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FIRST RECORD OF THE DEVIL FIREFISH *PTEROIS MILES* (BENNETT, 1828) (ACTINOPTERYGII: SCORPAENIDAE) FROM MALTESE COASTAL WATERS

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ABSTRACT

A specimen of the invasive Devil firefish, Pterois miles (Bennett, 1828), was recorded for the first time in Maltese waters in January 2026. The individual was caught by a recreational angler at Migraħ Ferħa (north-west Malta) at a depth of 10 m using a paternoster rig baited with squid. The fish was photographed and then released. This record marks a further expansion of the P. miles distribution in the central Mediterranean Sea and highlights the importance of citizen science initiatives in the early detection of marine non-indigenous species.

Key words: Lionfish, *Pterois miles*, Malta, Mediterranean Sea, invasive species, citizen science

PRIMA SEGNALAZIONE DEL PESCE LEONE *PTEROIS MILES* (BENNETT, 1828) (ACTINOPTERYGII: SCORPAENIDAE) DALLE ACQUE COSTIERE MALTESI

SINTESI

Un esemplare della specie invasiva Pterois miles (Bennett, 1828), nota come pesce scorpione o pesce leone, è stato segnalato per la prima volta nelle acque maltesi nel gennaio 2026. Il pesce è stato catturato da un pescatore sportivo a Migraħ Ferħa (costa nord-occidentale di Malta) a una profondità di 10 m, utilizzando una lenza paternoster provvista di calamaro come esca. Una volta fotografato, l'esemplare è stato rilasciato. Questa segnalazione rappresenta un ulteriore ampliamento della distribuzione di P. miles nel Mediterraneo centrale e sottolinea l'importanza delle iniziative di scienza partecipativa per l'individuazione precoce di specie marine non-indigene.

Parole chiave: pesce leone, *Pterois miles*, Malta, Mediterraneo, specie invasiva, scienza partecipativa

INTRODUCTION

The Devil firefish, *Pterois miles* (Bennett, 1828), is a scorpaenid fish native to the Red Sea and the Indo-West Pacific, ranging from East Africa to Indonesia (Poss & Motomura, 2022). It is equipped with highly venomous fin spines. It has become one of the most successful marine invaders worldwide, particularly following its rapid expansion in the western Atlantic (Schofield, 2009; Albins & Hixon, 2013).

In the Mediterranean Sea, *P. miles* is a Lessepsian migrant, having entered via the Suez Canal (Bariche *et al.*, 2017; Golani *et al.*, 2021). The species was first recorded in Israeli waters in 1991 (Golani & Sonin, 1992), and since the early 2010s, it has undergone a rapid range expansion across the eastern Mediterranean, with records from the waters of Lebanon and Cyprus (Bariche *et al.*, 2013; Iglésias & Frotté, 2015), Turkey (Turan *et al.*, 2014), Greece (Crocetta *et al.*, 2015), Israel (Stern & Rothman, 2019), and as far as the central sector of the Tunisian coasts (Dailianis *et al.*, 2016), demonstrating its highly invasive character in the eastern part of the basin (Kletou *et al.*, 2016; Azzurro *et al.*, 2017; Katsanevakis *et al.*, 2020; Kondylatos *et al.*, 2023, 2024). More recently, the species has continued to spread westward, with records from the Ionian Sea, the Adriatic, and Sicily indicating ongoing colonisation of central Mediterranean ecosystems (Azzurro *et al.*, 2022, 2025). The species is also familiar to spearfishers in Libya and Tunisia (Al Mabruk & Rizgalla, 2019; Ben Amor *et al.*, 2022). Although still unpublished at the time of writing, another Mediterranean record of the species was reported on social media on 26 April 2026 by Manuela Falautano and ISPRA (the national Italian institute for environmental management) from the Italian island of

Lampedusa, located in the Strait of Sicily just over 100 km south-west of the Maltese Islands.

Despite its proximity to colonised areas, no confirmed published records of *P. miles* from Maltese waters have been documented to date. In fact, when SCUBA diving centres in Malta and neighbouring countries were consulted as part of a pan-Mediterranean study, they stated that they had observed the species in local waters but did not provide any photographic or video evidence of such occurrences, raising doubts of misidentification (Bottacini *et al.*, 2024). Here, we report the first occurrence of *P. miles* in Malta based on photographic evidence provided by a recreational angler.

MATERIAL AND METHODS

On 27 April 2026, a Maltese angler contacted one of the authors (A.D.) through the “Spot the Alien” citizen science campaign (campaigns.ocean.mt) to report a lionfish caught on 25 January 2026. The observation involved a single lionfish, captured using a paternoster rig with size 10 hooks baited with squid (Fig. 1). The capture took place from land at a depth of approximately 10 m at Migraħ Ferħa, northwest Malta Island (35°52′25.0″N, 14°20′36.3″E), on a rocky substrate.

The fish was photographed immediately after capture. No morphometric measurements nor meristic counts were taken, as the individual was released alive shortly afterwards.

Species identification was based on morphological characteristics and colour visible in the photograph, while some biometric measurements were estimated using ImageJ software (Schindelin *et al.*, 2012). Before measurement, the image was calibrated using a reference object of known dimensions visible in

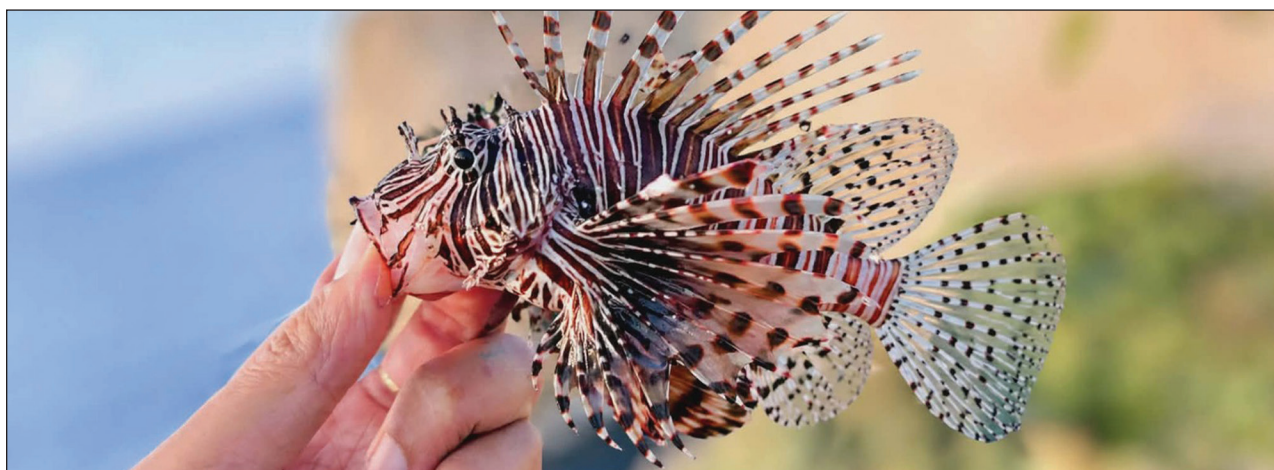


Fig. 1.: The individual of *Pterois miles* fished at Migraħ Ferħa, Malta Island, on 25 January 2026 (Photo by James Mamo).
Sl. 1.: Primerek plamenke (*Pterois miles*), ujet pri mestu Migraħ Ferħa na otoku Malta 25. januarja 2026 (Fotografija: James Mamo).

the photograph (*i.e.*, the fisherman's hand), allowing conversion of pixel values to centimetres. Standard morphometric parameters were then recorded where possible, including total length (TL), standard length (SL), head length, eye diameter, caudal fin length, and pre-dorsal and pre-pectoral distances. Measurements were taken along straight-line axes using the segmented line and point tools in the software. To minimise potential error associated with image perspective and fish curvature, only clearly defined anatomical landmarks and axes aligned as closely as possible to the plane of the image were used.

RESULTS

The photographed fish (Fig. 1) was identified as *P. miles* following Schultz (1986), Poss (1999), Golani *et al.* (2021), and Poss & Motomura (2022). The pectoral fin does not extend beyond the caudal peduncle; the head and body have a pale background and dark red or reddish brown vertical bars of irregular width; four broad stripes radiate from the eyes; the supraocular cirrus is blackish; dorsal-fin spines have dark red areas alternating with nearly white areas; soft dorsal, anal, and caudal rays have numerous black spots, and the membranes are transparent. Estimated morphometric measurements obtained from the lateral photographic analysis were: total length (TL) 13.8 cm; standard length (SL) 10.5 cm; head length 4.1 cm (39.0% of SL); eye diameter 0.9 cm (8.6% of SL); caudal fin length 3.3 cm; pre-dorsal distance 3.8 cm (36.2% of SL); pre-pectoral distance 3.4 cm (32.4% of SL).

DISCUSSION

This record represents the first documented occurrence of *Pterois miles* in Maltese waters and contributes to the growing body of evidence indicating the species' rapid expansion across the central Mediterranean Sea.

Morphological characters and colour of the Maltese individual agreed with the literature mentioned above and allowed for its identification as *P. miles*. The rocky substrate and shallow depth of capture are consistent with habitat preferences observed for the species in invaded Mediterranean areas, where individuals frequently occupy rocky reefs and coastal habitats between 5 and 50 m depth (Kletou *et al.*, 2016; Kondylatos *et al.*, 2023).

The arrival of *P. miles* in Malta is not entirely unexpected given its established presence in nearby regions such as Sicily and the Ionian and Adriatic seas, as well as in Libyan and Tunisian waters (Azzurro *et al.*, 2017, 2025; Di Martino *et al.*, 2021; Dulčić *et al.*, 2024). A high degree of hydrodynamic connectivity and larval dispersal likely facilitate this continued spread (Johnston & Purkis, 2015). Nevertheless, the 'late' nature of this sighting might be putatively attributed to the discarding

at sea of specimens caught by local fishers wary of its venomous nature or to the non-use of underwater cameras by SCUBA diving instructors during supervised dives with customers. The dispersion pathway for the *P. miles* specimen recorded in this study might have proceeded along the North African coastline and the Tunisian platform, as hypothesized for similar newcomers such as *Sepioteuthis lessoniana* (Marrone *et al.*, 2025). In addition, several mathematical modelling studies (*e.g.*, Turan, 2020; Mitchell & Dominguez Almela, 2025) have predicted that the north-eastern stretches of the African coast, as well as central Mediterranean areas, including the waters around Malta, provide the most suitable areas for lionfish establishment.

The ecological implications of this record are significant. Lionfish are generalist predators with high reproductive output and few natural predators in invaded ecosystems, allowing them to exert strong predation pressure on native fish and invertebrate assemblages (Albins & Hixon, 2013; Zannaki *et al.*, 2019; Batjakas *et al.*, 2023). Their establishment in Maltese waters could therefore pose a threat to local biodiversity and fisheries resources.

It is important to note that the fish was released alive after capture, raising the possibility of future recapture. Moreover, the presence of additional individuals in the area cannot be excluded. Public awareness and targeted removal efforts have been identified as key management strategies in other regions (Azzurro *et al.*, 2022). In reviewing management lessons learned from the lionfish invasion of the western Atlantic, Ulman *et al.* (2022) listed participatory management, involving local stakeholders and organisations, as a key strategy, along with a number of others (*e.g.*, lionfish hunting tourism, recreational tournaments and commercial fishery removals). Removal experiments involving the two highly invasive species, *Pterois miles* and *Diadema setosum*, were carried out in Cyprus, and their effectiveness in reducing their populations and facilitating the recovery of native fish populations was discussed (Hüseyinoğlu *et al.*, 2024). Within participatory management strategies, citizen science campaigns play a critical role in detecting early-stage invasions through an early-warning system. Platforms such as "Spot the Alien" provide valuable real-time data that can kick-start and complement scientific monitoring programs.

Further monitoring is required to determine whether this record represents an isolated occurrence or the early stage of population establishment in Maltese waters.

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PRVI ZAPIS O POJAVLJANJU PLAMENKE *PTEROIS MILES* (BENNETT, 1828)
(ACTINOPTERYGII: SCORPAENIDAE) V MALTEŠKIH OBALNIH VODAH

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POVZETEK

Avtorji poročajo o invazivni plamenki, *Pterois miles* (Bennett, 1828), ki je bila januarja 2026 prvič zabeležena v malteških vodah. Primerek te vrste je ujel ljubiteljski ribič pri mestu Miġraħ Ferħa (severoza-hodna Malta) na globini 10 metrov z uporabo ribiške vrvce s svincem na dnu (paternoster), kot vabo pa je uporabil lignja. Riba je bila fotografirana in nato izpuščena. Ta zapis o pojavljanju označuje nadaljnjo širitev območja razširjenosti vrste *P. miles* v osrednjem Sredozemskem morju in poudarja pomen pobud ljubiteljske znanosti pri zgodnjem odkrivanju tujerodnih morskih vrst.

Ključne besede: plamenka, *Pterois miles*, Malta, Sredozemsko morje, invazivna vrsta, ljubiteljska znanost

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