

**THE FIRST RECORDED OCCURRENCE OF THE MOTTLED GROUPEL,  
*MYCTEROPERCA RUBRA* (SERRANIDAE),  
IN THE SOUTHEASTERN ADRIATIC SEA**

by

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**RÉSUMÉ.** - Premier spécimen de badèche rouge, *Mycteroperca rubra* (Serranidae), signalé en mer Adriatique du sud-est.

Le premier exemplaire de badèche rouge, *Mycteroperca rubra*, (poids = 381,5 g ; LT = 327 mm) a été capturé en mer Adriatique du sud-est, au large de Dubrovnik, Croatie (42,5°N), en septembre 2001. La présence de la badèche rouge dans les eaux de la mer Adriatique conforte l'hypothèse du réchauffement actuel des eaux de la Méditerranée septentrionale.

Key words. - Serranidae - *Mycteroperca rubra* - MED - Adriatic Sea - First record.

The proposition of Francour *et al.* (1994) that the Mediterranean Sea is warming is supported, at least circumstantially, by the accumulating observations of previously unrecorded tropical fish species in the generally subtropical and temperate waters of the Mediterranean. To date, more than ninety such exotic species have been identified: (<http://www.ciesm.org/atlas/appendix1.html>).

Similarly, an increasing number of native Mediterranean species, such as *Epinephelus marginatus* and *E. aeneus*, have been recorded in higher latitudes (Francour *et al.*, 1994; Dulčić and Lipej, 1997; Glamuzina and Skaramuca, 1999; Glamuzina *et al.*, 2000).

Groupers of the genus *Mycteroperca* are mainly tropical species; their occurrence in subtropical and temperate waters is limited. Only the so-called Mottled Grouper, *Mycteroperca rubra* (Bloch, 1793) is native to the Mediterranean, though it is not as common as groupers of the genus *Epinephelus*. In fact, it seems that it is relatively rare in the Mediterranean, as stated by Bouain *et al.* (1983) for Tunisian waters. On the contrary, the Mottled Grouper is very common along the coast of Senegal and eastern Atlantic (Séret, 1981). However, the first signs of its expansion in the Mediterranean waters was reported almost 30-years ago (Tortonese, 1975).

The present contribution describes the first record of the Mottled Grouper in the southeastern Adriatic Sea.

**RESULTS**

A single specimen of mottled grouper was caught by a spearfisherman on 9th September 2000 at a location several kilometers offshore of Dubrovnik, Croatia (42.5°N) (Fig. 1). The capture site is characterized by large stones dumped in the area several years earlier to form an artificial reef. Of note, there have been unsubstantiated sightings of four other Mottled Groupers by diver in the same area. These fish were of similar characteristics as the specimen herein described and were present in the same location during few months period.

The specimen in question, examined at the Biological Institute, had a total length of 327 mm; a wet mass of 381.5 g; and was estimated to be 3 years old by scale reading under binocular microscope (Fig. 2).

The main feature that distinguishes *M. rubra* from groupers of the genus *Epinephelus*, especially the very similar *E. caninus*, is the number of soft anal fin rays: from 10 to 13, usually 11-12, for *M. rubra*; 7 to 10 for *Epinephelus* and 8 for *E. caninus* (Heemstra and Randall, 1993).

All other important morphological characteristics of the captured specimen fit well with the species description provided by Heemstra and Randall (1993) (Table I). For example, the caudal-fin margin is truncated, as is typical in this genus for fish from 20-50 cm SL.

**DISCUSSION**

The Mottled Grouper, *Mycteroperca rubra*, previously has not been recorded in the southeastern Adriatic; nor was it included in the latest list of Adriatic ichthyofauna (Jardas, 1996). According to Heemstra and Randall (1993), its distribution is limited to the Ionian sea and below latitude 40°N (Fig. 1).

The location at which the specimen described herein was captured is approximately 450 km north of the published northern limit of distribution of this species (Tortonese, 1975; Fisher *et al.*, 1987; Heemstra and Randall, 1993). However, the distribution map of Mottled Grouper published in Tortonese (1986) is not precise and also reported occurrence of this species in southeastern Adriatic, without supporting data.

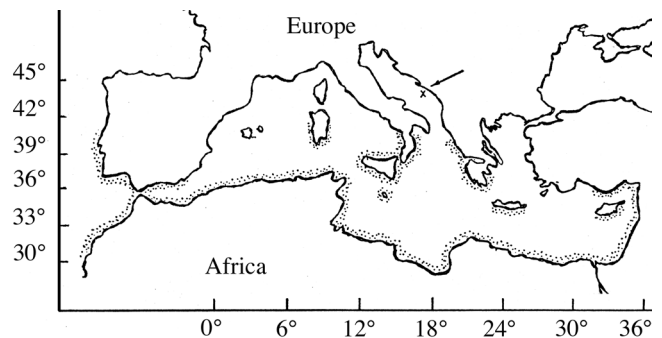


Figure 1. - Area of distribution of the Mottled Grouper, *Mycteroperca rubra* (after Heemstra and Randall, 1993) and the location of its first recorded occurrence in the Adriatic Sea (arrow).

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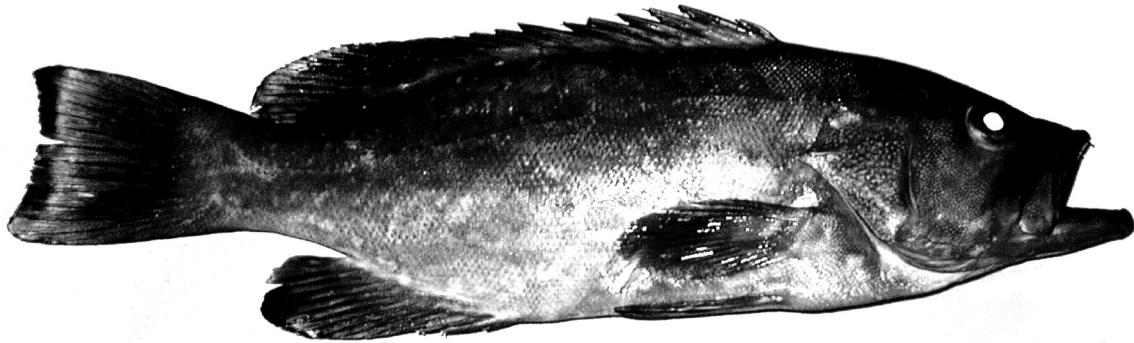


Figure 2. - Mottled grouper, *Mycteroperca rubra* (P = 381.5 g; LT = 327 mm) caught in September 2001, near Dubrovnik (Croatia) in the southeastern Adriatic.

Table I. - Morphometric (in mm) and meristic data of the Mottled Grouper, *Mycteroperca rubra*, caught in the southeastern Adriatic.

Features	in mm	in % LS
<b>Morphometric</b>		
Total length	327	
Standard length	285	
Fork length	42	14.73
Predorsal length	98	34.38
Preanal length	159	55.78
Preventral length	105	36.84
Prepectoral length	94	32.98
Dorsal fin length	134	47.01
Anal fin length	50	17.54
Ventral fin length	49	17.19
Caudal fin length	52	18.24
Body depth (max)	76	26.66
Body depth (min)	66	23.15
Head length	93	32.63
Ocular diameter (horiz.)	14	4.91
Interorbital width	21	7.36
Preorbital length	28	9.82
<b>Meristics</b>		
Dorsal fin rays	XI + 16	
Anal fin rays	III + 12	
Pectoral fin rays	17	
Ventral fin rays	I + 5	
Caudal fin rays	20	
Lateral-line scales	71	
Gill rakers upper limb	17	
lower limb	28	
total	45	
Weight (g)	381.5	

A similar finding was found in the case of the White Grouper (*Epinephelus aeneus*) previously reported by our group (Glamuzina *et al.*, 2000).

This finding (caught and observed fish) does not permit any

confident comment to be made regarding whether or not this species has established a breeding population in the area. In any event, the impact of successful colonization by these and other exotic fish species would, at the least, represent a significant change in the composition of the native ichthyofauna. It is reasonable to speculate that addition of this new element could influence the behaviour and ecology of native fish species and, from an economic standpoint, affect the local fisheries, as was recently observed for dusky grouper, *E. marginatus* (Glamuzina, 1999).

Over the past decade several investigators have reported the occurrence of new fish species in Adriatic waters (Lipej *et al.*, 1996; Dulčić *et al.*, 1999; Glamuzina *et al.*, 2000; Parenti and Bressi 2001). These records are composed almost entirely of thermophilic species.

This has had an impact on the distribution and population structure of the Adriatic's native fish species (Glamuzina and Skaramuca, 1999). The most remarkable change in population structure was observed recently with *Balistes carolinensis*. Once entirely unknown in the Dubrovnik area, and subsequently observed only very rarely, today this species is an established part of the rocky coast ichthyofauna (Laboratory of ecology and aquaculture, Dubrovnik, unpubl. data).

The waters around Dubrovnik are characterized by a narrow belt of shallow coastal waters periodically subjected to the influx of water masses from the open Adriatic. Faunal changes observed in this area thus could be used to forecast changes in the waters of the central and northern Adriatic, as has been the case with the Dusky Grouper (Glamuzina and Skaramuca, 1999).

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