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Short communication

First record of the hollowsnout grenadier, *Coelorhynchus coelorhyncus* (Risso, 1810), from the Sea of Marmara, Turkey

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Summary

In August 2008 eight specimens of the hollowsnout grenadier, *Coelorhynchus coelorhyncus,* were caught by beam trawl off Barbaros in the Sea of Marmara, Turkey. The study represents the first record of this species in the Sea of Marmara.

Introduction

The hollowsnout grenadier *Coelorhynchus coelorhyncus* (Risso, 1810) is a benthopelagic fish found at depths of 90–1250 m (usually 200–500 m). It has a wide distribution from the Mediterranean northward to southern Norway and westward to the Shetlands, the Faroes, off southern Iceland and southeastern Greenland (Whitehead et al., 1984–1986; Cohen et al., 1990). The species displays a 'bigger-deeper' phenomenon (Polloni et al., 1979), with smaller specimens distributed in shallower (< 400 m) and larger individuals in deeper waters (> 500 m) (Madurell et al., 2004). Distribution and biology of *C. coelorhyncus* in the Catalan Sea are given in Massuti et al. (1995).

Known from the Mediterranean coasts of Turkey (Bilecenoğlu et al., 2002), age and growth of the hollowsnout grenadier in Turkish Aegean waters are given in Filiz et al. (2006), and its food habits in Sever et al. (2008).

The Sea of Marmara is limited in the exchange of water masses with the Black, Mediterranean and Aegean seas because of the narrow and shallow threshold of the Bosphorus

Fig. 1. *Coelorhynchus coelorhyncus* [Photo by L. Artüz]

(Aydemir et al., 2007). Although the Sea of Marmara has a relatively rich and typical biological diversity, with different biological events and different forms in different layers, there is no information on the first record of the hollowsnout grenadier. Thus, the aim of the present study was to provide interesting and new data on the occurence of *C. coelorhynchus* in the Sea of Marmara.

Materials and methods

On 11 August 2008, eight specimens of the hollowsnout grenadier (Fig. 1) were caught by a single beam trawl haul in the waters off Barbaros (27°26′09″E, 40°44′18″N). All specimens were collected at about 500 m depth on a muddy bottom rich in the sea urchin, *Spantangus purpureus*. Haul duration was about 15 min. and boat speed was 2 mph. The trawl was equipped with a 22 mm stretched mesh size at the cod-end.

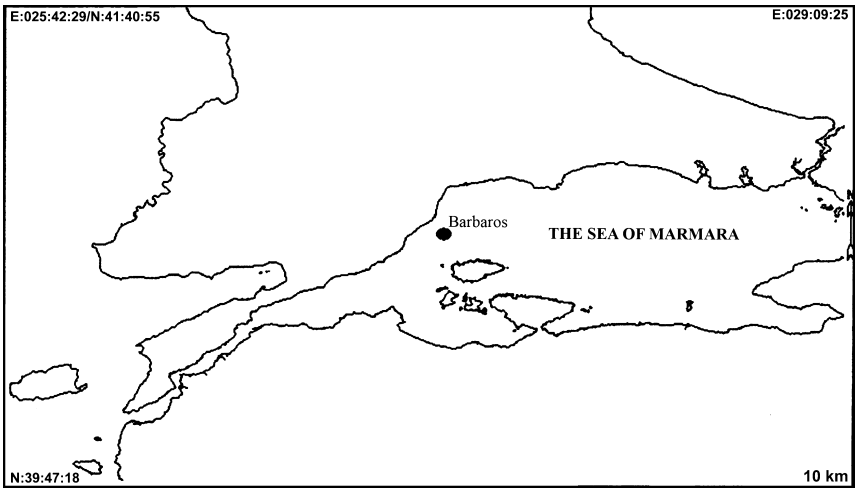

Fig. 2. Sampling station

Concurrently some oceanographic data [(temperature (T°C), salinity (‰), dissolved oxygen (DO), and pH] were measured at the sampling station (Fig. 2) as part of the project MAREM (Marmara Environmental Monitoring Project) entitled 'Changing Oceanographic Conditions of the Sea of Marmara' and supported by the Inönü Foundation and Sohtorik Shipping İstanbul.

The location was identified by MAP 330GPS. Measurements of hydrographic data, temperature, salinity, dissolved oxygen and pH of the seawater were recorded with a Midas ECM, a highly versatile current meter. Water samples were obtained with Nansen bottles. The captured fish were identified to species level and measured with a digital caliper and later fixed in 10% buffered formaldehyde, preserved in 75% ethanol and deposited in the ichthyology collection of the Department of Biology, University of Balıkesir, Turkey. It is the first record of this species in the Sea of Marmara, Turkey.

Results and Discussion

All specimens had the typical diagnostic features of *C. coelorhyncus* reported by Whitehead et al. (1984–1986) and Cohen et al. (1990). Previous captures were in the Ionian Sea: 3447 individuals, 8–104 mm preanal length (PAL) (Labropoulou and Papaconstantinou, 2000); North Aegean Sea: 208 individuals, 90–216 mm (Filiz and Bilge, 2004); Bay of İzmir, the Aegean Sea: 411 individuals, 90–216 mm TL (Filiz et al., 2006); Bay of Sığacık, the Aegean Sea: 113–123 mm TL (Sever et al., 2008); continental slope of Colombia: 251 individuals, 81–356 mm TL (Diaz et al., 2000); coast of Algarve: 25 individuals, 86–220 mm TL (Borges et al., 2003); Western Mediterranean: 175 individuals, 21–123 mm TL (Morey et al., 2003). In the present study, measurements and counts of the specimens given in Table 1 are in agreement with the relevant studies.

The outflow from the Black Sea basin is a function of its water budget and carries runoff from the large rivers and surface waters running into the Black Sea. Salinity of the inflowing Mediterranean waters, which is over 38.50‰ at the entrance of the Dardanelles, decreases slowly with the distance traveled in the Sea of Marmara, down to 29‰ where the current enters the Black Sea at the northern end of the Bosphorus. The water masses of the Black Sea are entirely different from those of the Mediterranean proper. Because of this there is limited influence between the layers, above and beneath the thermo-halocline. In other words, the Sea of Marmara comprises two different water masses from two different seas. Black Sea-sourced upper water masses vary between 50 and 75 m in thickness depending on the amount of incoming water from the Black Sea; water temperatures, especially seasonally, are between 6°C and 27°C. Temperatures in the deeper water masses show virtually no change, fluctuating by only 0.8°C (15°C∼14.2°C) throughout the year. Living organisms in the Sea of Marmara are not easily influenced by salinity variations, which can be in accordance with hypersaline waters of the Mediterranean Sea (35–39‰) and hyposaline waters of the Black Sea (16–18‰). But as thermoklin stagnation arising from variations in temperature and salinity changes the chemical structure of the Sea of Marmara, ecological conditions of the sea vary at the same time (Karakulak et al., 2000). Post-1980s human population increases have negatively impacted environmental conditions caused by urban and industrial waste, especially influencing fishery locations in the thermocline. From the early 1990s, decreases in demersal fish stocks and increases in fishery efforts point to fish stocks in the Sea of Marmara, especially deep-swimming fishes, as subject to the stress of overfishing (Okuş et al., 1994).

In light of findings in this research and relevant studies, we can unfortunately expect to catch fewer *C. coelorhyncus*. Temperature (T°C), salinity (‰), dissolved oxygen (DO), pH, at the depth where the eight fish were caught in the Sea of Marmara are given as 15.21, 39.22, 1.14, and 7.78, respectively. Measurements of oceanographic parameters, which may vary over time, are very important with regard to providing information on fish habitat and collecting data for future studies.

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Table 1
Measurements and counts of *Coelorhynchus coelorhyncus* from Sea of Marmara. In parentheses: morphometric measurements as proportions of total and head lengths

Measurements (mm) and counts	*Coelorhynchus coelorhyncus*							
Number of specimens	1	2	3	4	5	6	7	8
Total length (L_T)	141	189	205	159	191	144	145	139
Preanal length	24	32	37	31	34	27	27	31
	17.02% (L_T)	16.93% (L_T)	18.05% (L_T)	19.50% (L_T)	1.80% (L_T)	18.5% (L_T)	18.62% (L_T)	22.30% (L_T)
Predorsal length	31	39	44	35	38	31	30	34
	22.00% (L_T)	20.63% (L_T)	21.46% (L_T)	22.01% (L_T)	19.90% (L_T)	21.53% (L_T)	20.69% (L_T)	24.46% (L_T)
Prepelvic length	23	27	34	28	30	23	23	28
	16.31% (L_T)	14.29% (L_T)	16.59% (L_T)	17.61% (L_T)	15.71% (L_T)	15.97% (L_T)	15.86% (L_T)	20.14% (L_T)
Prepectoral length	24	29	36	27	33	24	25	27
	17.02% (L_T)	15.34% (L_T)	17.56% (L_T)	16.98% (L_T)	17.28% (L_T)	16.66% (L_T)	17.24% (L_T)	19.42% (L_T)
Body depth	18	24	33	21	24	20	20	23
	12.77% (L_T)	12.0% (L_T)	16.10% (L_T)	13.20% (L_T)	12.57% (L_T)	13.88% (L_T)	13.79% (L_T)	16.55% (L_T)
Head length (L_H)	21	29	30	27	29	22	24	25
	14.90% (L_T)	15.34% (L_T)	14.63% (L_T)	16.98% (L_T)	15.18% (L_T)	15.27% (L_T)	16.55% (L_T)	17.99% (L_T)
Orbit diameter	6	8	10	6	7	6	6	6
	28.57% (L_H)	27.59% (L_H)	33.33% (L_H)	22.22% (L_H)	24.14% (L_H)	27.2% (L_H)	25.00% (L_H)	24.00% (L_H)
Preorbital distance	4	5	6	4	6	3	4	3
	19.04% (L_H)	17.24% (L_H)	20.00% (L_H)	14.81% (L_H)	20.69% (L_H)	13.64% (L_H)	16.66% (L_H)	12.00% (L_H)
Dorsal finrays	11	10	10	10	10	11	11	10
Pelvic finrays	7	8	8	8	8	7	7	8

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