

ON THE OCCURRENCE OF THREE MESO- AND BATHYPELAGIC FISHES IN THE ADRIATIC SEA. Jakov DULČIĆ, Institute of Oceanography and Fisheries, P.O. Box 500, Šetalište Ivana Meštrovića 63, 21000 Split, CROATIA.

RÉSUMÉ. Note sur la présence de trois poissons méso- et bathypélagiques dans l'Adriatique.

L'étude d'anciennes collections ichtyologiques a permis d'établir de nouveaux signalements pour l'Adriatique: *Valenciennellus tripunctulatus* (premier signalement confirmé), *Diaphus metopoclampus* (premier signalement) et *Gonichthys cocco* (premier signalement d'un adulte).

Key words. *Valenciennellus tripunctulatus* - *Gonichthys cocco* - *Diaphus metopoclampus* - MED - Adriatic Sea - New records.

Information existing on the meso- and bathypelagic ichthyofauna of the Adriatic Sea is mainly based on data from the research cruises conducted by the vessels "Thor" (1908-1910), "Najade" (1911-1914), "Hvar" (1948-1949), and "S. Lo Bianco" (1972-1974). The distribution of the ichthyofauna was also worked out the basis of this material. The data on the adult and developmental stages of these fishes originate from the papers by Pietschmann (1914), Jespersen (1915), Täning (1918), Karlovac (1952, 1953), and Fabiano and Fabiano (1977). In the middle seventies, cruises of the R/V "Andrija Mohorovičić" were conducted in the open Adriatic. The scope of the present paper is to present new data on some elements of the meso- and bathypelagic ichthyofauna of the Adriatic Sea.

R/V "Andrija Mohorovičić" cruises were performed during the periods: September 22 -



Fig. 1. Adriatic Sea. Map of sampling stations (□) during R/V "Andrija Mohorovičić" cruises 1974-1976. •: stations 8 and 58 where specimens of *Gonichthys cocco*, *Diaphus metopoclampus* and *Valenciennellus tripunctulatus* were collected.

October 16, 1974; March 3 - 18, 1975; April 20 - May 17, 1975; February 2 - March 1, 1976; and July 6 - 30, 1976, covering the entire Adriatic Sea from the most northern areas till the Strait of Otranto (35 fixed stations along 8 transects) (Fig. 1). The material was collected (a total of 132 plankton samples) using an IOSN international net (250 μm mesh, 113 cm in diameter and 350 cm in length). At each station routine samples were taken from different depth reaching maximum of 1180 m. Samples were fixed with 2.5% neutralised formaldehyde. All fishes were measu-

Table 1. Meristic characters of the three species (*Valenciennellus tripunctulatus*, *Gonichthys cocco*, *Diaphus metopoclampus*) in the study area. *: pseudobranch present; branchiostegal rays 10, 3 on epihyal; dorsal fin rays followed by a dorsal adipose fin; pelvic fin rays 7; photophores: ORB 1, BR (6), OP 3, OP₃ single, VAV (5), AC in 5 well-separated groups, IP (3)+(4), PV (16); (D: dorsal fin rays; A: anal fin rays; P: pectoral fin rays; AO: anal photophores.

Species	D	A	P	AO	Gill rakers
<i>Gonichthys cocco</i>	11	21	14	6 + 12 (18)	5 + 1 + 7 (13)
<i>Valenciennellus tripunctulatus</i> *	8	24	17	-	12 + 3 (15)
<i>Diaphus metopoclampus</i>	15	15	10	6 + 5 (11)	8 + 1 + 15 (23)

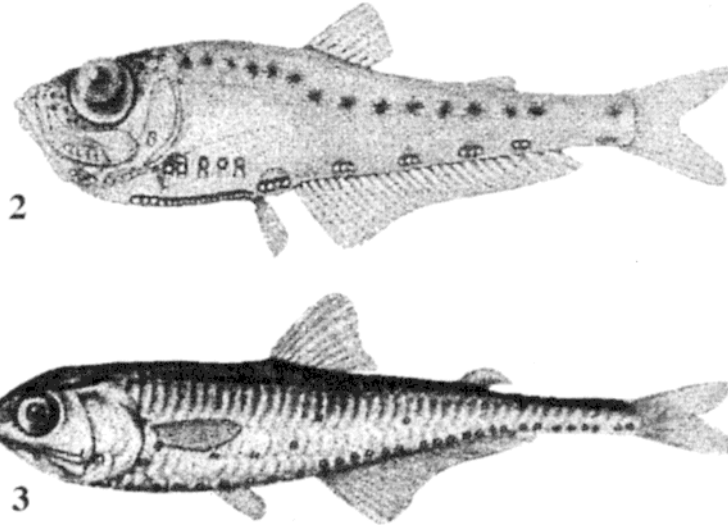


Fig. 2. *Valenciennellus tripunctulatus*; specimen of 28.4 mm TL from the Adriatic.
 Fig. 3. *Gonichthys cocco*; specimen of 39.4 mm TL from the Adriatic.

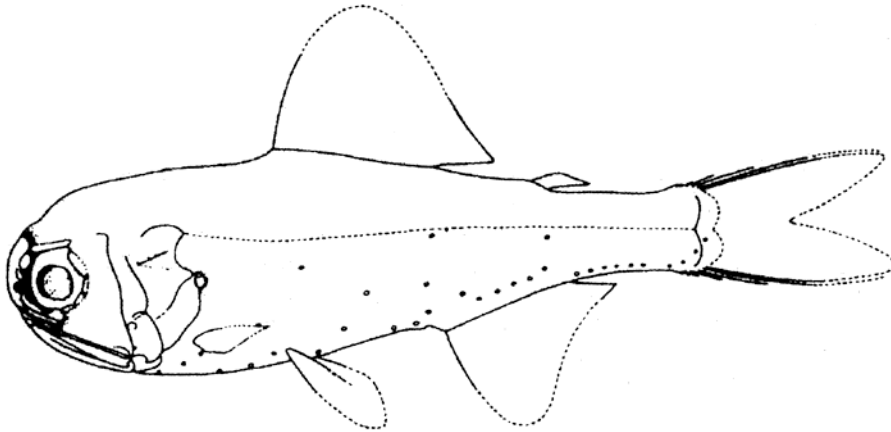


Fig. 4. *Diaphus metopoclampus*; specimen of 75.2 mm TL from the Adriatic.

red at the nearest mm TL (total length). The material used for this study is preserved in the Institute of Oceanography and Fisheries, Laboratory for Plankton Ecology, Dubrovnik. Hydrographic and biological data for the R/V "Andrija Mohorovičić" cruises from 1974 to 1976 have been published in a special publication of the Hydrographic Institute-Split: "Reports and results of the oceanographic investigations in the Adriatic Sea"

(Anonymous, 1982). The material for this study was sorted earlier, but never processed until 1999. The specimens were identified in accordance to Badcock (1984) and Hulley (1984). The examination of the material showed some new data for three species: *Valenciennellus tripunctulatus* (Esmark, 1871), *Gonichthys cocco* (Cocco, 1829) and *Diaphus metopoclampus* (Cocco, 1829). All these specimens have been deposited in the Ich-

thyological collection of the Institute of Oceanography and Fisheries in Split. Their meristic characters are presented in table 1

Valenciennellus tripunctulatus (Fig. 1)

One specimen was collected at a depth of 100 m (station 58: 41°03'N-18°59'E, 04h00), 28.4 m TL, in May 1975. Pietschmann (1914) was the first to cite *V. tripunctulatus* for the Adriatic Sea, but other authors (Šoljan, 1948, 1975; Karlovac, 1953) were of the opinion that in this case the question is actually of the species *Mauroliscus muelleri* (Gmelin, 1788). Tåning (1918) has noticed it on many stations in the Mediterranean. According to Bini (1970) the presence of this species in the Adriatic is doubtful, while Tortonese (1970) just presented the opinions of other authors (Šoljan, Karlovac). Jardas (1985) mentioned this species in the check-list of the fishes of the Adriatic Sea but with a question mark used for the species, the occurrence of which in the Adriatic is doubtful. The same author (1996) did not mention it in a new list of Adriatic fishes. For the Mediterranean, this species is recorded only in Messina strait (Torchio, 1960). Badcock (1984) characterised it as a probably rare migrant in the Mediterranean. So, it could be accepted that its record during R/V "A. Mohorovičić" cruise confirms its presence in the Adriatic Sea. We can treat it as the first confirmed record if we take into account doubtful information mentioned above.

Gonichthys cocco (Fig. 2)

One mature specimen was collected at a depth of 30 m (station 8: 41°29'N-18°43'E, 19h00), 39.4 m TL, in May 1975. This is the first record of adult stage of this species in the Adriatic Sea. Two postlarval specimens, 4.8 and 6.3 m TL, were caught on June 14th in 1948 (station 152, west of Durrës, at 53 m depth, 41°21'N-18°49'5"E, 09h45) (Karlovac, 1952, 1953). Tåning (1918) found this species in the eastern part of the Mediterranean, but did not find it either in the western Mediterranean or in the Adriatic. Hulley (1984) characterised this species rare in western Mediterranean, but common in the eastern part (not in the Adriatic Sea).

Diaphus metopoclampus (Fig. 3)

One specimen was collected at a depth of 480 m (Station 8: 41°29'N-18°43'E, 18h00),

73.2 m TL, in October 1974. The distribution of *D. metopoclampus* in the Mediterranean until now was limited to its western basin especially in the straits of Messina and Sicilia (Tortonese, 1970; Bauchot, 1987). A detailed distribution of this species in the Mediterranean and Atlantic is given by Nafpaktitis *et al.* (1977). Hulley (1984) characterised it as a probably rare migrant in the Mediterranean (western part). According to some authors it was not recorded for the Adriatic Sea (Šoljan, 1975; Jardas, 1985), but Fabiano and Fabiano (1977) recorded this species in the middle Adriatic (July 1974, 7 specimens, Station 27 07-123, 42°26'N-17°05'E, diurnal catch, 600 m depth, sampled by strascico-bottom trawl). These authors did not mention that this record was the first for the Adriatic. The specimen from the present material is the second. Sinis and Koukouras (1995) collected one mature female in the north coast of Crete Island and they characterised this occurrence as the first for the Aegean Sea and first from the Eastern Mediterranean. Papaconstantinou *et al.* (1997) collected three specimens (standard length range: 67-72 m) at a depth of 500 m in the North Aegean Sea and they also characterised this record as the first record from the Eastern Mediterranean.

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