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SHORT COMMUNICATION

THE MEDITERRANEAN PARROTFISH (*SPARISOMA CRETENSE*) ASCENDS THE ADRIATIC SEA

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Abstract. Due to increasing water temperatures, in recent years, the Adriatic Sea has seen a growing number of species arriving from warmer environments. This study reports the first record of *Sparisoma cretense* (Linnaeus, 1758) (Scaridae) along the coasts of the Marine Protected Area of the Tremiti Islands (Adriatic Sea). The possible origin of this species is briefly discussed herein.

INTRODUCTION

The growing number of records of tropical and southern species along the northern coasts of the Mediterranean Sea is strictly related to the increasing water temperatures, driving the spread of thermophilic species (i.e., species adapted to warm waters because they evolved in tropical or subtropical marine environments; Azzurro 2008) to a new environment, previously too cold to be suitable for their life. The issue of the Adriatic Sea meridionalization, i.e. the occurrence of different thermophilic taxa therein, has been discussed by several authors (Dulcic and Pallaoro 2001). For instance, the population of *Thalassoma pavo* (Linnaeus, 1758), which is a recognized thermophilic species of the family Labridae, has been reported to have extended its distribution range in the Mediterranean Sea northwards (Bianchi and Morri 1994).

The parrotfish (Perciformes: Scaridae) are renowned to be rasping grazers, characterized by parrot-like merged jaw teeth, with which they rasp algal communities, eroding reefs and significantly contributing to sedimentary processes. The family Scaridae is divided into two subfamilies: the Scarinae Rafinesque, 1810 and the Sparisomatinae Gill, 1893, each including five genera. In the Mediterranean, only two of these genera are represented, by one species each: *Scarus*, by the lessepsian *Scarus ghobban* Forsskål, 1775, and *Sparisoma* by the native *Sparisoma cretense* (Linnaeus, 1758) (Golani et al. 2006) listed in the IUCN red list of threatened species as Least Concern (LC), (Pollard et al. 2012).

Sparisoma cretense is a thermophilic fish species occurring in the Atlantic waters from Portugal and the Macaronesian Archipelagos to the coast of Senegal and most of the Mediterranean coasts, except for the middle and northern Adriatic Sea (Pollard et al. 2012) (Figure 1). Additionally, in the Adriatic its presence is sporadic, and it is reported along the Croatian coasts (Dulcic and Pallaoro 2001) and in the Venice Lagoon (Ninni 1924), though its occurrence therein has been recorded just once and was represented only by a single specimen collected by a fisherman (Figure 1). *Sparisoma cretense* inhabits rocky and sandy areas not deeper than 50 m, where it forages for algae and invertebrates, and scrapes epiphytes on the leaves of *Posidonia oceanica*.

Here we report the first record of *S. cretense* at the Tremiti Islands (Adriatic Sea) and discuss the possible reasons underlying this occurrence.

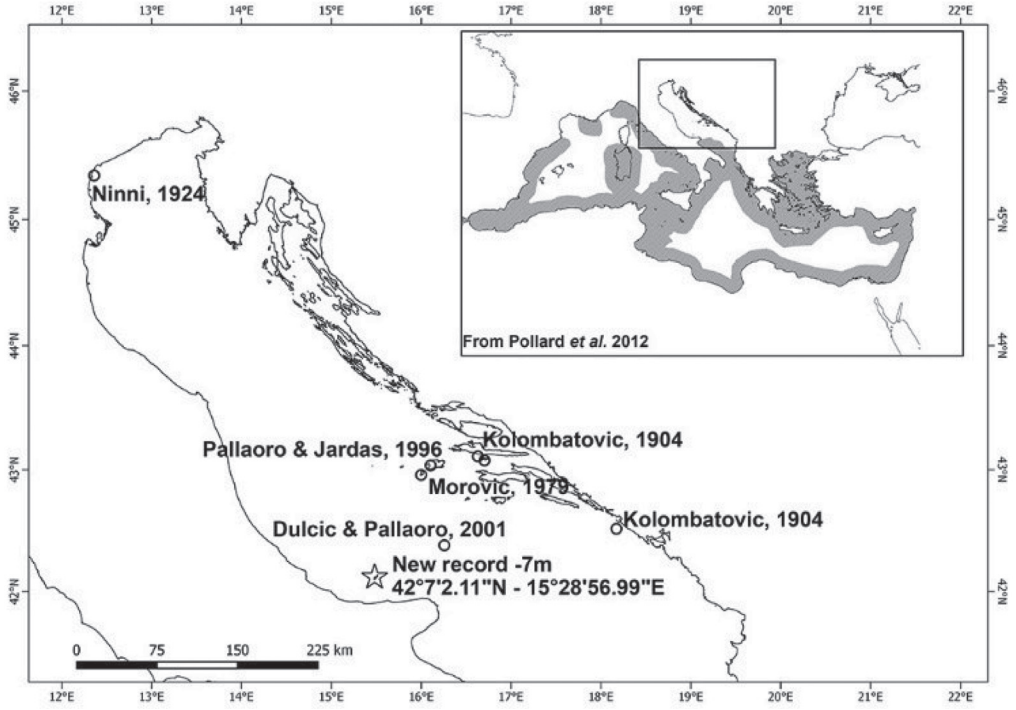

Figure 1. Previous localizations of *Sparisoma cretense* in the Adriatic Sea (indicated by circles), the new record at the Tremiti Islands (indicated by a star), and above, indicated in grey, is the native range of the species in the Mediterranean (Pollard et al. 2012).

MATERIALS AND METHODS

In July 2016, a campaign for the assessment of the environmental status of the Marine Protected Area of the Tremiti Islands was conducted. During this campaign, underwater visual census transects were performed in different habitats within the depth range of 5–30 m. At the end of one of the video transects, one specimen of *S. cretense* was encountered and recorded at a depth of 7 m, on the rocky substrate covered by photic algae (*Padina pavonica*, *Laurentia* sp.), along the coasts of San Domino island (42°7'2"N – 15°28'57"E). The total length (TL) of the specimen was estimated considering the average dimension of the adults of *Chromis chromis* (Linnaeus, 1758) present in the same photogram.

Figure 2. Female specimen of *S. cretense* recorded at the Tremiti Islands on the 11th of June in 2016.

RESULTS AND DISCUSSION

The specimen was an adult female about 175–180 mm in TL including the caudal filament. The colours of the body were characteristic of a female specimen, with yellow spots on the caudal fin and red ones on the body, although the colour of the head part, which is typically grey, was yellowish (Tortonese 1971; Figure 2).

The single record of *S. cretense* in the Venice Lagoon in the northern Adriatic Sea by Ninni (1924) was not confirmed, despite the fact that *S. cretense* is a highly visible and charismatic species. Therefore, its occurrence in the Venice lagoon could have been considered accidental, while this new record could be regarded as a further step in the ascent of this species to the Adriatic Sea recorded in these last years. It is not clear if the colonization of the Tremiti Islands originated from the Croatian or the Southern Apulian coasts. In fact, both scenarios are plausible when one takes into account the possibility that this species has the ability to lay floating eggs, as many others of the same family do (Nelson 1994). On the other hand, the westward water circulation of the sea surface at that latitude (Benetazzo et al. 2014) suggests that the floating eggs could have arrived at the Italian coasts from the east.

This record represents another example of the eastern

and thermophilic species' spread, largely reported in different taxa, to the western and northern Mediterranean coasts (Bianchi and Morri 1994).

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REFERENCES

Azzurro, E. 2008. The Advance of Thermophilic Fishes in the Mediterranean Sea: Overview and Methodological Questions. *CIESM Workshop Monographs* 35, 39–45. CIESM, Monaco.

Benetazzo, A., Bergamasco, A., Bonaldo, D., Falcieri, F.M., Sclavo, M., Langone, L., & Carniel, S. 2014. Response of the Adriatic Sea to an intense cold air outbreak: Dense water dynamics and wave-induced transport. *Progress in Oceanography* 128, 115–138. https://doi.org/10.1016/j.pocean.2014.08.015

Bianchi, C.N., & Morri, C. 1994. Southern species in the Ligurian Sea (Northern Mediterranean): new records and a review. *Bollettino dei musei e degli istituti biologici dell'Università di Genova* 58–59, 181–197.

Dulcic, J., & Pallaoro, A. 2001. Some new data on *Xyrichtys novacula* (Linnaeus, 1758) and *Sparisoma* (*Euscaris*) *cretense* (Linnaeus, 1758) from the eastern Adriatic. *Annales, Series Histia naturalis* 1, 35–40.

Golani, D., Ozturk, B., & Basusta, N. 2006. Fishes of The Eastern Mediterranean. Istanbul, Turkey. *Turkish Marine Research Foundation* 59, 121–121.

Kolombatovic, J. 1904. Contribuzioni alla fauna dei vertebrati della Dalmazia. Pesci. *Glasnik Hrvatskoga naravoslovnoga drutva* 13, 4–6.

Morovic, D. 1979. Rjede bentoske ribe srednjodalmatinskog područja s osvrtom na priobalni ribolov u njemu [Less frequent benthic fish middle-Dalmatian areas with emphasis on coastal fishing in it]. *Acta Biologica* 43, 87–98.

Nelson, J.S. 1994. *Fishes of the world* (3rd ed.). New York, N.Y.: John Wiley & Sons, 600 pp.

Ninni, E. 1924. Sulla presenza dello *Scarus cretensis* (Ald) nell' Adriatico [On the presence of *Scarus cretensis* (Ald) in the Adriatic]. *Bollettino Istituto di Zoologia Università di Roma* 24: 71–74.

Pallaoro, A., & Jarda, J. 1996. Ichthyological collection of the Institute of Oceanography and Fisheries in Split (Croatia). *Natura Croatica* 3, 177–219.

Pollard, D., Yokes, B., Francour, P., Rocha, L.A., Choat, J.H., Clements, K.D., Russel, B., Myers, R., Lazuardi, M.E., Muljadi, A., Pardede, S., & Raharjo, P. 2012. *Sparisoma cretense*. *The IUCN Red List of Threatened Species* 2012, e.T190710A17796845.

Tortonese, E. 1971. Osteichthyes. Part II. In *Fauna d'Italia*, Vol. XI. Bologna, Italy: Calderini Ed.