First record of the Rubber-lip grunt *Plectorhinchus mediterraneus* (Guichenot 1850) (Osteichthyes: Haemulidae) in Tunisian waters (Central Mediterranean)

Abdallah Hattour[1] and Mohamed Nejmeddine Bradai[1]
Institut National des Sciences et Technologie de la mer (INSTM),

ملخص

أول إشارة لظهور سمكة *Plectorhinchus mediterraneus* **بالسواحل الشرقية للبلاد التونسية :** نشير إلى ظهور و لأول مرة سمكة *Plectorhinchus mediterraneus* في وسط الساحل الشرقي للبلاد التونسية (سلقطة). تم اصطياد هذا النوع بواسطة الشباك الثلاثية خلال شهر أفريل 2011 .و هما ذكران بطول جملي يقدر ب 42 و36 صم . تفيد هذه الدراسة توسع الرقعة الجغرافية لهذا النوع الأطلسي الأصل لتشمل بعد الحوض الغربي للمتوسط الحوض الشرقي منه و تحديدا وسط الساحل الشرقي للبلاد التونسية.

كلمات مفاتيح : *Plectorhinchus mediterraneus* -الأنواع الدخيلة -المياه التونسية- أول إشارة

RESUME

Première observation du Diagramme gris *Plectorhinchus mediterraneus* (Guichenot, 1850) (Téléostéen, Haemulidae) sur les côtes Est de la Tunisie (Méditerranée centrale) : Nous enregistrons ici la première observation du Diagramme gris *Plectorhinchus mediterraneus* (Guichenot, 1850) dans le centre Est de la Tunisie. Cette espèce atlanto-méditerranéenne à affinité chaude franche vit principalement dans le sud-est atlantique et signalée également en Méditerranée occidentale et en Adriatique, a été trouvé pour la première fois sur les côtes centre-est de la Tunisie à Salakta. Les deux spécimens capturés en avril 2011 aux filets maillants de fond sont deux mâles adultes mesurant respectivement 36 et 42 cm de longueur totale. Le présent article rapporte cette nouvelle observation qui pourrait indiquer l'établissement de l'espèce dans la région. Nous donnons par ailleurs une courte description de l'espèce et un commentaire sur sa distribution en Atlantique Est et en Méditerranée.

***Mots clés**: Plectorhinchus mediterraneus, Haemulidae, eaux tunisiennes, Première signalisation.*

ABSTRACT

We register here the first record of the Rubber-lip grunt *Plectorhinchus mediterraneus* (Guichenot 1850) (family: Haemulidae) in central Tunisian water. This thermophilic Atlanto-Mediterranean species, occurring mainly in the Eastern tropical Atlantic and recorded also in the west Mediterranean basin and in the Adriatic Sea was found for the first time in the central east coast of Tunisia (Salakta). The two specimen captured, both adult male measuring respectively 36 and 42 cm total length, was taken with gillnet in April 2011. The present paper reports this new record which might indicate a recent establishment in the area. Furthermore it gives a short description of the specimens and comments on its distribution in the Mediterranean Sea.

***Keywords**: Plectorhinchus mediterraneus, Haemulidae, Tunisian water, first record.*

INTRODUCTION

Nowadays, the "tropicalization" of the Mediterranean is confirmed and accentuated by the arrival, in addition to Lessepsian fish, Atlantic species with affinities for warmer waters such as alien species *Seriola fasciata*, *Sphoeroides cutaneous* and also because of the development of populations of some autochthonous thermophilic species, the new records in Tunisia or in the Mediterranean are mostly thermophilic species (Bradai, 2010).

Zenetos and Polychronidis (2010), , estimated that nearly 1000 species entered the Mediterranean during the past century through the Suez Canal and Gibraltar channel, unintentionally or ship transferred. Among those marine species, 519 were considered to be established and spreading (Zenetos, 2009). The warming of the Mediterranean is one of the important causes of the entry of thermophilic species (Galil, 2009). This biological invasion constitutes a significant component of human-caused global environmental change (Vitousek et al, 1997).

Plectorhinchus mediterraneus (Teleostei, Haemulidae), occurring mainly in the tropical East Atlantic region extends its geographical distribution in the Mediterranean, first in western basin then in Adriatic and now in the Central Mediterranean.

The aim of the present work is to report the first record of *Plectorhinchus mediterraneus* in Tunisian water.

MATERIAL AND METHODS

The two specimens of *Plectorhinchus mediterraneus* were caught on 2 April 2011 with trammelnets by local small scale fisherman in the locality of Salakta (Mahdia) (Fig. 1), in the central east of Tunisia, by 15 m depth.

The identification was made using descriptions by Ben Tuvia and McKay, 1986.

Fig.1- Map of the Mediterranean Sea showing the locations of *Plectorhinchus mediterraneus* capture off Central coast of Tunisia

In the laboratory, measurements characters were recorded to the nearest mm: total, fork and standard length (TL, FL, and SL), body width (BW), head length (HL), Eye diameter (ED), fin length (fL). Indices of the body were calculated as percentages of the total length. The main meristic characters were registered (number of rays, gillrakers and lateral line scales). Body weight (BW in g) was also recorded.

RESULTS

Description: The body is laterally compressed and the front is high. It is completely covered with small ctenoïd scales; the mouth is small with large lips. The jaws do not reach back the front edge of the eyes that are large enough and relatively high. The teeth are sharp and arranged in bands on the two jaws. The preoperculum is vertical and their posterior ends with spines (Roux, 1981; Nelson 1994).

The coloration is uniformly grey violet more or less dark in adults (Young specimen has wide alternating light and dark bands) (Fig. 2). The Interior of the mouth is pink-orange

Measurement on the two specimen bodies, meristic characters and the percentage of total length are shown in table I.

Description and metric and meristic characteristics of the observed specimens confirm well that are Plectorhinchus *mediterraneus*.

Distribution: Mainly Eastern tropical Atlantic (Roux, 1990), it occurs from Spain and Portugal to Henties Bay, Namibia (Heemstra, 1995, Da Silva, 2011), off the Moroccan coast (Serghini et al, 2008), all Mauritanian coasts (Abdellahi, 2010), off Senegal water (Vassiliadès, 1982; Terashima, et al, 2007), ~~and~~ the gulf of Guinea (Schneider, 1990) and the Canary Islands (Ben-Tuvia, and McKay 1986). Quignard, and Tomasini~~,~~ (2000) mentioned the specie among Mediterranean fish biodiversity. It occurs in the western Mediterranean Sea (Fischer, and al, 1987, Mercader, and al, 2003). According to Dieuzeide, and al, (1955) the specie has been captured several time along Algerian coast under the synonym *Diagramma mediterraneum* Guichenot, 1850, and it ~~is~~ mentioned by Djabali~~,~~ and al, (1993) as a fish of the Algerian coast. In the Eastern Mediterranean Sea, the haemulid *Plectorhinchus mediterraneus*, has been mentioned among fish of the Greek seas

(Economidis, 1973) and has been found recently in Adriatic Sea (the Gulf of Trieste, in Diga Rizzo, Italy, and near Piran, Slovenia) (Llpej, and al, 1996). It extends now its distribution area to the central Mediterranean in Tunisian waters.

.

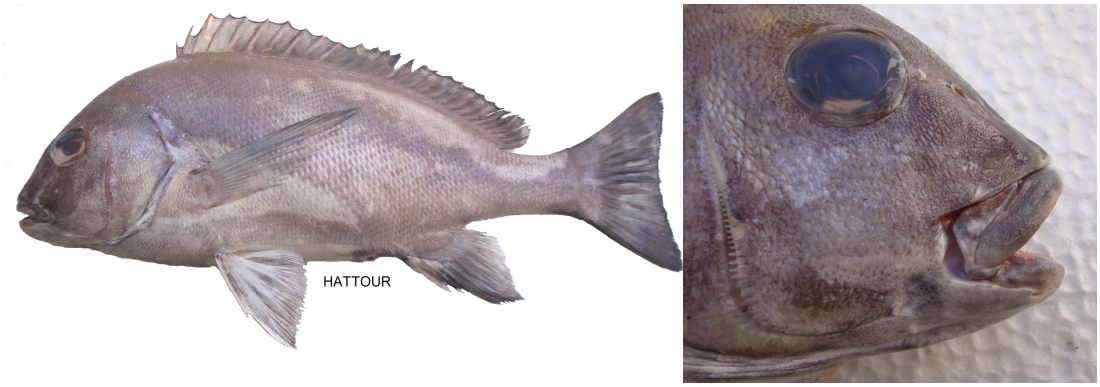

Figure 2- Specimen of *Plectorhinchus mediterraneus* (Guichenot 1850), 420 mm TL captured in Salakta waters (central east Tunisia) and details of the head showing preoperculum posterior end with spines.

Table I : Measurements carried out on the two *Plectorhinchus mediterraneus* (Guichenot 1850) specimens collected at Salakta on April 2011

Measured characters	**Specimen N°1**	**% (TL)**	**Specimen N°2**	**% (TL)**
Total weight (g)	890		530	
Total length (TL) (mm)	420	100,0	360	100,0
Fork length (SL) (mm)	406	96,7	350	97,2
Standard length (mm)	369	87,9	315	87,5
Head length (mm)	102	24,3	88	24,4
Horizontal eye diameter (mm)	26	6,2	21	5,8
Snout- Dorsal fin length (mm)	122	29,0	105	29,2
Dorsal fin base length (mm)	210	50,0	180	50,0
Snout-Pectoral fin length (mm)	108	25,7	93	25,8
Snout-Ventral fin length (mm)	126	30,0	108	30,0
Snout-Anal fin length (mm)	244	58,1	210	58,3
Anal base fin length (mm)	43	10,2	37,2	10,3
Body width (mm)	102	24,3	87	24,2
Pectoral fin length (mm)	114	27,1	98	27,2
Dorsal fin length (mm)	210	50,0	180	50,0
Meristic characters				
Dorsal fin	XI+19		XII+19	
Pectoral fin	14		14	
Ventral fin	I+5		I+5	
Anal fin	III+9		III+9	
Caudal fin	17		17	
Gillrakers (lower arm)	19		19	
Scale in lateral line	56		56	

CONCLUSION AND DISCUSSION

The Rubber-lip grunt, *Plectorhinchus mediterraneus* is one of the 35 species in the family Haemulidae found in fresh, brackish and salt waters. Before this new record, only one species *Pomadasys incisus* of this family is known occurring along all Tunisian coasts (Bradai et al., 2004a). This record of two specimens might indicate a recent establishment in the area.

This work confirms once more the subtropical nature of Tunisian waters. This character is accentuated by

the arrival of both Lessepsians and Atlantic species with affinities to the warm waters (*Seriola fasciata*, *Sphoeroides cutaneus*). In recent decades, the intrusion in Tunisian waters of the tropical Atlantic and the Indo ocean species has become a salient feature. This contributed significantly to the formulation of the inventories of the biotic components of the Mediterranean Sea in General and especially Tunisian waters. These changes are to correlate with the increase in the temperature of surface (Zouari and al, 1996). The extension of the subtopicalisation is reported for the case of the Gulf of Gabes by Bradai and al, 2004a, and b and Bradai 2010. The same phenomenon was reported by Banon 2004 who justified the signaling of tropical species in the North Atlantic by the warming of the Ocean. Moreover Stebbing et al, 2002 were able to demonstrate a significant correlation, during the last 40 years, between the increase in the number of invasive species in the North Atlantic Ocean and the increase of the sea water temperature.

Plectorhinchus mediterraneus is a coastal bottom fish that can reach a maximum size (SL) of 800mm (Ben-Tuvia, and McKay 1986); the common size is around 600 mm. The maximum total mass is 7,920 g (IGFA, 2001). The size of the first sexual maturity (50%) at Angola Sea is about 25 cm (TL) as well for males and females (Da Silva, 2011). The observed specimens 42 and 36 TL are adult males.

Acknowledgements

We would like to thank the fishermen of Salakta who provided us the examined specimens.

BIBLIOGRAPHY

Abdellahi, O.S.O.B., 2010-Evolution du niveau trophique des débarquements de la pêche artisanale Mauritanienne entre 1997 et 2008. J. Sci. Hal. Aquat., 3:97-103

Banon, R., 2004. New records of two southern fishing Galician waters (NW Spain). *Cybium, 28 (4) : 369-371*

Ben-Tuvia, A. and R. McKay 1986 Haemulidae. p. 858-864. In P.J.P. Whitehead, M.-L. Bauchot, J.-C. Hureau, J. Nielsen and E. Tortonese (eds.) Fishes of the north-eastern Atlantic and the Mediterranean. volume 2. UNESCO, Paris.

Bradai, M.N., 2010- Tunisian fish and the global warming. Rapp. Comm.int. Mer Médit, 39, p462.

Bradai, M.N., Ktari, R., Ben Souissi, J., Ben Hadj-Hamida, N., Ghorbel, M., Jarboui, O., Bouain, A., and Missaoui, H., 2004a. Liste commentée des poissons exotiques recensés en Tunisie. *Rapp. Comm. Int. Mer Méditerranée (CIESM).* 37, 2004.

Bradai, M.N., Quignard, J.P., Bouain, A., Jarboui, O., Ouannes-Ghorbel, A., Ben Abdallah, L., Zaouali, J., and Ben Salem, S., 2004b- Autochtonous and exotic fish species of the Tunisian coasts: Inventory and biogeography. *Cybium*, 28 (4), 315-328.

Da Silva, F., 2011- Avaliaçao biologica da populaçao de *Plectorhinchus mediterraneus* (Guichenot 1850) (Pisces: Haemulidae) no sul de Angola (Namibie) universidade agostinho neto faculdade de Ciências Abordagem preliminary Annual BCC Scientific forum 17-20 OCTOBER 2011 Swakopmund, Namibia.

Dieuzeide, R., Novella, M., and Roland, J., 1955- Catalogue des poissons des côtes algériennes. Bull Sta d'Aqua et de Pêche de Castiglione, III (n,s) 6, 384 p. 202 fig.

Djabali, F., B. Brahmi and M. Mammasse 1993- Poissons des Côtes Algériennes. Pelagos, Bulletin de l'Ismal (Bulletin de l'Institut des Sciences de la Mer et de l'Aménagement du Littoral). Numéro spécial 215 p.

Economidis, P.S., 1973- Catalogue of the fishes of Greece. Reprinted from Hellenic Oceanology and Limnology, Praktika of the Inst. of Ocean. and Fishing Research, vol. 11 (1972).

Fischer, W., M.-L. Bauchot and M. Schneider (eds.) 1987- Fiches FAO d'identification des espèces pour les besoins de la pêche. (Révision 1). Méditerranée et mer Noire. Zone de Pêche 37. FAO, Rome. 1529 p.

Galil, B.S., 2009. Taking stock: inventory of alien species in the Mediterranean Sea. Biological Invasions, 11:359-372.

Heemstra, P.C. 1995 Additions and corrections for the 1995 impression. p. v-xv. In M.M. Smith and P.C. Heemstra (eds.) Revised Edition of Smiths' Sea Fishes. Springer-Verlag, Berlin.

IGFA, 2001- Database of IGFA angling records until 2001. IGFA, Fort Lauderdale, USA.

Llpej, L., Spoto, M. and Dulcic, J. (1996), *Plectorhinchus mediterraneus* from off north east Italy and Slovenia–the first records of fish of the family *Haemulidae* from the Adriatic Sea. Journal of Fish Biology, 48: 805–806. doi: 10.1111/j.1095-8649.1996.tb01476.x

Mercader, L., Lloris, D., and Rucabado, J., 2003- Tots els peixos del mar Catala. Diagnosis I claus d'identifucació. Institut D'estudis Catalans. Barcelona. 350p.

Nelson, J.S., 1994– Fishes of the world. Third Edition. New York, John Wiley & Sons, Inc.

Quignard, J.P., and Tomasini, J.A., 2000- Mediterranean fish biodiversity. Biol. Mar. Mediterr. 7(3):1-66.

Roux, C., 1981– « Pomadasyidae ». In Fischer (W.), Bianchi (G.), Scott (W. B.) (eds) : Fiches FAO d'identification des espèces pour les besoins de la pêche. Atlantique centre-est ; zones de pêche 34,47 (en partie). III. Rome, FAO.

Roux, C., 1990- Haemulidae. p. 783-788. In J.C. Quero, J.C. Hureau, C. Karrer, A. Post and L. Saldanha (eds.) Check-list of the fishes of the eastern tropical Atlantic (CLOFETA). JNICT, Lisbon; SEI, Paris; and UNESCO, Paris. Vol. 2.

Schneider, W., 1990- FAO species identification sheets for fishery purposes. Field guide to the commercial marine resources of the Gulf of Guinea. Prepared and published with the support of the FAO Regional Office for Africa. Rome: FAO. 268 p.

Serghini, M., Boutayeb, A., Boumâaz, A., Srairi, A., Mesfioui, A., Zoubi, A., and Dridi, A., 2008- Stability of the spatial stuctures of demersal assemblage in the Moroccan southern Atlantic zone. APPLIED ECOLOGY AND ENVIRONMENTAL RESEARCH 6(1): 117-127.

Stebbing, A.R.D., Turk, S.M.T., Wheeler, A., and Clarke, K.R., 2002. Immigration of southern fish species to South-west England linked to warming of the Norh Atlantic (1960-2001). *J. Mar. Biol. Ass. U.K., 82:177-180.*

Terashima H.,, Sato, M., Kawasaki, H., and Thiam D., 2007- Quantitative Biological Assessment of a Newly Installed Artificial Reef in Yenne, Senegal *Zoological Studies* 46(1): 69-82 (2007)

Vassiliadès, G., 1982-Helminthes parasites des Poissons de mer des côtes du Sénégal, Bulletin de l'I.F.A.N.

Vitousek, P.M., D'antonio, C.M., Loope, L.L., Rejmnek, M., and Westbrook, S.R., 1997- Introduced species: a significant component of human-caused global change. New Zealand Journal of Ecology, 21 (1): 1-16.

Zenetos, A., 2009- Marine biological invasions. Technical Report 20/2009/RAC/SPA. UNEP/MAP/RAC/SPA, Tunis.

Zenetos, A., & Polychronidis, L., 2010- Feasibility study in setting up a regional mechanism for collecting, compiling and circulating information on invasive non-indigenous species in the Mediterranean. Contract number No 85 /RAC/SPA 2010, 86 pp.

Zouari, K., Bouzid, J., Bousnina, A., Chayeb, M., Karray, N., Bradai, M.N., 1996. Implications des changements climatiques sur la zone côtière de Sfax (Tunisie). *UNEP,MAP Tech. Rep. Ser*. n° 99: 326 p.