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Short Communication

New record of the red lionfish, *Pterois volitans* (Linnaeus, 1758), in the Northeastern Mediterranean Sea

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ABSTRACT

A new record of the red lionfish, *Pterois volitans* (Linnaeus, 1758), from the northeastern part of the Mediterranean Sea was recorded based on a male individual. The specimen was caught by a trawl boat on 26 March 2017. This is the third record of *P. volitans* from the Mediterranean Sea basin.

Keywords: *Pterois volitans, New record, Yeşilovacık Bay, Turkey*

Kırmızı Aslan Balığı *Pterois volitans* (Linnaeus, 1758)'ın Kuzeydoğu Akdeniz'deki Yeni Kaydı

ÖZET

Akdeniz'in Kuzeydoğu sahillerinde bir erkek kırmızı aslan balığı, *Pterois volitans* (Linnaeus, 1758), bireyinin yeni kaydı yapılmıştır. Birey ticari bir trol gemisi tarafından 26 Mart 2017 tarihinde yakalanmıştır. Bu kayıt ile *P. volitans* türünün Akdeniz baseninden üçüncü kaydı yapılmıştır.

Anahtar Kelimeler: *Pterois volitans, Yeni Kayıt, Yeşilovacık Körfezi, Türkiye*

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I. INTRODUCTION

Biological invasions are a leading cause of biodiversity loss, and human-induced global change has made a significant contribution to it [1]. They cause biodiversity loss of ecosystems around the world as a result of interactions between indigenous species and invaders, thereby causing great economic losses [2, 3]. Invasive species generally worsen problems caused by climate change, food pollution, overfishing, and other global and local anthropogenic stresses on local species, and thus can bring about massive effects on the endangered species [4].

Non-indigenous marine species become invasive by entering the region with various vectors, including transport, commerce, interior corridors (such as ducts) and others, and cause undesirable effects on the environment, economy and / or human health. Biological invasions are accompanied by a number of negative effects, such as a reduction in the number of local species, changes in basic ecosystem processes, leading to major economic losses and exposure of the local population to new threats [5].

After the opening of the Suez Canal, many alien species migrated to the Mediterranean Sea, most of which were benthos species and fish species. The occupation rate of the Eastern Mediterranean Sea by alien fish (Lessepsian species) has accelerated in recent years. Approximately 40% of the alien fish species in the Mediterranean Sea have been reported since 2001 and have expanded their geographical range during this time [6].

Red lion fish naturally lives in the Pacific Ocean and in the Atlantic Ocean. They distribute alone on the hillside and around the coral reefs and rocky bottom layers, usually at depths of 0-50 m. They are also an invasive species for the Mediterranean Sea [7-10]. With the convenient water temperature and the deepening of the Suez Canal, the number of lion fishes starting to appear in the Mediterranean Sea is increasing day by day [11,12]. Lion fish cause anxiety as it is an invasive predator [13], which can be a major catalyst in reducing or eliminating local populations, and it poses potential threats to human health [14]. Lion fish fed with fish and invertebrate animals up to 4% of body weight per day potentially reduce the number of local species and increase competition for the food [14-16].

The lion fish (*P. volitans* and *P. miles*) have caused one of the fastest and ecologically most harmful invasions up to now, with their entry into the Western Atlantic [17]. The lion fish was first seen in Florida in the 1990s, escaping from the aquarium that was cultivated because of its attractive appearance [18], and then it began to spread quickly. The first record of the red lion fish was given by Gürlek et al. (2016) from Iskenderun Bay in the Mediterranean Sea [11]. The second record of this species was reported by Gökoğlu et al. (2017) from the gulf of Antalya and Ovacık coastal waters [12]. The third record of red lion fish was given from the Mediterranean Sea in this study; the present study is important in that it shows fast distribution of the *P. volitans* in a short time span.

II. MATERIALS AND METHOD

A male specimen of the red lionfish *P. volitans* was caught alive by a commercial trawl fishing boat in the North-Eastern Mediterranean (Yeşilovacık Bay) (36°07'32.5"N 33°36'31.6"E) on 26 March 2017 (Fig. 1, 2). The specimen was preserved in 4% formalin and was photographed and deposited in the

Museum of the Systematic, Faculty of Fisheries, Mersin University, (MEUFC-17-11-038). Taxonomic identification was based on diagnostic characters provided by Turan *et al.* (2017) [19].

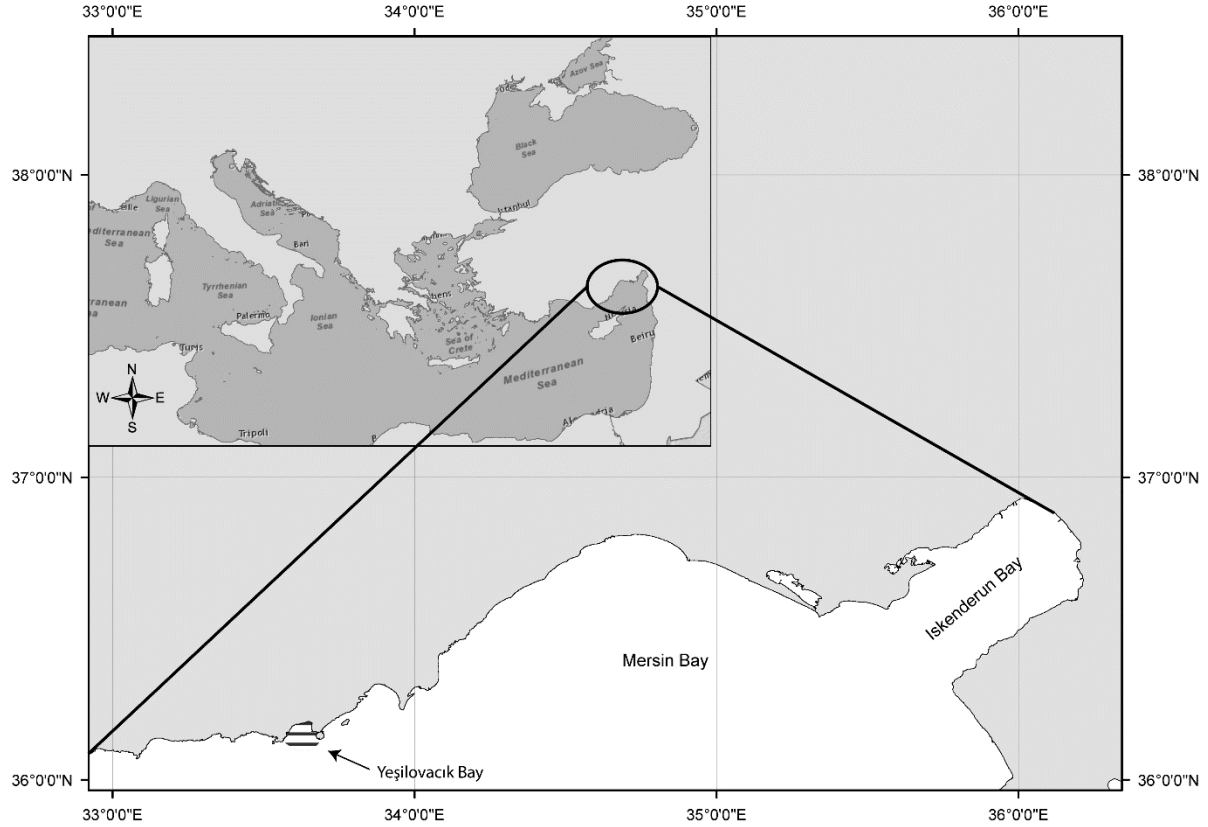

Figure 1. *The shaded area indicates the location where the specimen was observed*

Figure 2. *P. volitans was observed in Yeşilovacık Bay, Turkey*

III. Result and Discussion

The first record of the *P. volitans* with single specimen from the Mediterranean coast, Iskenderun Bay was reported in 2016 [11]. The last record of the species was reported in 2017 from the Gulf of Antalya and Ovacık coastal waters, Turkey [12]. The present study reported the third record of *P. volitans* from the Mediterranean Sea. It was also reported the first record of *P. volitans* from Yeşilovacık Bay as shown in Figure 1.

The total length and weight of this male specimen is 35 cm and 621 g, respectively. It has dorsal spines: 13; dorsal soft rays: 11; anal spines: 3; anal soft rays: 7; caudal soft rays: 14 (Table 1).

Table 1. *The reports of the Pterois volitans from the Mediterranean Sea*

	Total Length (cm)	**Total Weight (g)**	**Sample Number**	**Location**
Present Study (2017)	35	621	1	Yeşilovacık Bay, north-eastern Mediterranean
Gökoğlu et al. (2017)	37	799	1	The Gulf of Antalya, Ovacık coast, north-eastern Mediterranean
Gürlek et al. (2016)	22	122	1	Hatay Coast, north-eastern Mediterranean

Yeşilovacık Bay provides a suitable environment for the lionfish with its rocky and reef zones. It is thought that like *P. miles, P. volitans* will also settle in the habitats along the Mediterranean coastlines in Turkey that are similar to Yeşilovacık Bay.

A small number of reports on the status of lion fishes in the Mediterranean Sea indicate that the ecological and socio-economic implications of a lionfish invasion are largely neglected. Despite that, *P. volitans* spreading at an unprecedented rate along the Caribbean and the Gulf of Mexico along the tropical Atlantic have never been seen in the Mediterranean waters until 2016 [11, 12] and it is third time in one year the *P. volitans* was reported in Mediterranean Sea. Its rapid spread in the Mediterranean Sea is remarkable. The lion fish grow fast and mature early; have a regular reproductive cycle; releasing their eggs in a protective, gelatinous mass that will enhance fertility and provide protection; and invasive species are successful due to their characteristics such as disease, parasites or mortality attributable to predators [15-17]. These features of this species make it a very dangerous invasive species.

The Mediterranean Sea is faced with the risk of invasion of the lion fish due to many reasons such as the possibility of transition to the Mediterranean Sea from the Suez Canal, making aquaculture on Mediterranean shores due to its attractive images, climate changes, the Mediterranean Sea water temperatures and the advantages of its reproductive cycle. The lionfish takes the sixth place in the top ten ornamental fishery categories in the US [20]. They spread from the aquarium that broke in the storm in the Florida shores and caused an important invasion [21]. Female lion fish, which can release 2 million eggs at each laying period, are at risk of spreading by transporting their eggs through ballast

water [7]. Ballast water is considered an important vector of invasive species [22]. It is the result of a combination of these reasons that the lion's fish has a fast penetration and propagation into the region. In a study, 20 specimens of the lion fish (*P. miles*) on the South Cyprus coastal waters were reported. Researchers have reported that group observation of lion fish, which form communities only at breeding time, shows a level of spread in the Mediterranean Sea [23].

The negative impact of lionfish in the ecosystem is very fast, especially on reefs. The study in the Bahamas has shown that the lion fish can cause reduction up to 80% in the population of reef fish in the area [13]. This reduction is due to the fact that the lion's fish is a predator for the species in the region. In addition to reducing the number of fish species, lionfish is also creating competition for native predator species [3]. If this species establishes a population in the Northeastern Mediterranean Sea, it must be observed as a result of its negative effects.

The lion fish is not a preferred fish for consumption because of its general appearance; and the lack of hunting on lion fish will cause its number to increase in habitats and deteriorate the marine ecosystem. At the same time, being a venomous species is a cause for people to be afraid or even to affect tourism in some coastal cities. It has been observed that there is not much information about the predators of lion fish, which are dangerous for many fish species due to the deadly defense mechanisms of dorsal, anal and pelvic fins [24]. According to Schlaepfer et al. [25], if the adverse effects of lion fish are suspended until an evolutionary response to lion fish occurs, over time, local species such as grouper fish can develop evolutionary responses to how they will consume lion fish; so that ecological balancing will be achieved. In this context, it also needs to be studied to improve the populations of potential predatory of the lion. It has been reported that lion fish in Bahamas are consumed by groupers [26]. In addition, human consumption of lion fish in this area was also provided. It is important to realize the consumption of lion fish in the Mediterranean Sea, which is known to be delicious. At the same time, as a precaution, it is also important to catch lion fish by divers in the Mediterranean Sea.

IV. References

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