Occurrence of Gardiner's Butterfly Fish, *Chaetodon gardineri* (Norman, 1939), (Chaetodontidae) in Coastal Waters of Pakistan

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Abstract: This study is the first report on the occurrence of *Chaetodon gardineri* in the coastal waters of Pakistan. The detail description of morphometric and meristiccharacters of *C. gardineri* was presented in this paper.

Keywords: *Chaetodon gardineri*, morphometrics, Arabian Sea, Karachi.

INTRODUCTION

The Chaetodontidae is a big family of colorful butterfly fishes comprised of more than 130 species. They have compressed, deep and flattened bodies with projected mouths [1]. About 130 species of Chaetodontidae were reported from coral reef areas [2, 3], and half of these butterfly fishes feeds on corals and rely on reefs for breeding, nursing ground, and shelter [4-8]. The fishes belong to the Chaetodontidae are also serves as a bio-indicator of coral reef health [8-14]. Butterfly fishes have been comprehensively studied due to their bright and colorful shapes [15-18]. Family Chaetodontidae is poorly reported in Pakistan with only 4 representatives of 3 genus [19]. *Chaetodon gardineri* also called Gardineri's Butterfly fish or yellow dotted Butterfly fish commonly lives in western Indian Ocean from Gulf of Aden, Arabian sea coast towards Oman and Sri Lanka [20], and northern Sumatran waters [1]. Despite of their wide distribution in western Indian Ocean no description of this fish is available from Pakistani waters. The present study provides the first report on the presence of *Chaetodon gardineri* in the coastal waters of Pakistan. The meristic characters of the fish were compared with the earlier reported data.

MATERIALS AND METHODS

A single specimen of the fish was collected from the by-catch of the trawl landings at Karachi fish harbor, the biggest landing site of Pakistan. The total length (TL, cm), standard length (SL, cm), and total weight (TW, gm) were measured. The color and bands was noted in the fresh specimen. All morphometric measurements were taken on the left side of the specimen and the species was identified by following the description given by [1, 21].

RESULTS

The present specimen (Figure **1**) was caught in August 2016. Body is deep and compressed and oval in shape; eyes small; snout long; small protractile mouth; head steeps and caudal peduncle is deep; large black and yellow bar starts from below the belly or below the operculum and passed to the eye and runs to the dorsal and caudal fin and end at the mid of anal fin. Yellow dotted lines 15 in number. Dorsal fin XII + 23; anal fin III +23; pectoral fin 14; pelvic fin I +5; caudal fin 15. Anal and caudal fins are yellow in colour. Pectoral fin white in colour with red at the base. Anal fin with 3 hard spines. Dorsal fin black with yellow tips. Pelvic fin whitish with yellow and black colour. The morphometric characters and measurements of

Figure 1: Butterfly fish *C. gardineri* caught from Pakistan.

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Table 1: Morphometric Characters and Measurements of *Chaetodon gardineri* in Present Study

Morphometric characters	Cm
Total length	16
Standard length	13
Eye diameter	1
Inter-orbital length	1.9
Body depth	9.7
Snout length	1
Caudal fin length	3
Anal fin length	5.7
Pelvic fin length	2.6
Pectoral fin length	3
Dorsal fin length	9.8
Head length	5.2
Pre-orbital length	2.2
Post-orbital length	1.6
Caudal peduncle length	1
Total weight	97 gram

Table 2: Comparison of Meristic Characters of *Chaetodon gardineri* with other Studies

Locality	Dorsal fin	Anal fin	Pectoral fin	Caudal fin	Pelvic fin	Length (TL)	Author
Pakistan (Arabian Sea)	XII,23	III,23	14	15	I,5	16cm	Present study, 2016
India (Andaman Sea)	XII,20-22	III,18-19	13-14	-	I,5	17cm	Rajan, 2010
Oman (Gulf of Oman)	XII, 20-22	III, 18-19	14	-	-	17 cm	Randall,1995

Chaetodon gardineri given in Table **1**. The meristic characters of *C. gardineri* was compared with the description of other reports given in Table **2**.

DISCUSSION

C. gardineri resemble with *C. decussates* by having a black bar which starts from the mouth and runs to the dorsal fin to caudal peduncle and ends at anal fin. *C. gardineri* is distinguished with *C. decussates* in many characters as they have black dorsal and anal fins, different body lines patterns and meristic characters [22]. The description of two species *C. collare* and *C. pictus* was available from Pakistan and this is the first report on the occurrence of third species *Chaetodon gardineri* from the coastal waters of Pakistan. Our specimen shows slight variation in the meristic characters when compared to the description of the specimen given by other authors from the region [22, 23].

This fish is rare in the catches of trawlers in Pakistan as only a single specimen was observed during the six month study. Butterfly fishes are not commercially exploited and they were caught as a by-catch in deep water trawling operations and hence used in poultry and fish feed industry in Pakistan. Butterfly fishes were used as an aquarium fishes all over the world. These fishes require attention as an industry in our region.

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