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## ON THE OCCURRENCE OF BUTTERFISH, *STROMATEUS FIATOLA* LINNAEUS, 1758, IN THE EASTERN ADRIATIC SEA: A REVIEW

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### ABSTRACT

*The butterflyfish Stromateus fiatola specimen (total length TL=46.8 cm, weight W=1320.8 g, ♂) was caught near Klek (southern Adriatic, Croatian coast). According to the previous records of the species in the Adriatic Sea, it may be stated that it is rare in the area. The main morphometric and meristic data are given.*

**Key words:** *Stromateus fiatola*, occurrence, rarity, eastern Adriatic

## REVISIONE DEI RITROVAMENTI DI LECCIA BASTARDA, *STROMATEUS FIATOLA* LINNAEUS, 1758, IN ADRIATICO ORIENTALE

### SINTESI

*Nel novembre 2005 è stato catturato un esemplare di leccia bastarda Stromateus fiatola (lunghezza totale = 46,8 cm, peso = 1320,8 g, ♂) nelle acque costiere vicino a Klek (Adriatico meridionale, costa croata). In accordo con le segnalazioni passate di tale specie nel mare Adriatico, gli autori la definiscono rara in quest'area. Nell'articolo vengono riportati i principali dati morfometrici e meristici.*

**Parole chiave:** *Stromateus fiatola*, ritrovamento, rarità, Adriatico orientale

## INTRODUCTION

The butterflyfish, *Stromateus fiatola* Linnaeus, 1785, is a benthopelagic marine fish occurring at depths ranging from 10 to 70 m. It occurs along the Atlantic coasts from the Bay of Biscay (rare) southward to the Cape of Good Hope, and in the Mediterranean (not in Adriatic) (Haedrich, 1986). Jardas (1985, 1996) reported on its presence in the Adriatic Sea (fairly rare), while Haedrich (1986) excluded its presence in the Adriatic. Young specimens are often found associated with pelagic medusae, forming large shoals (Jardas, 1996). It feeds on small fishes, zooplankton and medusae (Haedrich, 1986).

There are no data available on biology and ecology of this species in the Adriatic Sea. The aim of this paper is to present data regarding the new record of butterflyfish in the eastern Adriatic (with a review of Adriatic records) and its morphometric and meristic characters.

## MATERIAL AND METHODS

The butterflyfish specimen (total length TL=46.8 cm, weight W=1320.8 g, ♂) (Fig. 1) was caught by gill-net on 9<sup>th</sup> November 2005 near the village of Klek (southern Adriatic, Croatian coast) (Fig. 2) at a depth of 10 m on rocky-muddy bottom. The specimen was identified according to Šoljan (1975). It was subsequently measured to the nearest 0.1 cm and weighed to the nearest 0.1 g. The meristic characters considered were dorsal, anal and pectoral fins. It is deposited in the Ichthyological Collection of the Institute of Oceanography and Fisheries in Split, Croatia (IOR-300).



**Fig. 1:** Specimen of the butterflyfish *S. fiatola* (♂, TL = 46.8 cm).

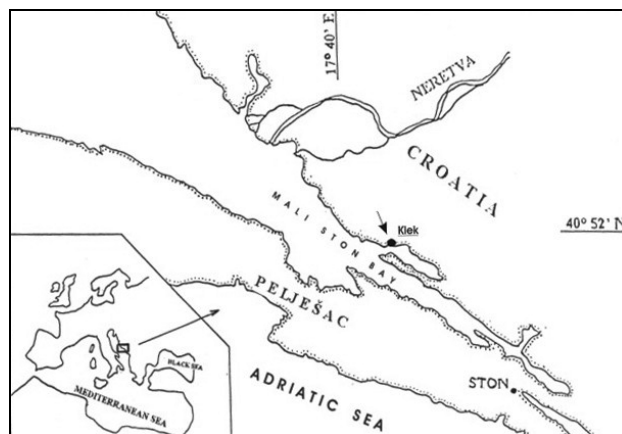
**Sl. 1:** Primerek fige *S. fiatola* (♂, celotna dolžina = 46,8 cm).

## RESULTS AND DISCUSSION

In Table 1, the main morphometric and meristic data are given. The meristic characteristics of butterflyfish are in agreement with data by Haedrich (1986), *i.e.* D 42-50, A 33-38, P 21-25.

## Description of the Adriatic specimen

The specimen has a deep compressed body. Eyes and mouth are small, dorsal fin single and long based, longer than the similar anal fin. Anterior rays are longer than those that follow, but fins are not falcate. Pectoral fins are broad and wing-like, but not prolonged, while pelvic fins are absent. Colour is generally bluish on the back and whitish on the sides and below, overall with a silver tinge.



**Fig. 2:** Site where the specimen of *S. fiatola* was caught (Klek, southern Adriatic).

**Sl. 2:** Lokalizacija ujetega primerka fige *S. fiatola* (Klek, južni Jadran).

Graeffe (1888) reported on the presence of butterflyfish at the Trieste fish market and their occurrence together with the jellyfish *Rhizostoma pulmo* L. The first record of the butterflyfish was made near Rijeka on 16<sup>th</sup> July 1896 (Langhoffer, 1903). Other records were made in the Neretva Channel on November 20, 1944 (Onofri, 1997), in the Trpanj area (Pelješac peninsula) on February 2, 1996 (Pallaoro & Jardas, 1996), in the Dubrovnik area (without data on date of capture) (Mušin, 1989) and in the Vis channel (without data on date of capture) (Onofri, 1983). The first record of a juvenile butterflyfish was made near Stončica, Vis Island, on 23<sup>rd</sup> September 1998 (Dulčić *et al.*, 2000).

This record could possibly be connected with the findings of huge quantities of jellyfishes: *R. pulmo*, *Pelagia noctiluca*, *Cotylorhiza tuberculata* and *Aurelia aurita* in 2005 along the entire eastern Adriatic coast (D. Lučić, *pers. comm.*), since they constitute a very significant component of the species' diet. An unusual occurrence of such rarely found fish could be related to the changes in climate and/or oceanographic conditions (Quigley, 1985; Dulčić *et al.*, 1999). The penetration and occurrence of the species may also be connected with some special oceanographic conditions and input of intermediate waters (50–100 m) in the Adriatic (Adriatic ingres-

sions), which influenced the increase in salinity and temperature. Furthermore, Pallaoro (1988) stated that the Adriatic ingressions caused more rare species to appear in the central Adriatic region in the 1986–87 period.

**Tab. 1: Morphometric (in cm) and meristic data of the butterflyfish specimen (♂) in the southern Adriatic.**

**Tab. 1: Morfometrični (v cm) in meristični podatki o primerku fige (♂), ujete v južnem Jadranu.**

<b>Weight (W) (g)</b>	1320.8
Weight of gonads (g)	9.1
<b>Morphometric characters (cm)</b>	
Total length (TL)	46.8
Standard length (SL)	34.0
Head length (Lc)	13.0
Predorsal length (Lpd)	13.4
Preanal length (Lpa)	15.3
Prepectoral length (Lpp)	9.1
Dorsal fin length (Ld)	18.8
Anal fin length (La)	17.2
Pectoral fin length (Lp)	5.1
Caudal fin length (Lc)	7.8
Maximal body height (Tmax)	17.6
Minimal body height (Tmin)	3.0
Eye diameter (O)	1.0
Interorbital length (Io)	3.0
Preorbital length (Po)	2.4
<b>Meristic characters</b>	
Dorsal fin (D)	44
Pectoral fin (P)	23
Anal fin (A)	33

It could be pointed out that the term 'rarity' is a subjective and elastic term varying with place and, moreover, is subject to change with our increasing knowledge of the fauna. According to Morović (1974), the rarity of certain fish species could be evaluated from the records in scientific literature. The same author proposed three possibilities regarding the term rarity: a) if a species is recorded less than five times, it should be treated as a very rare species, b) if there are up to ten records, the species should be considered rare, and c) a fish species caught in certain areas and only during specific season should be treated as fairly rare. If we take this evaluation into consideration, then the butterflyfish is a rare species in the Adriatic Sea. Although such species may not be very important for community metabolism and some other functional properties, they may constitute the largest component of species richness (Putman, 1994). Santos *et al.* (2002) noted that *S. fiatola* was a very rare species off the Algarve (southern Portugal); while Haedrich (1986) stated that it was rare in the Bay of Biscay. Papaconstantinou (1988) reported on the rarity of *S. fiatola* in Greek waters. It thus appears that this species is rare in the above mentioned areas, but more abundant in the areas southward from Morocco to the Cape of Good Hope (South Africa) (Haedrich, 1986). We may conclude that the rarity of the butterflyfish in the Adriatic Sea is not connected with the use of inappropriate fishing gears, but that we are dealing with a truly rare species.

The status of butterflyfish needs to be evaluated on a continuous basis as it is becoming increasingly apparent that uncommon species, and particularly those on the edge of their distribution, can be essential indicators of environmental changes.

## O POJAVLJANJU FIGE, *STROMATEUS FIATOLA* LINNAEUS, 1758, V VZHODNEM JADRANSKEM MORJU: PREGLED

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### POVZETEK

Novembra 2005 je bila v hrvaških obrežnih vodah blizu vasi Klek (južni Jadran) ujeta figa *Stromateus fiatola* (ce-

lotna dolžina = 46,8 cm, teža = 1320,8 g, ♂). Glede na prejšnje podatke o tej vrsti v Jadranskem morju gre za bržkone redko vrsto v tem območju. Podani so glavni morfološki in meristični podatki ujetega primerka.

**Ključne besede:** *Stromateus fiatola*, pojavljanje, redkost, vzhodni Jadran

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