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Whale sharks (*Rhincodon typus*) in the Mediterranean Sea: first confirmed records from the southeastern Levant

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Abstract

The whale shark (*Rhincodon typus*) is the largest living fish species and a cosmopolitan planktivore primarily inhabiting tropical and warm-temperate waters. In most checklists it is generally considered absent from the Mediterranean Sea, although isolated sightings have been reported in recent years. Here we present the first confirmed records of *R. typus* from the southeastern Levantine coast, with multiple observations of two distinct individuals between September and November 2025. These sightings are added to the few existing records from Turkey (Samandağ, Hatay, 2021) and Spain (Ceuta, Strait of Gibraltar, 2022). They also raise questions regarding the species' distribution across the Mediterranean and the origin of these individuals, which may have entered through the Suez Canal (Lessepsian migration) or from the Atlantic Ocean via the Strait of Gibraltar. These records may reflect ongoing changes in the Mediterranean Sea and highlight the importance of continued monitoring.

Keywords: Whale shark; *Rhincodon typus*; Mediterranean Sea; Israel; Range extension; Vagrant species.

Introduction

The whale shark (*Rhincodon typus* Smith, 1828) is the largest extant fish, reaching up to 17–21 m in length and weighing over 20 tons (Compagno, 2001; Stewart & Wilson, 2005; Ebert *et al.*, 2021). As one of the largest marine species, *R. typus* is a filter-feeder, primarily consuming plankton, small fish, and nektonic organisms through ram or suction feeding (Colman, 1997). The species is widely distributed in tropical and warm-temperate oceans, occurring in coastal and oceanic habitats and seasonally aggregating in highly productive areas such as upwelling systems, seamounts, and coral reefs (Colman, 1997; Rowat & Brooks, 2012).

Globally, *R. typus* occurs throughout the Atlantic and Indo-Pacific Oceans, including the Caribbean, Gulf of Mexico, and the Red Sea. Global models of habitat suitability indicate that occurrence probability of whale sharks is highest in warm tropical waters, with peak suitability typically observed between ~26-29 °C (Sequeira *et al.*, 2013). Similar temperature associations have also been reported from regional aggregation studies (Rowat & Brooks, 2012; Arrowsmith *et al.*, 2021). Tagging studies reveal that whale sharks can dive to depths exceeding 1,000 m, tolerating temperatures as low as 3-4 °C, but feeding and aggregations are strongly associated with warm surface waters (Eckert & Stewart, 2001; Brunnschweiler *et al.*, 2009). Satellite telemetry studies indicate that whale sharks are capable of transoceanic movements, crossing entire ocean basins and covering thousands of kilometers during a single migration (Eckert & Stewart, 2001; Sequeira *et al.*, 2013), with documented long-distance movements of up to 13,000 km over a 37-month period (Ebert *et al.*, 2021). These migrations are often linked to seasonal productivity hotspots, spawning aggregations of prey species, or shifts in oceanographic conditions (Ebert *et al.*, 2021). Such mobility underlines the species' potential to appear in regions far outside its core range.

Despite its broad distribution, the whale shark is considered absent from Mediterranean elasmobranch checklists (Serena *et al.*, 2020). However, two confirmed sightings have been reported in recent years: a juvenile observed in Turkey in 2021 (Turan *et al.*, 2021), and an adult female near the Strait of Gibraltar in December 2022 (Fortič *et al.*, 2023). Here we report the first confirmed records from the southeastern Levantine coast, including multiple temporally clustered observations that indicate the presence of at least two distinct individuals. These observations expand the limited number of docu-

mented occurrences in the Mediterranean and may warrant a reassessment of the species' status within the basin.

Materials and Methods

Observations of *R. typus* along the southeastern Levantine coast were obtained opportunistically through public reports and social media between 26 September and 24 November 2025. The first report originated from the Ashdod Municipality, which announced the temporary closure of local beaches following a confirmed sighting of a large shark near the shoreline. A video recorded by municipal lifeguards was posted online and rapidly circulated. Following the announcement, contact was established with the lifeguards in order to verify the sighting and obtain the original video footage and photographs.

Additional sightings were later reported from various locations along the coast. Each report was verified following a similar protocol: observers were contacted directly, original photographs and/or videos were collected, and species identification was verified based on diagnostic morphological features (following Ebert *et al.*, 2021). Total length was estimated using reference objects visible in the images (e.g., shadow of the sighting aircraft, lifeguard craft).

Results

On 26 September 2025, at 12:00 local time, a whale shark (*R. typus*) was sighted off Ashdod, Israel (31.80612° N, 34.63449° E) by municipal lifeguards patrolling on a water scooter. A camera was deployed underwater, capturing clear video footage of the individual swimming near the surface (Fig. 1). Total length of the individual was estimated at approximately 6 m. Diagnostic features visible in the footage included a broad, flattened head, terminal mouth, and the characteristic checkerboard pattern of spots and stripes, confirming identification as *R. typus*. The shark swam near the shoreline, at a depth of ~4 m. In this region, the continental shelf is characterized by a gradual slope, therefore, the animal remained distant from deeper waters. It appeared to be in good condition, with no visible injuries or signs of entanglement.

The following day (27 September 2025), a whale shark was photographed from a light aircraft off Netanya (32.32062° N, 34.84135° E; 10:45 local time), approximately 60 km north of the initial observation. The aerial photograph (Fig. 2A) allowed for a size estimation by comparison to the shadow of the aircraft (10 m wingspan) visible in the image.

A series of additional sightings occurred during early to mid-October along the central and southern coastline. On 7-8 October 2025, reports of a large shark were received near Ashkelon, including an observation by municipal lifeguards close to shore. Although these encounters were not photographed, later that day (8 October, 18:30 local time), a powered parachute pilot successfully photographed a whale shark between Ashdod and Ashkelon (31.75350° N, 34.59279° E; Fig. 2B,C). Subsequent observations were reported from Bat Yam and on the following day from Neve Yam Beach (~90 km further north). On 12 October, a whale shark was also filmed outside the Marina in Herzliya by local lifeguards. On 17 October 2025, a whale shark was reportedly landed in Khan Yunis, Gaza. Video footage circulated online showed an approximately 6 m individual brought ashore and processed for consumption.

Fig. 1: Whale shark (*Rhincodon typus*) observed off Ashdod, Israel, on 26 September 2025 at 12:00 local time (31.80612° N, 34.63449° E). (A–B) Underwater photographs showing the broad, flattened head and the diagnostic checkerboard spot pattern characteristic of the species. (C) Contextual view illustrating the proximity of the animal to the shoreline (~4 m depth). Photographs courtesy of the Ashdod lifeguard team (G. Ohayon, A. Ohayon, Y. Frish).

Fig. 2: Aerial photographs of a whale shark (*Rhincodon typus*) observed along the Israeli coast. (A) Image taken from a light aircraft off Netanya on 27 September 2025. Photo by Sharon Gavriel at 10:45 local time (32.32062° N, 34.84135° E). (B,C) Images captured from a powered parachute between Ashdod and Ashkelon on 8 October 2025. Photo credit: Mendi Barel at 18:30 local time (31.75350° N, 34.59279° E).

Later observations indicate the presence of at least one additional individual. On 30 October 2025, an undocumented encounter was reported near the wave-breakers in Tel Aviv. This report was followed the next day by video footage recorded by lifeguards of a smaller (~4 m) whale shark off the coast of Haifa. Additional reports in November included a group of swimmers who reported a "large dotted shark" off the coast of Jisr al-Zarqa, and, ten days later, a spearfisher who filmed a whale shark in shallow waters near Michmoret, central Israel.

In all documented sightings along the Israeli coast, municipal authorities implemented precautionary beach closures and instructed bathers to exit the water. Herzliya was the only exception, where the shark was initially identified as a hammerhead shark, and no beach closure was implemented.

Overall, eight photographed and four unphotographed sightings were reported between 26 September and 24 November 2025, spanning 59 days and approximately 175 km along the coastline. Early verified sightings (26 September–10 October) reported an individual of a similar estimated size (~6 m), whereas later sightings in October and November, including records from Haifa and Michmoret, reported a smaller (~4 m) individual, indicating the presence of at least one additional whale shark during the same season. All records from the southeastern Levantine coast are summarized in Fig. 3 and Table 1, together with previously published records of *R. typus* from the Mediterranean Sea and the adjacent Atlantic region.

Discussion and Conclusion

Here we document a series of encounters with whale sharks (*R. typus*) along the southeastern Levantine coast, representing the first Confirmed and reported records of the species in Israeli Mediterranean waters and adding to the limited number of verified records from the Mediterranean Sea. Taken together, these observations indicate a temporally clustered coastal presence involving at least two individuals, as suggested by consistent early size estimates, a documented landing event, and subsequent sightings of a smaller shark later in the season. The reconstruction of these events relied largely on coordinated public reporting and the circulation of visual documentation through social media, highlighting the increasing value of such sources for detecting and documenting rare appearances of large pelagic species in the Mediterranean.

Together with previously reported records from the Levantine Basin off Turkey (Turan *et al.*, 2021) and from the western Mediterranean near the Strait of Gibraltar (Fortič *et al.*, 2023), the observations presented here suggest that whale sharks occasionally enter the Mediterranean Sea. As a highly mobile species capable of long-distance movements across ocean basins (Ebert *et al.*, 2021), such sporadic records are more likely to reflect transient incursions rather than an established resident population. The recent increase in confirmed observations may be partly attributable to improved documentation, including the widespread use of underwater cameras, drones, and

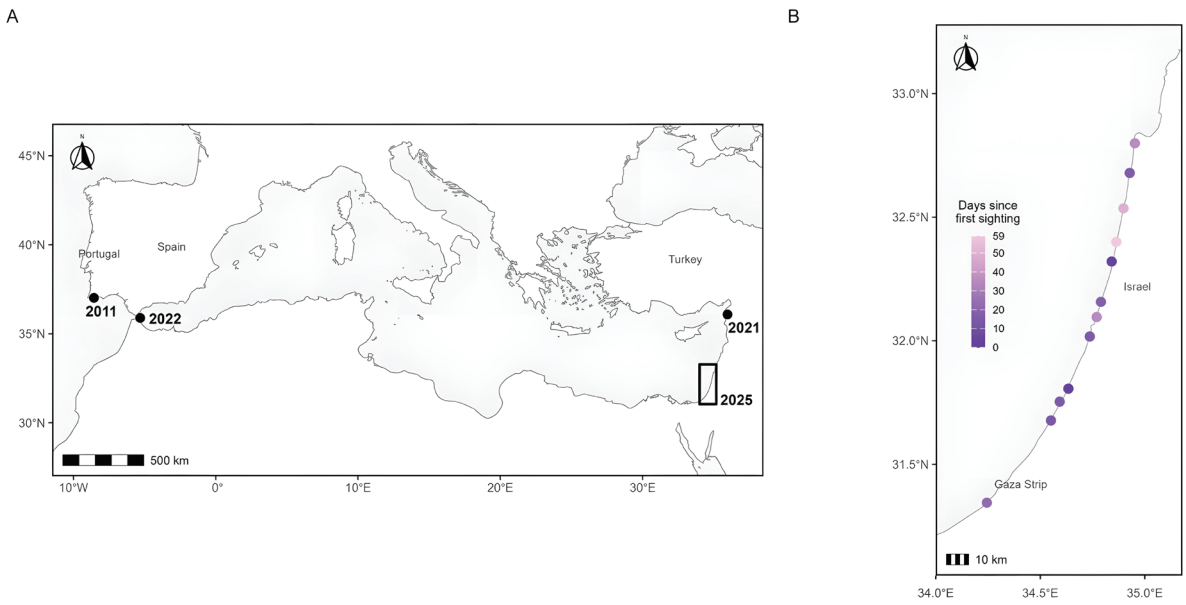

Fig. 3: Records of *Rhincodon typus* in the Mediterranean Sea and the adjacent Atlantic region. (A) Previously documented records plotted by year, rectangle demarcates the eastern Levantine coast and the area shown in detail in the right panel. (B) All coastal records documented in the present study, colors indicate the number of days since first confirmed sighting (range: 0–59 days). Color gradient reflects chronological order and does not represent a movement trajectory.

Table 1. Confirmed and reported records of the whale shark (*Rhincodon typus*) in or near the Mediterranean Sea, including the Israeli and Gaza Strip sightings in 2025.

Date	Location	Length	Remarks	Source
07/10/2011	Portugal (Olhão, Algarve, Atlantic, outside Med)	7-8 m	Male, captured in tuna set-net, released	Rodrigues *et al.*, 2012
18/10/2021	Turkey (Samandağ, Hatay, Levantine Basin)	~3 m	Juvenile observed by a commercial long-liner	Turan *et al.*, 2021
12/06/2022	Spain (Ceuta, Alboran Sea, North Africa, W Med)	~10 m	Female inside a tuna pound net, released alive	Fortič *et al.*, 2023
26/09/2025	Israel (Ashdod, SE Levantine Basin)	~6 m	Observed and filmed underwater by lifeguards on a water scooter	This study
27/09/2025	Israel (Netanya, SE Levantine Basin)	~6 m	Photographed from light aircraft	This study
07/10/2025	Israel (Ashkelon, SE Levantine Basin)		Large shark reported by swimmer; no photographic documentation	This study
08/10/2025	Israel (between Ashdod and Ashkelon, SE Levantine Basin)	~6 m	Photographed from powered parachute	This study
09/10/2025	Israel (Bat-Yam, SE Levantine Basin)		Whale shark reported; no photographic documentation	This study
10/10/2025	Israel (Neve-Yam, Atlit, SE Levantine Basin)	~6 m	Whale shark photographed from shore	This study
12/10/2025	Israel (Herzliya, SE Levantine Basin)	~6 m	Filmed by lifeguards on a water scooter	This study
17/10/2025	Gaza Strip (Khan Yunis, SE Levantine Basin)	~6 m	Documented as landed; video footage circulated online	This study
30/10/2025	Israel (Tel-Aviv, SE Levantine Basin)		Reported near breakwaters; no photographic documentation	This study
31/10/2025	Israel (Haifa, SE Levantine Basin)	~4 m	Filmed by lifeguards on a water scooter	This study
13/11/2025	Israel (Jisr-al-Zarqa, SE Levantine Basin)		A group of swimmers reported a large spotted shark; no photographic documentation	This study
24/11/2025	Israel (Michmoret, SE Levantine Basin)	~4 m	Filmed in shallow waters by spearfisher	This study

social media platforms.

The Mediterranean Sea is among the fastest warming marine regions globally, with surface temperatures increasing by more than 1 °C over the past century (Ali *et al.*, 2022; Pastor *et al.*, 2020). The eastern Mediterranean, particularly the Levantine Basin, is both the warmest subregion and one of the most invaded marine ecosystems worldwide, largely due to species introductions via the Suez Canal (Galil *et al.*, 2020). The whale shark is generally associated with tropical and warm-temperate waters, and habitat suitability models indicate higher occurrence probabilities at relatively elevated sea-surface temperatures (Sequeira *et al.*, 2013; Rowat & Brooks, 2012). In this context, the ongoing warming of the Mediterranean, particularly in its eastern basin, may increase the likelihood of occasional occurrences of thermophilic megafauna such as *R. typus*. While most recorded non-indigenous species in the region are small-bodied taxa, the Suez Canal has also been used by large sharks such as *Carcharhinus obscurus* (Barash, 2014; Bigal *et al.*, 2024), suggesting that large pelagic species, including *R. typus*, could potentially travel along this route. The Strait of Gibraltar represents an additional or alternative pathway for Atlantic taxa, as supported by records from Portugal (Rodrigues *et al.*, 2012) and Ceuta (Fortič *et al.*, 2023). Similar sporadic incursions of marine megafauna of Atlantic origin have been documented in the Mediterranean, including occasional appearances of killer whales (*Orcinus orca*) and great white sharks (*Carcharodon carcharias*) in recent years (e.g., Mrusczok *et al.*, 2022; Soldo & Jardas, 2002). Such records further support the possibility that whale sharks recorded in the Mediterranean may originate from the Atlantic rather than exclusively from the Red Sea.

Whale shark occurrences in the Mediterranean remain rare and exceptional. In a basin undergoing rapid environmental transformation, the sporadic appearance of highly mobile megafauna may reflect shifting ecological conditions and warrant continued monitoring. Coordinated regional reporting and increased public awareness will be essential to reduce the risk of vessel-related injuries or landing events, and to assess whether whale sharks remain sporadic visitors or begin to frequent the region more regularly.

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