

CONFIRMED OCCURRENCE OF CUCKOO WRASSE *LABRUS MIXTUS* (OSTEICHTHYES: LABRIDAE) IN TUNISIAN WATERS (CENTRAL MEDITERRANEAN)

Sihem RAFRAFI-NOUIRA & Moncef BOUMAIËZA

Laboratoire de Bio-surveillance de l'Environnement, Unité d'Hydrobiologie Littorale et Limnique, Université de Carthage, Faculté des Sciences, Zarzouna, 7021 Bizerte, Tunisia

Christian REYNAUD & Christian CAPAPÉ

Laboratoire interdisciplinaire de Recherche sur la Didactique, l'Éducation et la Formation, E. A. 3749, case 77, Université Montpellier II, Sciences et Techniques du Languedoc, 34 095 Montpellier cedex 5, France
E-mail: capape@univ-montp2.fr

ABSTRACT

*In this paper the authors report the capture of two specimens of cuckoo wrasse *Labrus mixtus* in northern Tunisian waters: a male and a female, both large-sized adults. These captures confirm the occurrence of the species in the area although locally it is considered to be very rare. The origin of both specimens remains questionable, in terms of whether they are indigenous or non-indigenous species: in the latter case eastern Atlantic origin cannot be excluded.*

Key words: Osteichthyes, Labridae, *Labrus mixtus*, Tunisian waters, central Mediterranean

PRESENZA CONFERMATA DI TORDO FISCHIETTO *LABRUS MIXTUS* (OSTEICHTHYES: LABRIDAE) IN ACQUE DELLA TUNISIA (MEDITERRANEO CENTRALE)

SINTESI

*Nell'articolo gli autori riportano la cattura di due esemplari di Tordo fischiotto, *Labrus mixtus*, nelle acque della Tunisia settentrionale. Si tratta di un maschio ed una femmina, due adulti di grandi dimensioni. Tali catture confermano la presenza della specie nell'area, benché localmente venga considerata piuttosto rara. L'origine dei due campioni resta discutibile, in quanto non è possibile stabilire se appartengano ad una specie indigena oppure alloctona. In quest'ultimo caso non si può escludere che siano arrivati dall'Atlantico orientale.*

Parole chiave: Osteichthyes, Labridae, *Labrus mixtus*, acque della Tunisia, Mediterraneo centrale

INTRODUCTION

The cuckoo wrasse *Labrus mixtus* Linnaeus 1758 is widely and continuously distributed throughout the eastern Atlantic from Norway to the Gibraltar Strait (Quignard & Pras, 1986; Quéro *et al.*, 2003). Southwards, the species is reported off Morocco (Lloris & Rucabado, 1998), Senegal and from the Azores and Madeira Islands (Gomon & Forsyth, 1990). *L. mixtus* is known in the Mediterranean Sea, especially in the western basin (Quignard & Pras, 1986) and the Adriatic Sea (Šoljan, 1975; Lipej & Dulčić, 2010). The species is not recorded in the Black Sea (Quignard & Tomasini, 2000) and is considered to be rather rare in the eastern Mediterranean basin (Bilecenoglu *et al.*, 2002; Golani, 2005).

The first recorded sighting in Tunisian waters of *L. mixtus* was by Gruvel (1926) in the southern Gulf of Gabès. Later it was documented further north in the Gulf of Tunis by Lubet & Azzouz (1969) but no specimens were available to date for confirmation. Observations conducted over several decades throughout the Tunisian coast did not permit the recording of new specimens of *L. mixtus*; consequently, Bradaï (2000) and Bradaï *et al.* (2004) referred to the species as a rarity in the area. Since 2006, investigations carried out from northern Tunisian waters, including the Lagoon of Bizerte, presented the opportunity to find previously unknown species and/or confirm the occurrence of rare fish species (El Kamel *et al.*, 2009; Mnasri *et al.*, 2009, 2010; Azzouz *et al.*, 2010, 2011; Mansour *et al.*, 2011; Rafrafi-Nouira *et al.*, 2011).

MATERIAL AND METHODS

On 07 February 2011, two specimens of *L. mixtus*, a male and a female, were caught off the coast of Ras Jebel, a city located in northern Tunisia (37° 15' 19.91" N and 10° 06' 16.18" E), 45 km north to Tunis. The study used 30 mm mesh gill nets set at between 10 and 12 m of depth on rocky bottoms partially covered by marine vegetation. Specimens of other labrid and sparid species were also recorded at this time (Fig. 1).

Male and female specimens were identified using field guides such as Quignard (1966), Wheeler (1969) and Quignard & Pras (1986), photographed, and then measured to the nearest millimetre (Fig. 2). Total body mass and removed organs, such as liver and gonads, as well as stomach contents were weighed to the nearest decigram. Stomach contents showing prey items were identified to the lowest taxon possible. Gonads and stomach contents were examined by naked eyes and under binocular microscope.

RESULTS AND DISCUSSION

Both male and female specimens were identified as follows: body oval and elongate. Mouth protrusible, rather large with thick lips reaching almost to the eye

level and canine-like teeth, sharp, pointed snout. Scales moderate in size, rather smaller than pupil diameter. Dorsal fin uniform in height, its soft part longer than high. Anal fin uniform in height. Colour remarkably different for males and females. Male with black head, back featuring blue and green lines; sides, belly, dorsal and other fins orange. Female with orange-pink body, rather paler on the belly; three dark spots on the back, the first at the junction of the spines and soft rays of dorsal fin, the second at the end of fin, the third on upper margin of caudal peduncle. Whitish spots also visible between the dark spots.

Both specimens are preserved in 10 % buffered formaline and deposited in the Ichthyological Collection of the Faculté des Sciences de Bizerte, with catalogue numbers FSB-Lab-mix-01 and FSB-Lab-mix-02 for the male and female specimens, respectively.

The morphological description, colour, morphometric measurements with proportion of standard length (% SL) and meristic counts (see Table 1) are in agreement with Quignard (1966), Wheeler (1969) and Quignard & Pras (1986). The male and the female measured 336 mm and 301 mm in total length, respectively, and weighed 500.9 g and 379.4 g, respectively. They were large specimens, probably adults, following Quignard & Pras (1986) who reported that from the Mediterra-

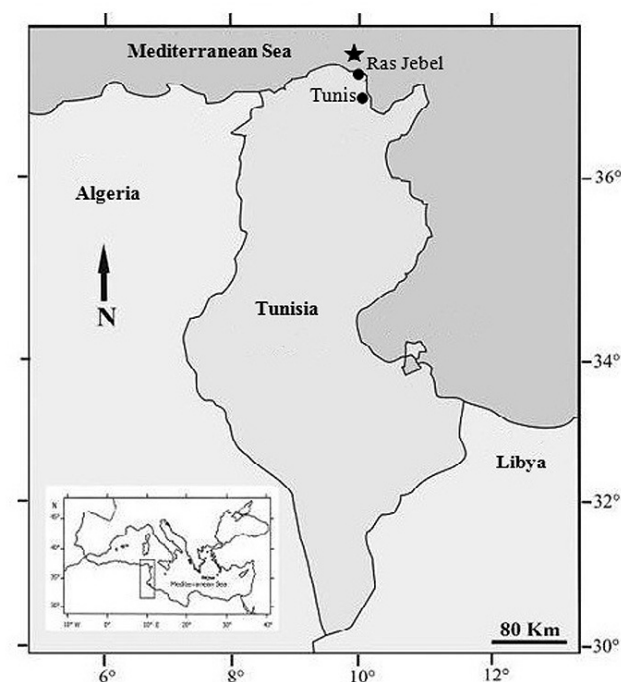


Fig. 1: Map of the Mediterranean Sea showing Tunisia and map of the coast of Tunisia with black star pointing out the capture site of *Labrus mixtus*.

Sl. 1: Zemljevid Sredozemskega morja in Tunizije ter zemljevid tunizijske obale. S črno zvezdico je označena lokacija ulova vrste *Labrus mixtus*.

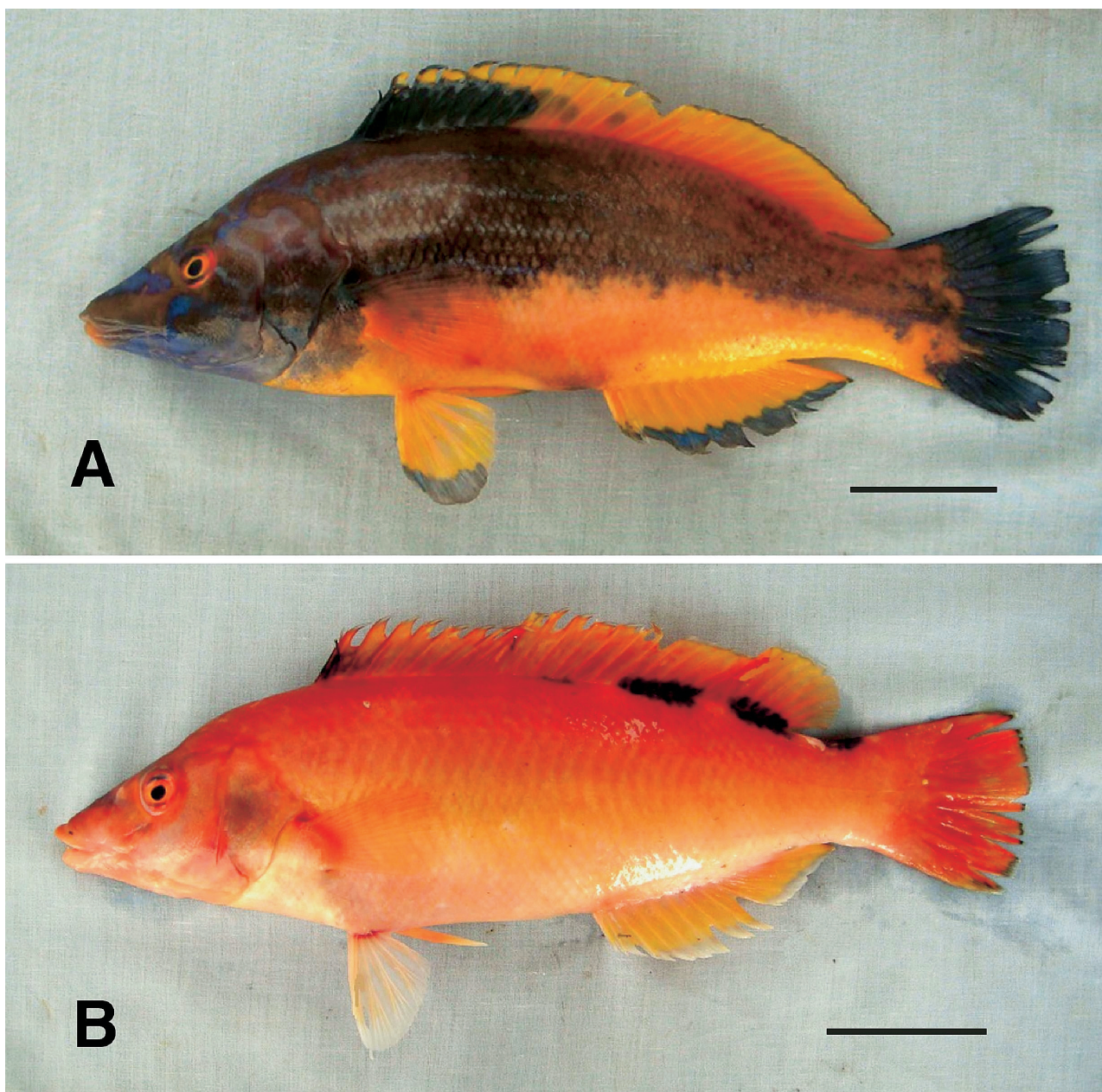


Fig. 2: *Labrus mixtus*. (A) Male specimen, (B) female specimen. For both specimens, scale bar = 50 mm.
Sl. 2: Vrsta *Labrus mixtus*. (A) Moški primerek, (B) ženski primerek. Pri obeh primerkih je merilo 50 mm.

nean, 7 year-old males and females measured 260 mm and 240 mm total length, respectively, while 17 year-old males measured 325 mm total length. The testes were partially damaged and it was impossible to make a reliable statement about the condition of this male. The ovary was externally granulous and contained pre-vitellogenic oocytes. This female was probably a pre-spawning specimen. The gut of both specimens contained remains of undeterminable crustaceans, probably crabs, confirming previous observations reported by Wheeler (1969).

Both records of *L. mixtus* reported in this paper confirm the occurrence of the species in the northern Tunisian waters. Conversely, the occurrence of the species further to the south is doubtful according to Bradaï (2000), who has not observed any specimen, despite careful and thorough investigations conducted in the Gulf of Gabès over the course of several decades, so Gruvel's findings (Gruvel, 1926) remain questionable.

L. mixtus is attested in the colder temperate waters of seas from northern Europe; however, its occurrence southward in warmer waters, continuously from off the

coast of Morocco to as far south as Senegal, suggest that it is probably an eurytherm fish species, able to support temperature changes in the wild. This goes some way towards explaining its occurrence in Tunisian waters. However, the question remains: are these recent

captures of *L. mixtus* derived from a local population, previously established in the area, or are they the consequence of migrations from the eastern Atlantic through the Gibraltar Strait? It appears difficult to state, both hypothesis remaining valid.

Tab. 1: Morphometric measurements in mm and as % standard length (% SL), meristic counts and weights recorded in male and female cuckoo wrasse *Labrus mixtus* caught in the Tunisian waters.

Tab. 1: Morfometrične meritve v mm in v % glede na standardno dolžino (% SL), meristična štetja in teža, izmerjena pri moškem in ženskem primerku vrste *Labrus mixtus*, ujete v tunizijskih vodah.

Reference	FSB-Lab-mix-01		FSB-Lab-mix-02	
	Male		Female	
Sex				
Morphometric measurements	mm	% SL	mm	% SL
Total length	336	112.7	301	114.0
Standard length	298	100.0	264	100.0
Pre-dorsal fin length	101	33.8	95	35.9
Pre-pectoral fin length	96	32.2	86	32.5
Pre-anal fin length	174	58.3	160	60.6
ocular diameter	15	5.0	13	4.9
Dorsal fin length	151	50.6	139	52.6
Pectoral fin length	18	6.0	14	5.3
Anal fin length	60	20.1	53	20.0
Pelvin fin length	11	3.6	6	2.7
Caudal fin length	43	14.4	33	12.5
Body height	47	15.7	41	15.5
Pre-orbitary length	37	12.4	35	13.2
Post-orbitary length	44	14.7	38	14.3
Head length	97	32.5	86	32.5
Inter-orbitary length	23	7.7	19	7.1
Meristic counts				
Dorsal fin rays	XVII+14		XVII+14	
Pectoral fin rays	16		16	
Anal fin rays	III+12		III+12	
Caudal fin rays	15		16	
Pelvic fin rays	I+5		I+5	
Gill rakers	17		17	
Lip folds	7		7	
Vertebrae	39		39	
Scales along lateral line	48		48	
Scales behind eye	8		8	
Scales on cheeks	8		8	
Weight (in dg)				
Total body	500.9		379.4	
Eviscerated body	469.8		343.1	
Liver	4.4		6.4	
Gonad	-		9.5	
Stomach contents	17.5		12.5	

POTRJENO POJAVLJANJE VRSTE *LABRUS MIXTUS* (OSTEICHTHYES: LABRIDAE) V
TUNIZIJSKIH VODAH (OSREDNJE SREDOZEMLJE)

Sihem RAFRAFI-NOUIRA & Moncef BOUMAÏZA

Laboratoire de Bio-surveillance de l'Environnement, Unité d'Hydrobiologie Littorale et Limnique, Université de Carthage, Faculté des Sciences, Zarzouna, 7021 Bizerte, Tunisia

Christian REYNAUD & Christian CAPAPÉ

Laboratoire interdisciplinaire de Recherche sur la Didactique, l'Éducation et la Formation, E. A. 3749, case 77, Université Montpellier II, Sciences et Techniques du Languedoc, 34 095 Montpellier cedex 5, France
E-mail: capape@univ-montp2.fr

POVZETEK

*Avtorja članka poročata o ulovu dveh velikih, odraslih primerkov vrste *Labrus mixtus*, in sicer moškega in ženskega spola, v severnih tunizijskih vodah. Ulov potrjuje prisotnost vrste na območju, kjer je sicer zelo redko prisotna. Izvor obeh primerkov ostaja neznan: vrsta je bodisi avtohtona bodisi neavtohtona, pri čemer ne moremo izključiti izvora iz vzhodnega Atlantika.*

Ključne besede: Osteichthyes, Labridae, vrsta *Labrus mixtus*, tunizijske vode, osrednje Sredozemlje

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