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CASE REPORT VAKA TAKDİMİ

Occurrence of an abnormal one-eyed black anglerfish *Lophius budegassa (Spinola, 1807)* from Central Aegean Sea, Turkey

Orta Ege Denizi, Türkiye'de anormal tek gözlü fener balığı *Lophius budegassa (Spinola, 1807)*'nın bulunuşu

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Abstract: During the seasonal trawling studies between September 2017 and August 2018, one specimen of the *Lophius budegassa* (Spinola, 1807) was found as one-eyed. This is the first record of this type, morphological abnormality of this fish species from Aegean Sea. Abnormality could be caused by environmental or genetic factors. The other reason might be a one-eyed specimen could be attacked by other carnivores when specimens at early stages. However, based on morphological investigations there were no visible assault scar or wound lesion were found on orbital skin tissue.
Keywords: One-eyed, abnormality, *Lophius budegassa*, Central Aegean Sea

Öz: Eylül 2017 – Ağustos 2018 tarihleri arasında gerçekleşen mevsimsel trol örneklemeleri sırasında bir adet *Lophius budegassa* (Spinola, 1807) bireyi tek gözlü olarak bulunmuştur. Bu tip bir bildiri Akdeniz'de morfolojik anormallik olarak bu tür için bir ilktir. Anormallik faktörü çevre ve genetik kaynaklı olabileceği gibi diğer bir sebep olarak, tek gözlü bireyin erken büyüme evrelerinde yırtıcılar tarafından saldırıya uğramış olduğudur. Ancak morfolojik incelemeler sonucunda orbital deri dokusunda görünür hiçbir yara izi ve yara lezyonu görülmemiştir.
Anahtar kelimeler: Tek gözlülük, Anormallik, *Lophius budegassa*, Orta Ege Denizi

INTRODUCTION

Black-bellied angler *Lophius budegassa* occurs shallow waters to down to depths and they feed on benthic species, fish and crustaceans because they are carnivorous (Whitehead, 1986). Black anglerfish are typical bottom living species, the former having a depth range between 70 m and 800 m and the latter extending to depths >1000 m (Dardignac, 1988). Also, these two species are important in European fisheries. Anglerfish are known to be one of the top demersal predators in European waters. However, despite their high economic value, little is known about their biology and ecology (Farina et al., 2008; Landa et al., 2001; Issac et al., 2017). Black anglerfish has a more southern distribution therefore Mediterranean and Eastern North Atlantic from British Isles to Senegal (Fishbase, 2019). Anglerfishes are gaining high economic value day by day and becoming demand species in Turkish fish markets.

Diagnosis of *Lophius budegassa*; dorsal fin ray; 8 or 9 anal fin rays; 22-26 pectoral fin rays; length of third dorsal fin spine greater than snout width but less than distance between posterior frontal spines; length of forth dorsal fin spine approximately equal to snout width; esca a simple pennant-like flap; peritoneum dark (Caruso, 1983). So far, there is no explanatory study has been made about the cause of monocularism or being one-eyed of Lophius budegassa. The aim of this study is to identify this morphological abnormality and report this case.

MATERIALS AND METHODS

During the seasonal trawling studies between September 2017 and August 2018, one specimen of *L. budegassa* specimen were captured in offshore of Karaburun – Foça side of Turkey, 38°46'58.89" N - 26°24'38.10" E (Figure 1). All the trawls occurred between 45 – 360 m. However, there is no certain data of bathymetric existence of this abnormal specimen. One-eyed individual transported from the vessel with ice filled styrofoam box and were kept in the freezer. The morphometric features of the sample were measured. The total height measurement of the sample was measured with a 1 mm precision measuring board and the weight was measured with an electronic weighting machine with 0.01 g sensitivity.

RESULTS AND DISCUSSION

Eye deformations in Lophius species generally observed as blindness and blindness has been always described in albino individuals or with pale body coloration (Alonso-Allende, 1983; Bucke et al., 1994; Landa et al., 1998;

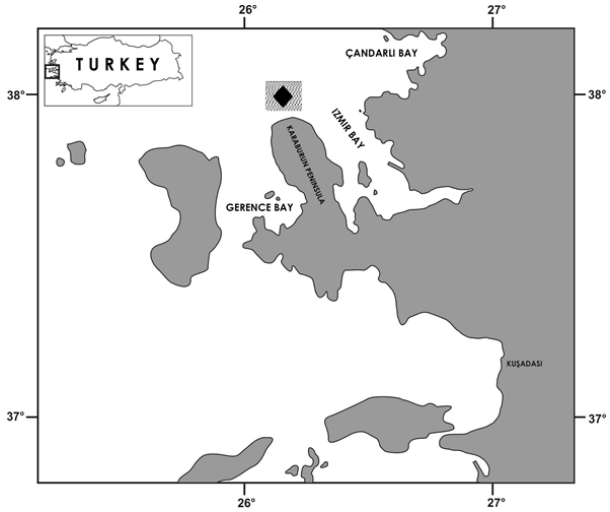

Figure 1. Sampling area of obtained one-eyed individual

Colmenero et al., 2016). One-eyed or monocularism is a very rare abnormality in *Lophius budegassa*.

Until now, there was only one report that occurred about being one-eyed and this was Monocular-leucism in SE Irish Sea, by Quigley et al. (2015). However, that species has two abnormalities. These are Monocularism and leucism. Overall, it is wrong to ignore the relations between coloration and eye deformations. However, in this report, the one specimen of *L. budegassa* has dark-brown coloration as other Lophius species. In the study of Colmenero et al. (2016), a single blind individual of *L. budegassa* was found and the coloration of that species was reported as same as in this study but in the end, they could not find the cause of blindness.

Until now, researchers focused on 4 major inducement factors that are related to eye abnormalities. These are parasitic, genetic alteration during the embryonic development of the eye structure, genetic changes, and pollution effects. According to studies of Bucke et al. (1994), there is no relationship between blindless anomaly and genetic changes or pollution effect but in the report of Colmenero et al. (2016), the microsporidian parasite *S. lophii* mentioned as could be associated with anatomical anomalies such as eye deformities. As a result of these inferences and previous reports, the cause of being one-eyed or monocularism is currently unknown. Based on the measurements and observation, it has been seen no significant differences except abnormal morphology as one-eyed. *L. budegassa* species from this research sex, length and weight measurements found as female (♀), 21.7 cm and 151.1 g respectively. Comparing the pictures of two individuals of *L. budegassa* (Figure 2), it is clearly shown that there is an orbital cavity under the skin tissue but no eyes (Figure 3). The etiology of monocularism is currently unresolved and abnormality could be caused by environmental or genetic factors.

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Figure 2. Left photo: Monocular abnormality in *Lophius budegasssa* (left of the eye), Central Aegean Sea, 2018. Right photo: Monocular leucism in *Lophius budegassa* (right of the eye), SE Irish Sea, January 2013. Photo: Declan Quigley

Figure 3. There is an orbital cavity under the skin tissue

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