

First record of the Mediterranean parrotfish, *Sparisoma cretense* in Ria Formosa (south Portugal)

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Several juvenile specimens of *Sparisoma cretense*, a previously unrecorded species, were caught using beach seining in Ria Formosa. The hypothesis that these occurrences are related with climatic changes is discussed.

The Mediterranean parrotfish *Sparisoma cretense* is one of the few temperate species of the Scaridae family and the only one to be found in Mediterranean waters (Bernardi et al., 2000). It is a common species in the Macaronesian archipelagos (Azores, Madeira, Canaries and Cape Verde islands), north-west coast of Africa and in the southern and eastern coasts of the Mediterranean (Gonzalez, 1993; Bernardi et al., 2000). Although the Mediterranean parrotfish is common in the eastern and southern coasts of the Mediterranean (Bernardi et al., 2000) and in the Macaronesian archipelagos (Santos et al., 1997; Bernardi et al., 2000) it has not been reported either for the western part of the Mediterranean (Spain and Portugal) or for the Gorringe and Ampère seamounts located in the Portuguese ZEE between the Portuguese south coast and Madeira Island (Gonçalves et al., 2004).

The Mediterranean parrotfish is a necto-benthic fish inhabiting rocky bottoms and sea grass beds. It is a daytime feeder, scraping algae, sea grass and small invertebrates from the substrate with its fused, beak-like jaw (Guidetti & Boero, 2002). In the Mediterranean, its breeding season occurs from July to September (De Girolamo et al., 1999) with juveniles recruiting in late summer (Guidetti & Boero, 2002).

Ria Formosa is a shallow mesotidal lagoon located on the south coast of Portugal (Figure 1). This lagoon plays a very important role as a nursery for most of the coastal species that inhabit the Portuguese south coast (Monteiro et al., 1994; Erzini et al., 2002). Its shallow waters and sea grass beds along with sand patches make it a perfect sheltered place for juveniles to feed and grow. Being a shallow water lagoon, it usually has higher water temperatures than those found at adjacent coastal areas.

Although several studies on fish communities have been done in Ria Formosa this species has never been caught or mentioned for this area (Monteiro, 1986, 1989; Erzini et al., 2002). In fact, there are no reported occurrences of this species on the Portuguese coast. In addition, local fishermen had never caught parrotfish or shown knowledge of this species.

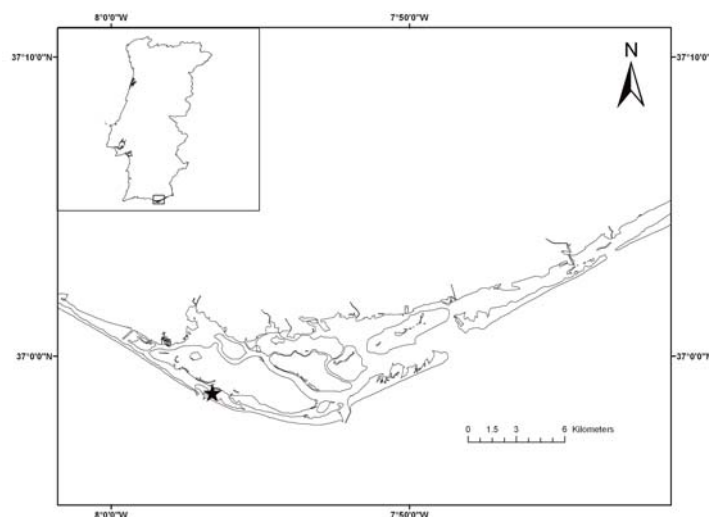


Figure 1. Map of sampling location on Ria Formosa lagoon, south Portugal.



Figure 2. *Sparisoma cretense* (Linnaeus, 1758) caught in Ria Formosa (south Portugal).

Table 1. Specimen measurements in millimeters (mm) and in percentage (%) of the total length (TL).

	Total length	Standard length	Body depth	Head length	Snout length	Eye diameter	Pectoral fin	Pelvic fin	Caudal fin	Anal fin	Dorsal fin
mm	79.23	65.75	19.92	19.41	5.94	5.51	13.5	10.66	11.02	15.77	36.76
% of TL	–	82.99	25.22	24.57	7.52	6.97	17.09	13.49	13.95	19.96	46.53

Seven individuals of Mediterranean parrotfish were caught using beach seines. The seine net had a total length of 25 m and a maximum height of 2.5 m. Each wing measured approximately 11 m and the height of the gear diminished from the central zone to the tips, where it was approximately 0.9 m. The mesh size was 9 mm from knot to knot when stretched. The beach seines were made over sea grass beds where fish diversity and abundance were expected to be higher.

One specimen of *S. cretense* (Figure 2) was brought to the laboratory for an accurate identification and all the others were released. All fish measurements were made by using a calliper with an accuracy of 0.005 mm.

The specimen was identified as *Sparisoma cretense* according to Quignard & Pras (1986b) following morphometric and meristic characteristics. The specimen presented a uniform mottled brown coloration and the several lengths taken are shown in Table I. The dorsal fin presented eight spines and ten soft rays, and the anal fin three spines and nine soft rays.

Since Ria Formosa is a known nursery ground for most coastal species of the Portuguese south coast (Monteiro et al., 1994; Erzini et al., 2002), it may also be a suitable place for juveniles of this species. The rising of the seawater temperature can be an explanation for the appearance of the Mediterranean parrotfish on the Portuguese south coast. The possibility that climatic changes occurring in the Mediterranean basin (i.e. water warming) would be involved in the spreading of *S. cretense* outside its typical distribution range was also noticed in south-east Italy (Guidetti & Boero, 2001). Other species like *Thalassoma pavo* (Linnaeus, 1758), which is still not found in the Portuguese south coast and whose distribution is similar to the Mediterranean parrotfish (Quignard & Pras, 1986a) may also start to occur supporting the hypothesis that fish migrations may be related with climatic change, namely water warming. Natural dispersal mechanisms could explain the presence of *S. cretense* juveniles in Ria Formosa. Eggs and/or larvae could have drifted with the Mediterranean currents, from places where adults are abundant, and established in the Ria Formosa where conditions seem suitable for their settlement.

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