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SOME NEW DATA ON *XYRICHTHYS NOVACULA* (LINNAEUS, 1758)
AND *SPARISOMA (EUSCARUS) CRETENSE* (LINNAEUS, 1758)
FROM THE EASTERN ADRIATIC

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ABSTRACT

A cleaver wrasse, *Xyrichthys novacula*, and a parrotfish, *Sparisoma (Euscarus) cretense*, were caught near Jelsa (Hvar Island) and the Vrhovnjaci archipelago in September and October 2000, respectively. Two specimens of parrotfish were also recorded by visual census in the Palagruža archipelago. As far as the cleaver wrasse is concerned this is, to our best knowledge, the northernmost record of this particular species in the Adriatic Sea. The main morphometric and meristic data are given for both species. The presented morphometric and meristic data of *S. cretense* are the first for this species from the Adriatic Sea.

Key words: *Xyrichthys novacula*, *Sparisoma (Euscarus) cretense*, Eastern Adriatic

NUOVI DATI SU *XYRICHTHYS NOVACULA* (LINNAEUS, 1758) E *SPARISOMA (EUSCARUS) CRETENSE* (LINNAEUS, 1758) NELL'ADRIATICO ORIENTALE

SINTESI

Xyrichthys novacula, pesce pettine, e *Sparisoma (Euscarus) cretense*, pesce pappagallo, sono stati pescati nei pressi di Jelsa (isola di Hvar) e dell'arcipelago di Vrhovnjaci, rispettivamente in settembre e ottobre 2000. Due esemplari di pesce pappagallo, inoltre, sono stati avvistati con la tecnica del censimento visivo nell'arcipelago di Palagruža. In base alle pubblicazioni disponibili, il ritrovamento del pesce pettine corrisponde alla segnalazione più settentrionale di tale specie nel mare Adriatico. Nell'articolo vengono riportati i principali dati morfometrici e meristici per entrambe le specie. I dati riguardanti *S. cretense* sono i primi per questa specie nel mare Adriatico.

Parole chiave: *Xyrichthys novacula*, *Sparisoma (Euscarus) cretense*, Adriatico orientale

INTRODUCTION

Some 411 fish species and subspecies (Cyclostomata not included) have been observed in the Adriatic Sea (Dulčić, 2000), and this number can so far be regarded as correct and complete for several reasons. Of this number, the very rare and rare fishes make up almost a quarter (96; 23.4%). Two species, cleaver wrasse *Xyrichthys novacula* (Linnaeus, 1758) and parrotfish *Sparisoma (Euscarus) cretense* (Linnaeus, 1758), belong to the very

rare species in the Adriatic Sea (Pallaoro & Jardas, 1996).

The records on biology and ecology of these two species in the Adriatic Sea are scarce in literature. Some data existed on *X. novacula* (Onofri, 1977, 1982, 1987, 1997) and *S. cretense* (Morovic, 1979), but most of them are of general character.

The main goal of this paper is to present some new data (morphometric and meristic characteristics, northernmost record) on these two species from the Adriatic Sea.

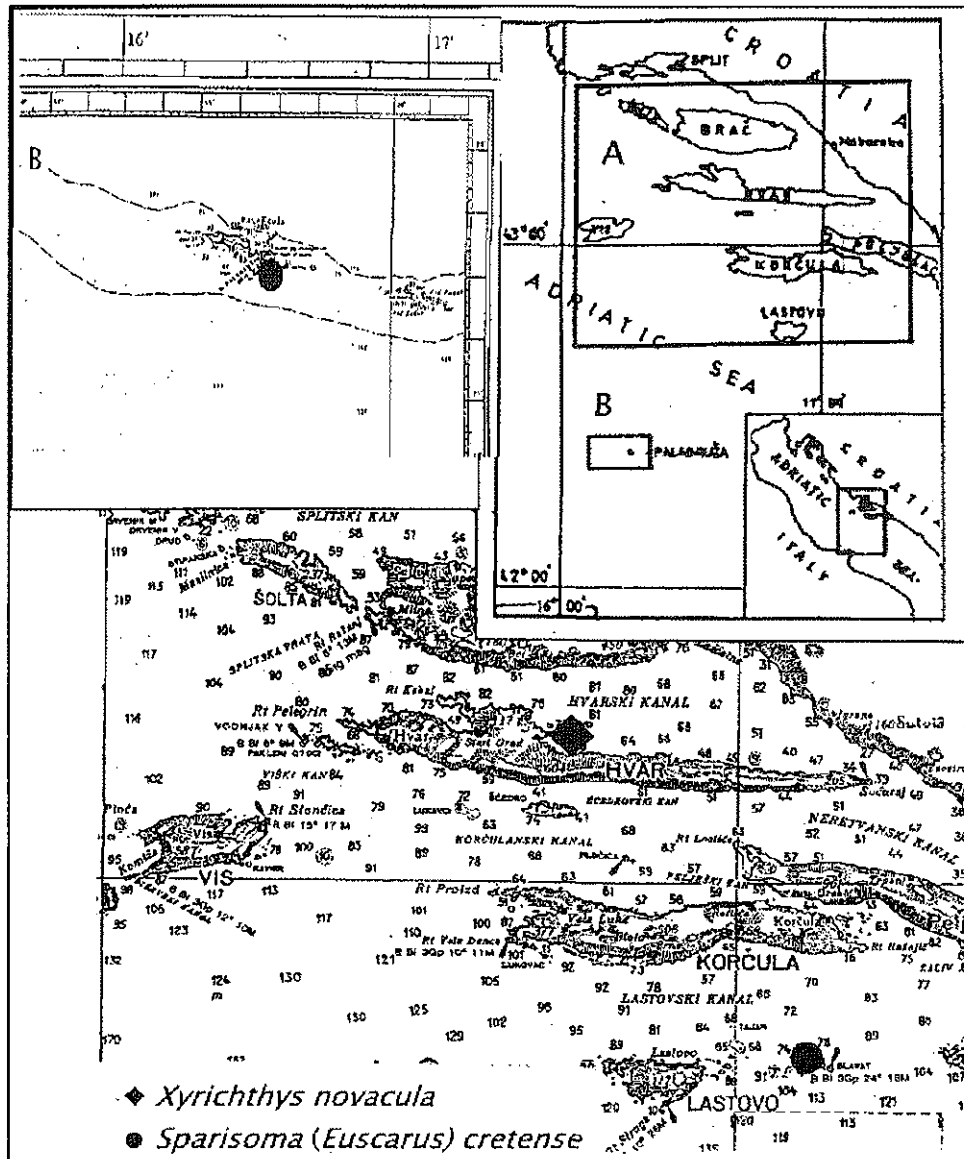


Fig. 1: Geographic locations of *Xyrichthys novacula* and *Sparisoma cretense* records in the Eastern Adriatic: (A) Hvar Channel, near Jelsa, Vrhovnjaci archipelago; (B) Palagruža Island. Legend: ◆ - *Xyrichthys novacula*, ● - *Sparisoma cretense*.

Sl. 1: Geografske lokacije pojavljanja vrst *Xyrichthys novacula* in *Sparisoma cretense* v vzhodnem Jadranu: (A) Hvarski kanal, bližina Jelse, otočje Vrhovnjaci; (B) otok Palagruža. Legenda: ◆ - *Xyrichthys novacula*, ● - *Sparisoma cretense*.

MATERIAL AND METHODS

The cleaver wrasse (female) (Fig. 2a) was caught (September 5th 2000) near Jelsa (the island of Hvar) (Fig. 1) at a depth between 10 and 15 m on sandy-muddy bottom (sea temperature was 22°C). The parrotfish (male) (Fig. 2b) was caught (October 2nd 2000) in the Vrhovnjaci archipelago (Fig. 1) at a depth between 4-5 m at the littoral bottom covered by photophile macroalgae (sea temperature was 21°C). Another parrotfish specimen (male) (Fig. 2c) was observed at the Palagruža Island (Fig. 1) in August 2000 by visual census (the divers were Tom Turk and Borut Furlan).

The specimens were identified according to Jardas (1996). They are deposited and registered (cleaver wrasse: 160A IOR; parrotfish: 161A IOR) in the Ichthyologic Collection of the Institute of Oceanography and Fisheries in Split, Croatia.

The specimens were preserved in 4% buffered formaldehyde immediately after capture, subsequently measured to the nearest 0.01 mm, and weighed to the nearest 0.01 g. Reduction in length caused by preservation depends on initial lengths of the specimens and duration of storage. Meristic characteristics considered were dorsal, anal, pectoral, ventral, caudal fins, and the number of scales in longitudinal line.

RESULTS AND DISCUSSION

In table 1, the main morphometric and meristic data of both species *X. novacula* and *S. cretense* are presented. The presented morphometric and meristic data of *S. cretense* are the first for this species from the Adriatic Sea and in agreement with those presented by Jardas (1996). Morovic (1979) reported the length of 41 cm of the caught parrotfish specimen along the western coast of Biševo Island (Central Adriatic) (on 6 July 1962) and this has been, until now, the only reported length of this species caught in the Eastern Adriatic. The meristic and morphometric characteristics of the cleaver wrasse differ from the data by Quignard (1966) and Bini (1968), but are in agreement with those by Onofri (1977, 1982, 1987). Considering the meristic and morphological characteristics, a special cleaver wrasse variation for the Adriatic is possible (Onofri, 1982). A specimen of this species had two horns on the upper side of the head and this was the first record of such a form ever to be reported in the world ichthyologic literature (Onofri, 1987).

The record of the cleaver wrasse near Jelsa (Hvar island) is, to our best knowledge, the northernmost record of this species in the Adriatic Sea. The cleaver wrasse is a species distributed in the Mediterranean and western Atlantic and generally found on shallow sand (Tortonese, 1975). Stossich (1880) was the first to report on the presence of this very rare species in the Adriatic but

without the data about the sampling area. Onofri (1977, 1982) supposed that Stossich had treated it as a member of the fauna of the Gulf of Trieste. It has been proved that cleaver wrasse is present only in the Southern Adriatic on sandy bottom where the *Posidonia oceanica* and *Zostera marina* biocenosis are well developed (Onofri, 1977, 1978, 1982). All previous records of this species in the Adriatic have been made in the Pelješac Channel (Southern Adriatic) at depths around 15 m (Onofri, 1982, 1987, 1997) (Tab. 2).

Tab. 1: Morphometric (in mm) and meristic data of the cleaver wrasse and parrotfish in the Eastern Adriatic
Tab. 1: Morfometrični (v mm) in meristični podatki za ustnačo *Xyrichthys novacula* in papagajevko *Sparisoma cretense* v vzhodnem Jadranu

Species	<i>Xyrichthys novacula</i> (♀)	<i>Sparisoma cretense</i> (♂)
Weight (W) (in g)	85.47	238.76
Morphometric characters		
Total length (Lt)	18.53	25.33
Standard length (Ls)	16.02	22.16
Head length (Lc)	4.41	5.71
Predorsal length (Lpd)	3.09	6.18
Preanal length (Lpa)	7.47	12.82
Prepectoral length (Lpp)	4.05	5.56
Preventral length (Lpv)	4.02	6.35
Base length D (Ld)	10.44	11.58
Base length A (La)	6.52	4.87
Pectoral length (Lp)	3.32	4.47
Ventral length (Lv)	2.55	3.61
Caudal length (Lc)	3.04	4.96
Max. body height (Tmax)	5.35	6.77
Min. body height (Tmin)	2.07	2.68
Eye diameter (O)	0.71	1.02
Interorbital length (Io)	0.72	1.49
Preorbital length (Po)	1.80	2.03
Postorbital length (O'lo)	1.90	2.66
Meristic characters		
Dorsal fin (D)	IX+12	IX+9
Anal fin (A)	III+12	III+9
Ventral fins (V)	I+5	I+5
Pectoral fins (P)	12	12
Caudal fin (C)	IV+12+IV	IV+12+IV
Linea lateralis (Ll)	27	23

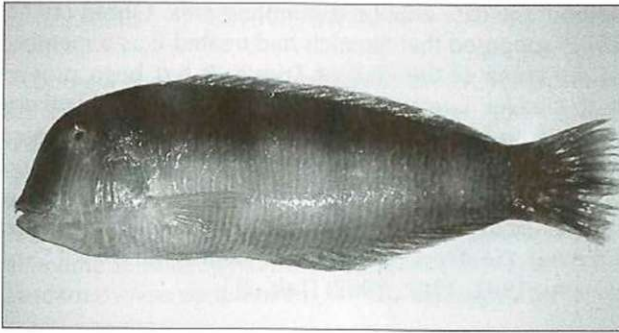


Fig. 2a: *Xyrichthys novacula*, ♀, 18.5 cm (Photo: J. Dulčić & A. Pallaoro)

Sl. 2a: *Xyrichthys novacula*, ♀, 18,5 cm. (Foto: J. Dulčić & A. Pallaoro)

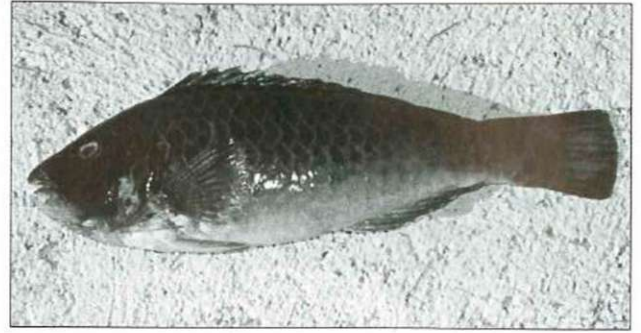


Fig. 2b: *Sparisoma cretense*, ♂, 25.3 cm, specimen caught near Jelsa, island Hvar. (Photo: J. Dulčić & A. Pallaoro)

Sl. 2b: *Sparisoma cretense*, ♂, 25,3 cm, osebek ujet v bližini Jelse, otok Hvar. (Foto: J. Dulčić & A. Pallaoro)



Fig. 2c: *Sparisoma cretense*, males observed by visual census at Palagruža Island. (Photo: B. Furlan)

Sl. 2c: *Sparisoma cretense*, samec, opažen med potapljanjem ob otoku Palagruža. (Foto: B. Furlan)

S. cretense was found in the sea from the northern to the southern part of the Adriatic (Tab. 2), although it clearly prefers its southern part (Jardas, 1996). Kolombatović (1900, 1904) reported how the first specimen caught in the Adriatic Sea was found at the fish market

in Dubrovnik (Southern Adriatic); it was described by Baldo Kosić (famous ichthyologist at that time). The same author reported on two specimens, caught by Grgur Bučić (famous naturalist and meteorologist of that time) near the town of Hvar in 1903 (Tab. 2).

Tab. 2: Records of cleaver wrasse and parrotfish in the Eastern Adriatic.**Tab. 2: Podatki o pojavljanju ustnače *Xyrichthys novacula* in papagajevke *Sparisoma cretense* v vzhodnem Jadranu.**

Species	Area/Date/Number	Source
<i>Xyrichthys novacula</i>	First record, Gulf of Trieste (??)	Stossich (1880)
	Pelješac Channel, western coast of the town of Korčula, 27.08.1977, one specimen (♀)	Onofri (1977)
	Pelješac Channel, western coast of the town of Korčula, several days after 27.08.1977, three specimens (♀)	Onofri (1982)
	Pelješac Channel, western coast of the town of Korčula, 1983, several specimens	Onofri (1997)
	Isle of Knežić, Lumbarda, Korčula Island, Pelješac Channel, 1988, one specimen	Pallaoro & Jardas (1996)
<i>Sparisoma cretense</i>	First record, Dubrovnik	Kolombatović (1900, 1904)
	The town of Hvar, Hvar Island, 1903, two specimens	Kolombatović (1900, 1904)
	Venice (Italy), one specimen	Ninni (1924), Bini (1968)
	Komiža, Vis Island, 07.08.1925, two specimens	Pallaoro & Jardas (1996)
	Biševo Island, 06.07.1962, one specimen	Morović (1979)
	Šćedro Island, 18.08.1965, one specimen	Morović (1979)

In the Mediterranean Sea, *S. cretense* is commonly distributed in the Eastern Basin and along the Northern African coasts (Bini, 1968; Papaconstantinou, 1992), whereas in the Western Basin it was only recorded off Marseilles, Nice, Valencia (Lozano Rey, 1952) and

Balearic Islands (Riera *et al.*, 1995). The parrotfish is quite common along the southern coasts of Italy (Tortonese, 1975), conversely few records were collected along the northern ones. Bini (1968) reports the catch of a single specimen in the waters of Venice (Northern Adriatic Sea), while Bianchi and Morri (1994) recently pointed out its occurrence along the island of Giglio (Northern Tyrrhenian). The species is also found in the waters from Portugal and the Azores southwards to Senegal (Quignard & Pras, 1986). *S. cretense* reaches a maximum total length (TL) of 50 cm (commonly from 10 to 30 cm TL) and shows a marked sexual dichromatism. Two males from Palagruža and one from the Vrhovnjaci archipelago were found on rocky substrates with photophile macroalgae characterised by medium rigidity and gentle slope. Rocky and sandy bottoms with seagrass patches are the preferred habitats of this species (Tortonese, 1975; Jardas, 1996). The parrotfish was mostly observed at relative shallow stands, lower than 12 m depth, except for one small-sized specimen, with a peculiar livery, recorded on *Posidonia oceanica*. Therefore, this species seemed to prefer shallow rocky substrates with photophile macroalgae, as observed in this study and along the coast of Ustica Island (Vacchi *et al.*, 1999). Other authors (Bini, 1968; Tortonese, 1975) also reported on the occurrence of this species on soft bottoms.

The occurrence of *S. cretense* along Ustica Island (36 nautical miles off the northern coast of Sicily) is consistent with the northern extension of the biogeographical range of these thermophilous species, as a result of a warming up of the Mediterranean waters (see Francour *et al.*, 1994; Riera *et al.*, 1995). In particular, the capture of *S. cretense* in the Southern and Central Adriatic during this year occurred more and more frequently, suggesting an increase in the population density, which has been confirmed by the findings of relatively large number of specimens (by *visual census*) around the islands of Korčula (southern coast) and Mljet (southern coast) (Mušin, Onofri & Milišić, *pers. comm.*). The northernmost record of the cleaver wrasse could also support the statement about the southern thermophilous species moving northwards in the last decade in the Adriatic Sea, which could be related to the changes in climate and/or oceanographical conditions (Dulčić *et al.*, 1999). The status of the cleaver wrasse and parrotfish needs to be evaluated on a continuous basis as it is becoming increasingly apparent that uncommon species, and particularly those on the edge of their distribution, can be essential indicators of environmental changes (Swabby & Potts, 1990).

NEKAJ NOVIH PODATKOV O VRSTAH *Xyrichthys novacula* (LINNAEUS, 1758)
IN *SPARISOMA (EUSCARUS) CRETENSE* IZ VZHODNEGA JADRANA

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POVZETEK

Septembra leta 2000 je bila v bližini Jelse (otok Hvar) ujeta samica ustnače *Xyrichthys novacula*, oktobra istega leta pa na območju otočja Vrhovnjaci samec papagajevke *Sparisoma (Euscarus) cretense*. Dva samca papagajevke sta bila opažena tudi med potapljanjem na območju otoka Palagruže avgusta meseca istega leta. Pojavljanje ustnače *Xyrichthys novacula* je po najinih podatkih najsevernejše za to vrsto v Jadranu. V članku so podani vsi glavni morfološki in meristični podatki za obe vrsti, ki so v primeru papagajevke hkrati tudi prvi podatki za Jadran nasploh. Odkritja papagajevke in ustnače severneje od območja, kjer je bila ta vrsta zabeležena do zdaj, bi zaradi dejstva, da sta obe vrsti v Jadranu redki in topoljubni, lahko povezali s spremembami v oceanografskih značilnostih Jadrana.

Ključne besede: *Xyrichthys novacula*, *Sparisoma (Euscarus) cretense*, vzhodni Jadran

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