valid species from the tropical eastern Pacific. He should have mentioned *C. atlanticus* Osório as a valid species from tropical West Africa.

Randall (1963) reviewed the family Cirrhitidae, and confirmed the differences that Schultz used to separate *Cirrhitus pinnulatus* into three species, but preferred to regard them as subspecies. He noted that *Cirrhitus maculosus* Bennett 1828 is an earlier name for the Hawaiian population than *C. alternatus* Gill. *Cirrhitus albopunctatus* was regarded as a valid species but *C. nigropunctatus* was placed in the synonymy of *C. punctatus* Cuvier. Randall (2001) revised the generic classification of the Cirrhitidae. He reclassified *Cirrhitus albopunctatus* Schultz in the new monotypic genus *Cristacirrhitus*.

In the present paper, with the advantage of more specimens to examine, colour photographs, and molecular study, we conclude that Schultz's description of *Cirrhitus spilotoceps* for the Red Sea form of *C. pinnulatus* is justified, and we extend its range to the Gulf of Oman based on underwater photographs. Comparison of mitochondrial DNA (mtDNA) of Hawaiian *C. pinnulatus* with that from elsewhere in the Central Pacific failed to