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An additional record of *Kyphosus vaigiensis* (Quoy & Gaimard, 1825) (Osteichthyes, Kyphosidae) from Sicily clarifies the confused situation of the Mediterranean kyphosids

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Abstract

The lowfin chub, *Kyphosus vaigiensis*, is reported for the first time off Favignana Island, Sicily, central Mediterranean Sea. The specimen was identified on the basis of morphometric and meristic characters as well as mitochondrial DNA sequences (COI and 16S-rDNA). Two, perhaps three, *Kyphosus* species—*K. bigibbus*, *K. sectatrix* and *K. vaigiensis*—have been occasionally recorded in the Mediterranean. These species occur both in the Atlantic and Indo-Pacific regions but it is likely they entered the Mediterranean through the Strait of Gibraltar. However, it is unclear whether they have established reproductive native populations in the Mediterranean.

Key words: Mediterranean Sea, Egadi Islands, Sicily, *Kyphosus vaigiensis*, new record, COI, 16S

Introduction

The taxonomy of the genus *Kyphosus* (Lacepède, 1801) “has been confused to the point where many authors did not attempt species level identification” (Knudsen & Clements, 2013a: 5). Two recent revisions (Knudsen & Clements, 2013a; Sakai & Nakabo, 2014) addressed this uncertainty; yet remain at odds concerning the identity and number of species that have been recorded in the Atlantic Ocean and Mediterranean Sea (Table 1).

The two revisions differ in the number of *Kyphosus* species occurring in the areas adjacent to the Mediterranean Sea. Knudsen & Clements (2013a) identified four widespread species (*Kyphosus bigibbus*, *K. vaigiensis*, *K. cinerascens*, *K. sectatrix*) occurring both in the Atlantic and Indo-Pacific areas, whereas Sakai & Nakabo (2014), identified three species (*K. atlanticus*, *K. bosquii*, *K. incisor*) in Atlantic region and six species (*K. vaigiensis*, *K. bigibbus*, *K. cinerascens*, *K. sydneyanus*, *K. pacificus*, *K. hawaiiensis*) in the Indo-Pacific region. However, the two revisions mainly differ on the acceptance of some valid species (Table 1). Consequently, understanding which species occur in the Mediterranean and by which route they entered is a challenge.

According to Knudsen & Clements (2013a), the species already recorded in the Mediterranean are *K. vaigiensis* and *K. sectatrix*. Knudsen & Clements (2013a) used digital radiographic photography to examine osteological characters, and statistically analysed morphometric and meristic characters, in addition to molecular phylogenetic analysis. They consider that the lowfin chub, *K. vaigiensis* (Quoy & Gaimard, 1825), is widely distributed, with records in the Atlantic, Pacific and Indian Oceans (including the Red Sea) and treated *K. incisor* (Cuvier in Cuvier & Valenciennes, 1831) as a junior synonym. Similarly, they consider *K. sectatrix* (Linnaeus, 1758) to be “much more widespread than previously thought” (Knudsen & Clements, 2013a: 58) and present in the Mediterranean. Sakai & Nakabo (2014), in their revision of the Atlantic and Eastern Pacific *Kyphosus* species,