

First record of the blacktip grouper *Epinephelus fasciatus* (Teleostei: Serranidae) in the Mediterranean Sea

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A specimen of the Indo-Pacific blacktip grouper was collected at a depth of 20 m from off the coast of Lebanon. This constitutes the first record of the species in the Mediterranean and adds to the number of exotic serranids in the Mediterranean Sea.

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INTRODUCTION

Serranids are a family of bony fish found in tropical and temperate oceans of the world (Nelson, 2006). The family is diverse with about 475 species distributed in 64 genera, all characterized by an operculum with 3 spines and a tip of maxilla exposed when mouth is closed (Nelson, 2006). Groupers is a common name for members of the subfamily Epinephelinae, which comprises about 160 species and 15 genera (Heemstra & Randall, 1993). At least 110 grouper species are reported to live in the Indo-Pacific region while only 14 species are known from the eastern Atlantic Ocean and the Mediterranean Sea (Heemstra, 1991; Randall & Heemstra, 1991). Most groupers are protogynous hermaphrodites and are known to be bottom-dwelling lie-in-wait predators that ambush their prey as it passes nearby (Heemstra & Randall, 1993; Nelson, 2006). Groupers are high-priced commercial food fish in markets of tropical and temperate areas.

The blacktip grouper *Epinephelus fasciatus* (Forsskål, 1775) is one of the most common species living in the Indo-Pacific region and is one of the two most widely distributed species of grouper in the world (Heemstra & Randall, 1993). It is very common in the Red Sea (Randall, 1983; Randall & Ben-Tuvia, 1983). *Epinephelus fasciatus* is a species of coral reefs and rocky bottoms that can be found down to about 160 m, but mainly between 20 and 45 m depth (Heemstra & Randall, 1993). It is active during the day and night and feeds mainly on fish, decapods, stomatopods and cephalopods (Harmelin-Vivien & Bouchon, 1976; Randall & Ben-Tuvia, 1983). It is sometimes found in small groups, resting on the bottom and can grow up to 40 cm long (Heemstra & Randall, 1993; Taquet & Diringer, 2007).

On 1 February 2011, a single individual of blacktip grouper was caught from off the Lebanese coast, north of the city of Tripoli (34°28'N 35°52'E). The specimen (Figure 1) was

entangled in a trammel net set at a depth of 20–25 m over a soft bottom, scattered with rocks. The fish was photographed by the fisherman immediately after capture and was afterwards sold mixed with other species. The distinctive characters visible on the photographs and unique to the species, allowed an accurate identification of the common Indo-Pacific *E. fasciatus*. The pale yellowish-red colour of the body with orange-red bars, the series of conspicuous black triangles behind the tip of dorsal fin spines, and the dark reddish-brown dorsal part of head and nape are characteristic features of the species. A complete description of the species is available in the literature (Randall & Ben-Tuvia, 1983; Heemstra & Randall, 1993). The estimated size of the specimen based on the photograph is approximately 22 cm in total length (Figure 1).

DISCUSSION

This note constitutes the first record of the Indo-Pacific blacktip grouper *E. fasciatus* collected from the Mediterranean Sea. Despite the fact that the identification was made on a photograph, it was easily distinguished from all congeneric species living in the Mediterranean by the yellowish-red coloured body with vertical orange-red bars (Figure 1).

The Suez Canal connected the Red and Mediterranean Seas and this allowed the incursion of numerous Indo-Pacific biota into the Mediterranean, or lessepsian migration, over the years. To date many hundreds of lessepsian organisms have settled in the eastern Mediterranean (e.g. Galil, 2008; Mavruk & Avsar, 2008; Golani *et al.*, 2009). Many of these species are acquiring economic importance in the eastern Mediterranean (Bariche, in press). The magnitude of first records in the Mediterranean of Indo-Pacific species, presumably lessepsian, seem to have increased in the last year (e.g. Bariche, 2010a, b; Golani & Appelbaum-Golani, 2010; Golani *et al.*, 2010; Goren *et al.*, 2010). Despite the fact that only one single individual was captured, multiple individuals might probably exist along the Lebanese coast as the

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Fig. 1 *Epinephelus fasciatus* captured off Tripoli (eastern Mediterranean). Photograph by A. Finge.

chances of capturing the only vagrant fish available seem to be very unlikely. This single record also suggests that this is a very recent entry to the Mediterranean.

A variety of shipping-related mechanisms are recognized vectors of exotic organisms' introduction (e.g. Wonham *et al.*, 2000; Galil, 2006; Coutts & Dogshun, 2007). The transport of *E. fasciatus* larvae or juveniles through any seawater-containing space within a ship may be the mode of introduction to the Mediterranean Sea, especially since the specimen was captured in the vicinity of Tripoli, 4 km away from a harbour. However, the prevalence of the species in the Red Sea, the closeness of the area of capture to the Suez Canal (about 600 km), and the large number of lessepsian species settled in the last decades make us suggest that the blacktip grouper could be a new lessepsian fish migrant to the Mediterranean. This last hypothesis cannot be strongly supported until additional individuals are collected in the near future, otherwise the ballast water transport would be a more plausible one. Additional specimens would also confirm the settlement of a reproductively active population in the eastern Mediterranean. Finally, the potential release from a private aquarium hypothesis cannot be completely excluded, although it is unlikely.

The blacktip grouper is not the first exotic Serranidae that has been reported from the eastern Mediterranean. Non-indigenous groupers of Indo-Pacific origin were mistakenly recorded from the Mediterranean (Heemstra & Golani, 1993; Golani *et al.*, 2009). More recently, two serranids of Atlantic origin were also collected from the Mediterranean (e.g. Ben Abdallah *et al.*, 2007; Heemstra *et al.*, 2010). Irrespective of the mode of introduction, the collected *E. fasciatus* increases the number of valid exotic serranids recorded in the Mediterranean Sea to six species.

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