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First record of *Pterois miles* (Osteichthyes:Scorpaenidae) in Syrian marine waters: Confirmation of its accordance in the eastern Mediterranean

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□ ABSTRACT □

This paper aimed to present the first record of *Pterois miles* (Bennet, 1828) off the Syrian coast (Eastern Mediterranean). Two specimens (159; 206 mm SL) were captured in Syrian waters between Lattakia and Jableh in 28th September 2015 and 10th December 2015. This first record of common lionfish *Pterois miles* in the Syrian coast could confirm the occurrence of this species in the Levant Basin (eastern Mediterranean). This is the fifth record of the species reported to date in the region. These records are not sufficient to state that the species is substantially established in the area, but investigations are rapidly needed to avoid unfavorable consequences on local environment and economy.

Key words: *Pterois miles*, Bioinvasion, Morphometric data, Meristic counts, Marine environment, Syrian coast.

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تسجيل النوع السمكي *Pterois miles* (Osteichthyes:Scorpaenidae) للمرة الأولى في الساحل السوري: تأكيد ظهوره في الحوض الشرقي للبحر الأبيض المتوسط

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□ ملخّص □

هدف هذا المقال لعرض تسجيل سمك الأسد الشائع *Pterois miles* (Bennet, 1828) للمرة الأولى في الساحل السوري (شرق البحر المتوسط). إذ تم في يومي 28 أيلول 2015 و10 وكانون الأول 2015 اصطياد عينتين (159، 206 ملم طول قياسي) من النوع المذكور في المياه البحرية السورية بين مدينتي اللاذقية وجبلة. إن تسجيل هذا النوع للمرة الأولى في المياه السورية يؤكد استمرار ظهوره في الحوض الشرقي للمتوسط. ويعد هذا التسجيل، التسجيل الخامس في المنطقة حتى تاريخه، غير أنه لا يمكن اعتبار هذه التسجيلات كافية لإثبات انتشار هذا النوع السمكي بشكل فعلي في المنطقة، وبالتالي لابد من إجراء تحقيقات سريعة احترازية لتجنب النتائج السلبية البيئية والاقتصادية المحتملة من انتشاره في المنطقة.

الكلمات المفتاحية: *Pterois miles*، غزو حيوي، بيئة بحرية، الساحل السوري.

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Introduction

Lionfishes, *Pterois volitans* (Linnaeus 1758), and *P. miles* (Bennett 1828) are both native to the Indo-Pacific and successful marine invaders (Albins & Hixon, 2008), the former is known in the Atlantic and Indo-Pacific and the latter in the Indian Ocean and Red Sea (Bariche *et al*., 2013). Weber & De Beaufort (1962) synonymized P. *volitans* and *P. miles*, while Schultz (1986), based on meristic counts and morphometric measurements, noted that they are closely related but distinct, and therefore, should be considered as two valid species. Additionally, such statement was confirmed on the basis of mitochondrial DNA analyses (Freshwater *et al*., 2009).

Schofield (2010) reported that lionfishes rapidly invaded off the eastern Atlantic the entire Gulf of Mexico and the Caribbean Sea. Additionally, their extension is expected southward from Trinida and Tobago to southern Brazil and possibly Uruguay. However, Schofield (2010) did not appear to state if both species are present at all locations. Conversely, a single lionfish species *Pterois miles* is known in the eastern Mediterranean Sea, where it entered form the Red Sea through the Suez Canal(Turan *et al*., 2014). The first record occurred in the Levant Basin, off Haifa (Golani & Sonin, 1992), and other records were reported off the northern coast of Lebanon (Bariche et al., 2013), off Cyprus coast by Evripidou (2013 in Turan *et al*., 2014), but the latter was collected, and consequently not available for taxonomic verification following Bello *et al*. (2014). A last record was reported by Turan *et al*. (2014) from the Turkish marine waters, in Iskenderun Bay.

Research importance and objectives

Most of alien fish species had invaded the Levant of Eastern Mediterranean in the last decades. This paper aims to confirm the presence of lionfish *Pterois miles* in the Syrian coast, delimit location, depth of fishing, and deposit reference specimens in the fish collection in the Marine Science laboratory (Faculty of Agriculture, Tishreen University).

Materials and Methods

During the recent years, we continued the investigation on fish species in the Syrian marine waters, by accompanying the fishermen, and observing these species in the main landing site in Lattakia city.

The fishermen use various fishing gears, but the most important are the long line and the trawl, which are used along the coastal shelf from Rass Albassit in the north to the Lebanese border in the south (Fig.1). Most of the fishing was done at a water depth between 20-250m. The specimens of *P. miles* (Bennet, 1828) were caught using trawl, at a water depth of approximately 50m, on a sandy bottom

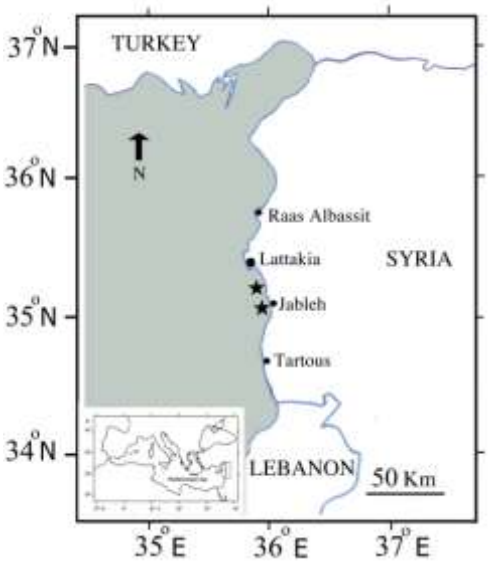

Figure 1. Map of the Syrian coast showing the capture sites of *Pterois miles* (black stars).

Morphometric measurements and meristic counts of the collected specimens were recorded following Golani & Sonin (1992), Bariche *et al*. (2013) and Turan *et al.* (2014). Measurements were carried out to the nearest millimeter and the weight to the nearest gram. Both specimens were preserved in 10% buffered formalin and deposited in the Ichthyological Collection of the Marine Sciences Laboratory, Faculty of Agriculture at Tishreen University, Syria, under a catalogue numbers: 2263 M.S.L. (Fig 2), and 2265 M.S.L.

Results and Discussion

In the context of collaboration with Syrian fishermen, we were informed about the capture of two specimens of *Pterois miles*: the first was on 28th September 2015 and the second was on 10th December 2015. They were caught by trawl on sandy bottom at a depth of approximately 50m from the area between Lattakia and Jableh (35’ 54 º E 35’ 24 º N and 35’ 51 ºE and 35’ 19 º N respectively; Fig. 1).

The Syrian *Pterois miles* specimens measured 211 mm and 269mm total length and weighed 103 g. and 254g respectively. They were identified by the following combination of characters: body slightly compressed; head angular with spiny protusions, tentacles and cirri around eyes and mouth; large mouth with villiform teeth; dorsal fin feathery with spines longer than body, and membranes incised almost to the base; anal and caudal fins rounded; pectoral fins wing-like with separate broad, smooth rays; small cycloid scales. Color of head and body with red and black stripes alternating vertically; dorsal spines, pectoral and ventral fins alternately banded with black, red and pink; dorsal soft rays, anal and caudal with series of dark spots.

Figure 2. *Pterois miles* captured off the Syrian coast: specimen referenced 2263 MSL, scale bar = 20mm.

Description and measurements as percentages of total and standard lengths (Table 1), recorded for the Syrian specimens of *P. miles* are in total accordance with Golani & Sonin (1992), Carpenter & Niem (1999), Golani *et al*. (2002), Louisy (2002), Bariche *et al*. (2013) and Turan *et al*. (2014). Therefore, both specimens identified as *P. miles* constitute the first records of the species from the Syrian coast and should be included in local ichthyofauna completing the list of bony fishes (Saad, 2005) and elasmobranch species, which comprises to date 232 species and 43 species respectively.

Table 1. Morphometric measurements in mm and as percentages of total length (%TL), standard length (%SL) meristic counts and weight in gram recorded in the specimens of *Pterois miles* from the Syrian coast.

Reference of specimens	Specimen reference number					
	2263 M.S.L			2265 M.S.L.		
Morphometric measurements	mm	%SL	%TL	mm	%SL	%TL
Total length	211	132.7	100.0	269	130.6	100.0
Standard length	159	100	75.4	206	100.0	76.6
Head length	46	28.9	21.8	71	34.5	26.4
Interorbital space	8	5.0	3.8	11	5.3	4.1
Eye diameter	11	6.9	5.2	10	4.9	3.7
Maxilla length	21	13.2	10.0	25	12.1	9.3
Pectoral fin length	132	83.0	62.6	128	62.1	47.6
Pectoral fin base	20	12.6	9.5	29	14.1	10.8
Dorsal fin length	125	78.6	59.2	145	70.4	53.9
Dorsal fin base	93	58.5	44.1	111	53.9	41.3
Pelvic fin length	72	45.3	34.1	85	41.3	31.6
Pelvic fin base	15	9.4	7.1	16	7.8	5.9
Anal fin length	62	39.0	29.4	73	35.4	27.1
Anal fin base	26	16.4	12.3	33	16.0	12.3
Pre-pectoral length	49	30.8	23.2	68	33.0	25.3
Pre-dorsal length	42	26.4	19.9	59	28.6	21.9
Pre-anal length	108	67.9	51.2	139	67.5	51.7
Pre-pelvic length	51	32.1	24.2	71	34.5	26.4
Meristic counts						
Dorsal fin rays	XIII +10			XIII +10		
Pelvic fin rays	I + 5			I + 5		
Anal fin rays	III +7			III +7		
Pectoral fin rays	14			14		
Caudal fin rays	IV + 14			IV + 14		
Total weight (g)	103			254		

Additionaly, these captures are also the fifth and sixth confirmed record of *P. miles* in the Mediterranean Sea since Golani & Sonin (1992), showing that the species is very rare in the region. Golani *et al*. (2002) noted the *P. miles* came from the Red Sea and entered into the Mediterranean Sea through Suez Canal, that should be considered as the main suitable hyptothesis of its introduction to the region. A possible escape from aquarium cannot be totally ruled out but needs to be verified and confirmed. Conversely, such hypothesis could be one of the multiple causes of the invasion of its close relative species *P. volitans* in the western Atlantic. Following Biggs (2009), the only release event housed in an aquarium that broke during a storm and six specimens escaped into Biscayne Bay, Florida (Hammer *et al*., 2007). Introduction via ballast water considered as a major vector of invasive species (Wonham *et al*., 2000) is unlikely to be the cause of the expansion of *P. volitans*. However, Morris *et al*. (2009) noted that dispersal of *P. volitans* probably occurs during the larval phase. Biggs (2009) noted that due to its poisonous spines, there are only few known predators of *P. volitans* in its native area, able to kill large predators such as groupers and sharks. Additionally, Albins & Hixon (2008) showed that the occurrence of lionfish displayed negative effects on reefs by a decreased recruitment of species in these areas, mainly those having an economical interest. On the other hand, following Biggs

(2009) coral reefs are one of the oceanic areas where humans, such as scuba divers and fishermen, could have contact with lionfish, therefore accidents increase concomitantly with abundance of lionfishes, and costs of traetments cannot be neglected. Lionfish impacts on tourist recreational activities have been observed and some locations have posted warning signs advising potential envenomations by lionfish (Morris *et al*. 2009). To date, it appears that Mediterranean areas are not yet confronted with similar troubles, or with ecological and economical risks as best instances. During two decades, few records were reported in this sea, due to the fact that *P. miles* is an alien species came from the Red Sea (Golani *et al*. 2002), and crossing Suez Canal remains a huge difficulty for a species which could not be considered as a Lessepsian sprinter (sensu Karachle *et al*. 2004) referring to its morphology. However, an invasion of lionfish similar to this reported in the western Atlantic cannot be totally ruled out.

Recommendations and Conclusion

Although the fact that a population of *P. miles* does not appear to date to be substantially established in the region, future researches are needed to focus on the early stages of development. They should be rapidly monitored in order to avoid negative impacts on local environment and economy, following for instance suggestions of Ruttenberg *et al*. (2012).

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