www.trjfas.org
ISSN 1303-2712
Turkish Journal of Fisheries and Aquatic Sciences 15: 937-940 (2015) DOI: 10.4194/1303-2712-v15_4_18

SHORT PAPER

Occurrence and New Geographical Record of Striped Seabream *Lithognathus mormyrus* (Linnaeus, 1758) in the Turkish Coast of Black Sea

Semih Engin[1,*], Arif Can Keskin[1], Tolga Akdemir[1], Dilruba Seyhan[1]

[1] Izmir Katip Celebi University, Faculty of Fisheries, Izmir, Turkey.

* Corresponding Author: Tel.: +90.542 7314281; Fax: +90.232 3860888;
E-mail: engin.semih@gmail.com

Received 13 November 2014
Accepted 31 December 2015

Abstract

In this study the striped seabream *Lithognathus mormyrus* (Linnaeus, 1758) was reported for the first time and considered as new geographic record from the northern part of Turkish coasts. The observation points and sampling localities were given with some ecological remarks. The morphological features of this species were examined. The relationship between variations in habitat structure along the Turkish coasts of Black Sea and the observation frequencies of the new geographical record of striped seabream *L. mormyrus* was discussed.

Keywords: *Lithognathus mormyrus,* striped seabream, ichthyofauna, Black Sea.

Karadeniz'in Türkiye Kıyılarında Mırmır Balığının *Lithognathus mormyrus* (Linnaeus, 1758) İlk Kaydı ve Dağılımı

Özet

Bu çalışmada *Lithognathus mormyrus* (Linnaeus, 1758) mırmır balığı Türkiye'nin Karadeniz kıyılarından ilk defa bildirilmektedir. Türün bazı ekolojik ve morfolojik özellikleri belirlenmiştir. Ayrıca Doğu Karadeniz sahil yolu inşaatı sonrası oluşan yeni habitatlar ile mırmır balığının gözlenme sıklığı arasındaki ilişki tartışılmıştır.

Anahtar Kelimeler: *Lithognathus mormyrus*, mırmır, ihtiyofauna, Karadeniz.

Introduction

The striped seabream *Lithognathus mormyrus* (Linnaeus, 1758) is a demersal fish inhabiting littoral waters on sandy or sand-muddy bottoms, sometimes on *Posidonia* beds (Bauchot and Hureau, 1986). *L. mormyrus*, are highly mobile but very dependent on the bottoms, where they get their feeding (Hammami *et al*., 2013). This fish is a carnivorous bottom feeder; juveniles presumably feed on copepods, small polychaetes and amphipods (Froglia, 1977; Jardas, 1985), whereas adults are more generalist feeders (Suau, 1970; Froglia, 1977; Badalamenti *et al*., 1992). The striped seabream have a distribution area covering the Eastern Atlantic and the Western Indian Ocean. In the Eastern Atlantic, it occurs from the Bay of Biscay to the Cape of Good Hope, and around the Canaries and Cape Verde (Bauchot and Hureau, 1986; 1990). It is also presented in the Mediterranean and Red seas (Smith and Smith, 1986). In the Western Indian Ocean, it occurs from Southern Mozambique to the Cape of Good Hope (Harmelin-Vivien *et al*., 1995). Distribution of *L. mormyrus* in the Turkish coasts is widely available in Levantine Sea, Aegean Sea and Sea of Marmara (Bilecenoğlu *et al*., 2014). In addition, it has been reported from Romanian coasts of northern part of Black Sea (Stanciu and Ilie, 1980). Till today, no study has provided geographical record information concerning the occurrence of the striped seabream *L. mormyrus* along the Turkish coasts of Black Sea.

Materials and Methods

This study was performed within an ichthyofauna survey, from the Turkish coasts of Black Sea. Forty littoral stations (0-30m) representing different habitat and shelter types were chosen along the Turkish coasts for the ichthyofauna survey of the present study.

Observations have been carried out with SCUBA as well as free diving, and one specimen was

sampled with spear gun. Sampling localities and observation points were given in Figure 1 and detailed with coordinates, habitat types and observations in Table 1.

The obtained specimen was fixed in % 70 ethanol solution and deposited in the fish collection of Sea Museum of İzmir Katip Çelebi University (IKCMM-PIS/025-2013). Meristic and metric characters of the species were examined (Table 2) and species identification was performed based on Bauchot and Hureau (1986).

Results and Discussions

During the present ichthyofauna survey underwater photographs were taken for *L. mormyus* along the northern coasts of Turkey during summer 2013, and one specimen was sampled from Derepazarı-Rize on 4 July 2013. Moreover, a school with 20 to 30 individuals was observed in Derepazarı-Rize water during summer period of 2014. Living and fixed sample of the striped seabream were photographed underwater and in the laboratory as shown in Figure 2A, and 2B respectively.

The specimens were distinguished from other species of the Sparidae in the Mediterranean by the following characters: body elongated and well compressed, upper profile of head gently curved, snout elongate and pointed; posterior nostril an oblique slit, just in front of eye, cheek and opercle

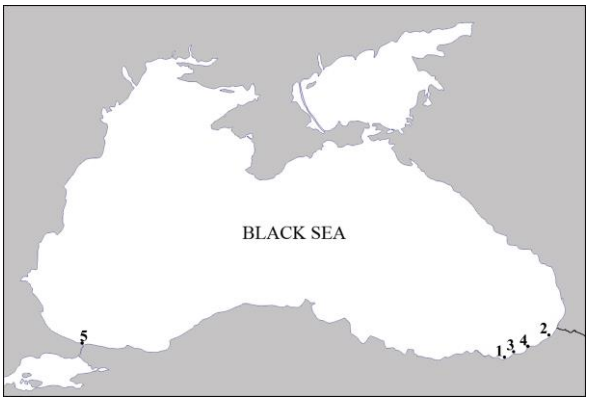

Figure 1. Location of the study area and the sampling/observation localities of *L. mormyrus.* 1: Çamburnu Harbour-Trabzon, 2: Arhavi-Artvin, 3:Derepazarı-Rize, 4:Pazar-Rize, 5:Rumeli Feneri-İstanbul.

Table 1. Sampling localities and observation points of *Lithognathus mormyrus* with years and habitat types

	Coordinates of sampling sites	Year	Habitat Type
1	40°55'24"N-40°12'17"E Çamburnu Harbour-Trabzon	2013	Artificial rocky habitat (harbor) with fine sand, depth 8 meter
2	41°21'05"N-41°17'35"E Arhavi-Artvin	2013	Artificial rocky habitat (breakwater) with silt sand and near a small river drainage, depth 3.5 meter
3	41°01'36."N - 40°24'40"E Derepazarı-Rize	2013 and 2014	Artificial rocky habitat (breakwater), depth 3 meter (as school)
4	41°11'01"N-40°52'36"E Pazar-Rize	2013	Bedrock with shell gravel, depth 2 meter
5	41°14'06"N-29°06'51"E Rumeli Feneri-İstanbul	2013	Fine sand, depth 6 meter

Table 2. Metric and meristic characters of the *Lithognathus mormyrus* in the northern coasts of Turkey

Characters	Proportion (%)/ Count
Sex	♂
Total length	226.01 mm
Standard length (L_S)	204.03 mm
Orbital length	19,48 % (L_H)
Pre-Orbital length	48,62 % (L_H)
Head length (L_H)	27,34 % (L_S)
Pre-Dorsal length	36,95 % (L_S)
Caudal peduncle length	15,32 % (L_S)
Line-Lateral scales	59
Dorsal fins	XI-12
Anal fins	III-10

Figure 2. (A) Underwater photograph of *L. mormyrus* in south eastern coast of the Black Sea and (B) sampled specimen.

scaled. In front of each jaw, outer series of conical teeth slightly enlarged, followed by inner bands of shorter teeth. Dorsal fin spines: XI; dorsal fin soft rays: 12; anal fin spines: III; anal fin soft rays: 10, pectoral short, ending well before anus. Lateral line scales: 59. Coloration of live specimen: silvery grey, darker dorsally; 15 narrow transverse stripes, dorsal and caudal fins generally brownish, other fins lighter.

During the period of ten years extended from 1997 until 2007, dramatic and severe changes were happened in the coastal area along the north eastern coasts of Turkey. These changes include the construction of highway, as well as, breakwaters, fishing ports, harbors etc. Thus, a new geographic habitat of big sheltered area with sandy bottom existed for the first time along the north eastern coasts of Turkey which covers approximately 400 km coast line and commonly 0-10 m depth between Unye-Sarp The new environment hosts many marine invertebrates particularly bivalves and decapods. The latter seemed to be more likely and more attractive seabream food source. On this basis the striped seabream *L. mormyrus* inhabited the Turkish coast of Black Sea for the first time and thence considered as recent geographical record for the Turkish coast of the Black Sea.

L. mormyrus is also frequently encountered in lagoons and estuaries along the Mediterranean coasts (Matić-Skoko *et al*., 2007; Monteiro *et al*., 2010). It is a gregarious species living on various types of sea bottoms in the Mediterranean, including sandy and rocky bottoms and sea grass beds (Bauchot and Hureau, 1986; 1990).

Our observations also showed distribution of *L. mormyus* is not restricted to south eastern Black Sea as it was reported from Romanian coasts (Stanciu and Ilie, 1980) also indicated the probability of its occurance along the whole southern and western coast of Black Sea.. During the last decade new findings of Mediterranean fish species in the northern coast of Turkey have increased (Engin *et al*., 2007; Kovacic and Engin 2009; Dalgıç *et al*., 2013). There may be two reasons of this situation, first is new ecological conditions in consequence of changing coastline structure and second is increase in frequency of ichthyological studies in the region.

Acknowledgements

This study was supported by TUBITAK (Scientific and Technological Research Council of Turkey) **(**Project code: 112 T 924**).**

References

Badalamenti, F., D'Anna, G., Fazio, G., Gristina, M. and Lipari, R. 1992. Relazioni trofiche tra quattro specie ittiche catturate su differenti substrati nel Golfo di Castellamare (Sicilia N⁄O). Biologia Marina Mediterranea. 1:145–150.

Bauchot, M.L. and Hureau, J.C. 1986. Sparidae. In: Fishes of the North- Eastern Atlantic and the Mediterranean, Vol. II. Whitehead PJP, Bauchot ML, Hureau JC, Nielsen E, Tortonese (Eds). UNESCO, Paris, 883–907 pp.

Bauchot, M.L. and Hureau, J.C. 1990. Sparidae. In: Check-List of the Fishes of the Eastern Tropical Atlantic. Clofeta, II. Quero JC, Hureau JC, Karrer A, Post L, Saldanha (Eds). UNESCO, Paris, 790–812 pp.

Bilecenoğlu, M., Kaya, M., Cihangir, M. and Çiçek, E. 2014. An updated checklist of the marine fishes of Turkey. Turkish Journal of Zoology, 38: 901-929. doi:10.3906/zoo-1405-60

Dalgiç, G., Gümüş, A. and Zengin, M. 2013. First record of brown comber *Serranus hepatus* (Linnaeus, 1758) for the Black Sea. Turkish Journal of Zoology. 37: 523-524. doi:10.3906/zoo-1209-28.

Engin, S., Turan, D. and Kovacic, M. 2007. First record of the Red-Mouthed goby, *Gobius cruentatus* (Pisces: Gobiidae), in the Black Sea. Cybium, 31: 87-88.

Fricke, R., Bilecenoglu, M. and Sari, H.M. 2007. Annotated checklist of fish and lamprey species (Gnathostomata and Petromyzontomorphi) of Turkey, including a red list of threatened and declining species. Stuttgarter Beiträge zur Naturkunde Serie A (Biologie), 706:1-169

Froglia, C. 1977. Feeding of *Lithognathus mormyrus* (Linnaeus, 1758) in Central Adriatic Sea (Pisces, Sparidae). Rapport Commission International Mer Mediterranee, 24: 95–97.

Hammami, I., Bahri-Sfar, L., Kaoueche, M., Grenouillet, G., Lek, S., Kara, M. and Hassine, O.K.B. 2013. Morphological characterization of striped seabream (*Lithognathus mormyrus*, Sparidae) in some Mediterranean lagoons. Cybium, 37(1-2): 127-139.

Harmelin-Vivien, M.L., Harmelin, J.G. and Leboulleux, V. 1995. Microhabitat requirements for settlement of juvenile sparid fish on Mediterranean rocky shores. Hydrobiologia, 300/301: 309–320. doi: 10.1007/BF00024471

Jardas, I. 1985. The feeding of juvenile striped seabream, *Lithognathus mormyrus* (Linnaeus, 1758) (Pisces, Sparidae). Rapport Commission International Mer Mediterranee, 29: 107–108.

Keskin, Ç. 2010. A review of fish fauna in the Turkish Black Sea. Journal of the Black Sea/Mediterranean Environment, 16: 195–210.

Kovacic, M. and Engin, S. 2009. First record of the zebra goby, *Zebrus zebrus* (Gobiidae), in the Black Sea. Cybium, 33: 83-84.

Matic´-Skoko, S., Ferri, J., Kraljevic, M. and Dulcic, J. 2007. Growth of juvenile striped seabream, *Lithognathus mormyrus* (Teleostei: Sparidae), in the Adriatic Sea. Journal of Applied Ichthyology, 23: 286–287. doi: 10.1111/j.1439-0426.2007.00841.x

Monteiro, P., Bentes, L., Coelho, R., Correia, C., Erzini, K., Lino, G.P., Ribeiro, J. and Gonçalves, M.S.J. 2010. Age and growth, mortality and reproduction of the striped seabream, *Lithognathus mormyrus* (Linnaeus, 1758) from the south coast of Portugal (Algarve). Marine Biology Research**,** 6: 53-65. doi**:** 10.1080/17451000903039731

Pérez-Ruzafa, A., Mompeán, M.C. and Marcos, C. 2007. Hydrographic, geomorphologic and fish assemblage relationships in coastal lagoons. Hydrobiologia, 577: 107-125. doi: 10.1007/s10750-006-0421-8

Smith, J.L.B. and Smith, M.M. 1986. Sparidae. In: Smiths' Sea Fishes. M. M. Smith, P. C. Heemstra (Eds). Springer-Verlag, Berlin, 580–594 pp.

Stanciu, M. and Ilie, G. 1980. *Lithognatus mormyrus*, a new species of Sparidae at the Romanian littoral // Pontus Euxinus, Studii si cercetari CSMN-Constanta, 1: 107-110 (in Romanian).

Suau, P. 1955. Contribución al estudio de la herrera (*Pagellus mormyrus* L.) (II) especialmente de la sexualidad. Investigational New Drugs, 1: 59-66.

UNESCO. 1981. Coastal lagoons research, present and future. Unesco Technical Papers in Marine Science, 32: 51-79.