

Breaking Boundaries: First Record of *Saurida gracilis* (Quoy and Gaimard, 1824) (Teleostei: Synodontidae) in Lebanese Waters Highlights a New Lessepsian Expansion

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Abstract

This study documents the first record of *Saurida gracilis* (Quoy & Gaimard, 1824) in Lebanese waters, marking its second occurrence in the Mediterranean Sea. The specimen was identified based on diagnostic morphological traits, supporting its introduction via Lessepsian migration through the Suez Canal. The findings highlight the importance of monitoring Non-Indigenous Species (NIS) and encourage further research and citizen science initiatives to assess their ecological impacts.

Introduction

The Gracile Lizardfish, *Saurida gracilis* (Quoy & Gaimard, 1824) is a widely distributed species in the Indo-Pacific Ocean, ranging from Hawaii to the Red Sea [2] [11]. It belongs to the family Synodontidae Gill, 1861 which includes four valid genera and 84 species [3], [4]. The genus *Saurida* Valenciennes, 1850, accounts for 26 of these species [4]. In the Mediterranean Sea, only two species of *Saurida* have been documented: *Saurida lessepsianus* Russell, Golani & Tikochinski, 2015 introduced via Lessepsian migration through the Suez Canal [5], [11] and *Saurida gracilis*, first recorded in Tunisian waters by [1].

In Lebanese waters, the only previously recorded *Saurida* species was the non-indigenous Lessepsian migrant *Saurida lessepsianus* [12]. This short communication documents the first record of *Saurida gracilis* in Lebanese waters, marking only the second occurrence of this species in the Mediterranean Sea.

Materials and Methods

On January 4, 2025, a single specimen of *Saurida gracilis* was captured in the eastern Mediterranean Sea off the Lebanese coast in Tripoli waters (coordinates: 34°28'49"N, 35°47'02"E) during a fishing trip by M. Annous. The specimen was caught using bottom fishing techniques with shrimp bait at a depth of 23 meters. It was photographed by one of the authors (S.F.) for identification, with morphological identification conducted based on diagnostic traits and morphometric measurements. A portion of the specimen was preserved in alcohol for molecular analysis and archived at Palm Island Nature Reserve under the code PINR21.

Results and Discussion

The specimen was confirmed as *Saurida gracilis* based on its diagnostic morphological features. The body is subcylindrical and moderately elongate, measuring approximately 226 mm in total length, and 220.5 mm in standard length, with a slightly depressed head and compressed tail. The dorsal surface is mottled brown, transitioning to a whitish ventral side with yellowish tones, and all fins exhibit dark dotted bands (Figure 1A and Figure 1B). Vertical dark bars are distinct along the posterior half of the body. The fin membranes are translucent, but all fin rays are spotted with yellow and brownish grey. The large mouth features numerous small teeth visible along the sides of the closed jaws, with the palatine teeth arranged in two rows on each side of the roof of

the mouth (Figure 1C and Figure 1D). The eyes are circular and partially covered by a fleshy adipose eyelid anteriorly and posteriorly. Fin ray counts include 11 rays in the dorsal fin, 9 in the anal fin, approximately 13 in the pectoral fins, and 9 in the pelvic fins; the longest ray of the

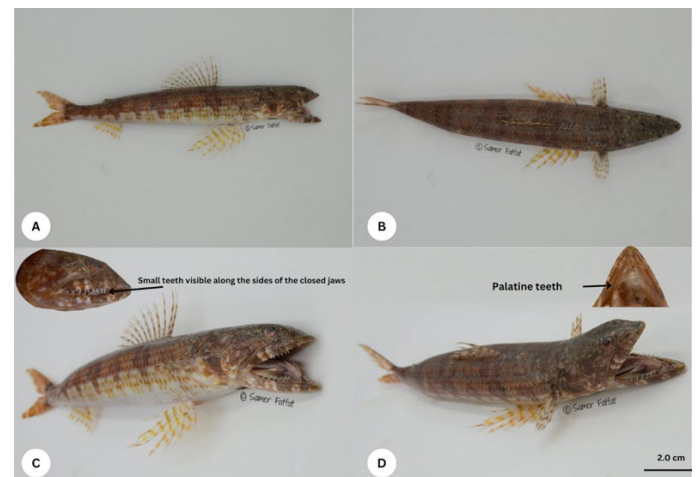


Figure 1: *Saurida gracilis* specimen captured off the Lebanese coast on January 4, 2025. (A) Lateral view showing the mottled brown dorsal coloration transitioning to a whitish ventral side with yellowish tones. (B) Dorsal view highlighting the subcylindrical body shape. (C) Lateral view of the head, illustrating small teeth visible along the sides of the closed jaws and the arrangement of palatine teeth. (D) Ventral view showcasing the compressed tail and fin ray patterns. Scale bar: 2.0 cm. Photocredit: Samer Fatfat.

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dorsal fin is two times as long as the last ray. The specimen has 52 lateral-line scales. The scale in the axil of the pectoral fin is short and broad. These characteristics align with those of specimens reported in Tunisian waters by [1] and descriptions provided by [2], [11]. Genetic analysis of the species is highly recommended for further confirmation.

The presence of *Saurida gracilis* as a newly recorded non-indigenous species (NIS) in Lebanese waters aligns with the observed increase in NIS, particularly Lessepsian species, throughout the Mediterranean Sea, and more notably in the Levantine Basin [10]. This occurrence supports the hypothesis by [1] suggesting that *S. gracilis* has most probably entered the Mediterranean via the Suez Canal. The species has been reported from the Suez Canal by [6] and from the Gulf of Suez by Dollfus in Gruvel 1936, as *Saurida sinaitica* [7]. It is otherwise widespread in the Red Sea and the Indo-West Pacific, from the Eastern Cape and KwaZulu-Natal (South Africa), East Africa, Socotra (Yemen), Seychelles, Madagascar and Mascarenes (La Réunion, Mauritius, Rodrigues) east to the Hawaiian Islands (U.S.A.) and Pitcairn Group, north to southern Japan and Ogasawara Islands (Japan), south to Western Australia, Queensland (Australia) and New Caledonia [8].

Monitoring the presence and assessing the ecological impacts of *S. gracilis* and other NIS is crucial for understanding their influence on local ecosystems. To this end, the continuation and expansion of citizen science initiatives are strongly recommended. These initiatives encourage collaboration between fishers and researchers, fostering robust networks and advancing the understanding of NIS dynamics and their effects on local communities and biodiversity.

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