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Case Report

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First report of abnormal pigmentation in a surmullet, *Mullus surmuletus* L. (Osteichthyes: Mullidae)

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Abstract: On 17 October 2012, an abnormally pigmented specimen of the surmullet *Mullus surmuletus* L. with a standard length of 164 mm was caught off the coast of Urla in İzmir Bay (Aegean Sea). This is the first report of abnormal pigmentation of the surmullet in the Mediterranean Basin. The sample fish had a patterned blue color on the back and its flanks were silvery. This kind of malpigmentation has not been observed in any mullids up to now.

Key words: Abnormal pigmentation, surmullet, *Mullus surmuletus*, Aegean Sea

1. Introduction

Malpigmentation (i.e. color abnormality) is a major deviation from the normal coloration of the body or part of the body. Malpigmentation can be categorized into 3 groups: hypomelanosis (pseudoalbinism), which is characterized by full or partial lack of pigmentation on the ocular side; hypermelanosis, which is characterized by abnormal pigmentation on the blind side; and ambicoloration, which is ocular-side pigmentation on both sides of flatfish. Malpigmentation is particularly common in hatchery-reared flatfishes, and this is an especially common problem in aquaculture due to reduced marketability (1–9).

Although malpigmentation is common in reared fishes, there are some records of color abnormalities on wild common sole (*Solea solea*) in the Thau Basin (France) and İzmir Bay (Aegean Sea) in the Mediterranean (10,11), and in 2 species of American sole (*Achirus declivis* and *A. lineatus*) in the Piraquê-Mirim estuarine system, SE Brazil (12). In addition, ambicolored flatfishes along the coasts of Europe have included *Scophthalmus maximus*, *Pleuronectes maximus*, *P. platessa*, *P. flesus flesus*, and, on very rare occasions, *S. rhombus*, *Monochirus hispidu*, and *P. limanda* (10).

2. Case history

On 17 October 2012, an abnormally pigmented *Mullus surmuletus* L. specimen (Figure 1) with a standard length (SL) of 164 mm was caught off the coast of Urla, located in İzmir Bay (coordinates: 38°24′29″N, 26°48′11″E). The specimen was caught by a bottom trawl net (44 mm codend mesh size) over a muddy bottom at a depth of 28 m and was deposited in the fish collection of the Ege University Fisheries Faculty (ESFM-PIS/12-001).

3. Results and discussion

Diagnostic characters were counted as VIII first dorsal fin rays, 10 second dorsal fin rays, 7 anal fin rays, 16 pectoral fin rays, and I+5 ventral fin rays. The surmullets (*M. surmuletus*) are distinguishable from the red mullets (*M. barbatus*) with less steep head and barbells longer than its pectoral fin (13).

Recently, color and/or external abnormalities have been reported for some demersal fish species in Turkey, i.e. for speckled ray *Raja polystigma* (14), for reared flounder *Platichthys flesus luscus* (15), and for wild common sole *Solea solea* (11). Moreover, this ichthyological note is the first report of abnormal pigmentation in wild surmullet in the Mediterranean. The specimen had a patterned blue color on the back and its flanks were silvery like a sardine. This kind of malpigmentation has not been observed in any mullids until now.

Many studies have reported environmental factors, light intensity, feeding during larval stages, the hormones (i.e. endocrine) involved in body color patterns, and genetic factors as possible hypotheses to explain color anomalies (3,6,7,16–19). Besides these possible factors, the environmental contamination of sediments that originate from anthropogenic and industrial activities could also contribute to the effects (20); this suggestion is plausible owing to the fact that the surmullet feeds from sediment.

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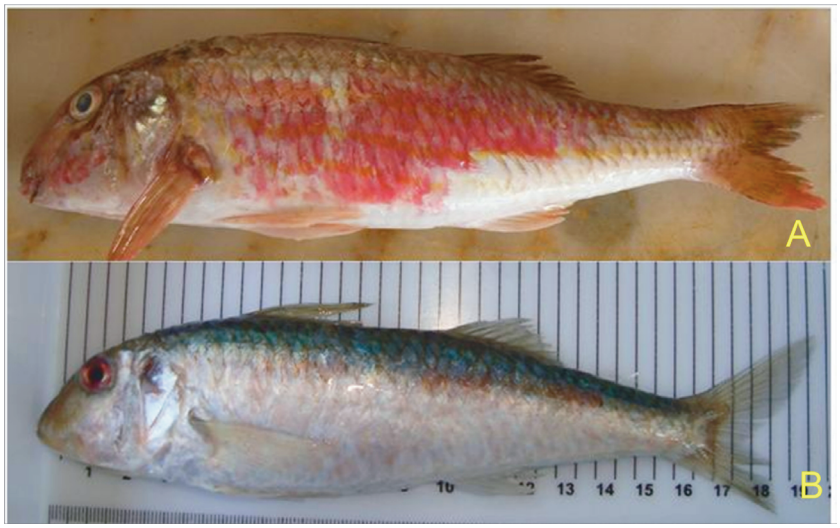

Figure 1. Abnormal pigmentation in a *Mullus surmuletus* caught off the coast of Urla, İzmir Bay, Turkey, 164 mm in SL. A) normal color; B) abnormal color.

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