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# First record of the megamouth shark *Megachasma pelagios* (Lamniformes: Megachasmidae), from the United Republic of Tanzania

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The megamouth shark *Megachasma pelagios* (Lamniformes: Megachasmidae) was described in 1976 from a specimen caught off Hawaii (Taylor *et al.* 1983) and is the only extant member of its family and genus (Diez *et al.* 2022). From 1976 to 2010 *M. pelagios* was considered rare, with only 50 individuals recorded globally during that time (Nakaya 2010). In recent years it is apparent that it is more common and widespread than previously thought, with 273 confirmed records to date across 16 countries in the Atlantic, Indian and Pacific Oceans (Yu *et al*. 2021; Diez *et al*. 2022; Skelton *et al*. 2023). This species is classified as Least Concern on the IUCN Red List of Threatened Species, as it is globally distributed and does not appear to be heavily impacted by fisheries (Kyne *et al.* 2019).

*Megachasma pelagios* has a distinctively large head with rounded snout; an extremely large mouth which extends behind its eyes; large gills; and grey colouration dorsally and white ventrally (Ebert *et al.* 2021). The species reaches a maximum total length (TL) of 820 cm, while size at birth is thought to be less than 170 cm TL (Ebert *et al.* 2021), based on the smallest individual recorded to date (176.7 cm TL, from northern Sumatra, Indonesia) (White *et al*. 2004). However, most individuals recorded to date have been between 400 and 500 cm TL (Yu *et al.* 2021). Until August 2020, *M. pelagios* was primarily recorded from the Pacific Ocean (n = 214 in the western Pacific and n = 35 in the eastern Pacific) with just six specimens each from the Atlantic and Indian oceans (Yu *et al.* 2021). Only five *M. pelagios* have ever been recorded off the coast of Africa, including Senegal in 1995 (Séret 1995), South Africa in 2002 (Smale *et al.* 2002), Gabon and Mauritania in 2016 and 2018, respectively (Diez *et al.* 2022), and most recently Liberia in 2020 (Environmental Justice Foundation 2020). Only one individual has ever been recorded from FAO Major Fishing Area 51—Western Indian Ocean (FAO 2023) (Figure 1A).

In the United Republic of Tanzania, which comprises mainland Tanzania and the Zanzibar Archipelago, including Pemba and Unguja islands, fisheries are primarily artisanal in nature and sharks and rays have historically been targeted, particularly in Zanzibar (Barnett 1997). Although sharks and rays are caught incidentally, they are also targeted using handlines and longlines, as well as bottom-set gillnets known locally as 'jarife' (Schaeffer 2004; Temple *et al.* 2019). Shark and ray meat is a relatively cheap staple food in Tanzania, and shark oil is used to maintain traditional wooden boats (Barnett 1997; Schaeffer 2004; Braulik *et al.* 2020).

In a 1985 "commercial" species guide, Bianchi (1985) listed 26 shark and 18 ray species in Tanzania. In Zanzibar, interviews in the 1990s to assess the status of shark fisheries revealed that at least 25 shark species were being caught (Shehe & Jiddawi 1997), while catch surveys in 2004 and 2016–2017 identified 13 shark and 3 ray species (Schaeffer 2004) and 21 shark and 17 ray species (Temple *et al.* 2019), respectively, in artisanal fisher catches.

The Wildlife Conservation Society has conducted surveys at selected landing sites and fish markets in mainland Tanzania and Zanzibar, since 2017, to record sharks and rays landed in the coastal fisheries. All shark and ray specimens observed during these surveys are recorded, measured (if whole), and photographed to verify species identification. From 2017 to 2023, these surveys recorded at least 44 shark and 28 ray species landed throughout the United Republic of Tanzania, of which 43 shark and 26 ray species were confirmed from Zanzibar fisheries, almost double and over three times more shark species than reported by Shehe and Jiddawi (1997) and Schaeffer (2004), respectively, and over eight times more ray species than reported by Schaeffer (2004). New country records for the United Republic of Tanzania

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revealed through these surveys increase the number of shark and ray species now confirmed in the country's waters to at least 59 and 42, respectively (Wildlife Conservation Society, unpublished data).

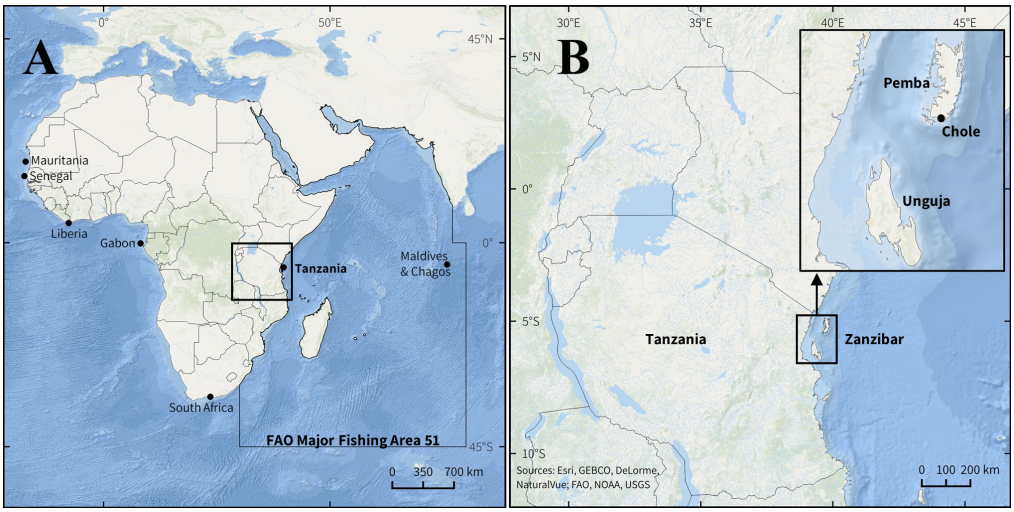


**FIGURE 1.** A) All megamouth shark *Megachasma pelagios* records from Africa and FAO Major Fishing Area 51 (black dots). The black box indicates the position of the United Republic of Tanzania within the context of Africa; B) Tanzania mainland and the Zanzibar Archipelago, which comprises Pemba and Unguja islands. Top right inset shows location of Chole market on Pemba Island, the location of the July 2022 *M. pelagios* record.

On the 29th of July 2022, a male specimen of *M. pelagios* was recorded in Chole market on Pemba Island (5°25.52'S, 39°43.74'E) in the Zanzibar Archipelago (Figure 1B; Figure 2). The exact catch location is unknown, but the shark was caught from an artisanal fishing vessel and thus was likely caught within a few kilometres of Pemba Island. The individual was incorrectly recorded at 111 cm TL; however, photographic verification with a tape measure alongside the specimen suggests it was approximately 170 cm TL (Figure 2A). This closely matches the smallest *M. pelagios* ever recorded at 176.7 cm TL (White *et al.* 2004). The individual was caught with a longline and the market vendor suggested that the specimen could be sold for 40,000.00 Tanzanian Shillings (TZS), or approximately 17.00 United States Dollars (USD). The specimen still had all fins intact (Figure 2C) and the meat was likely sold for local consumption.

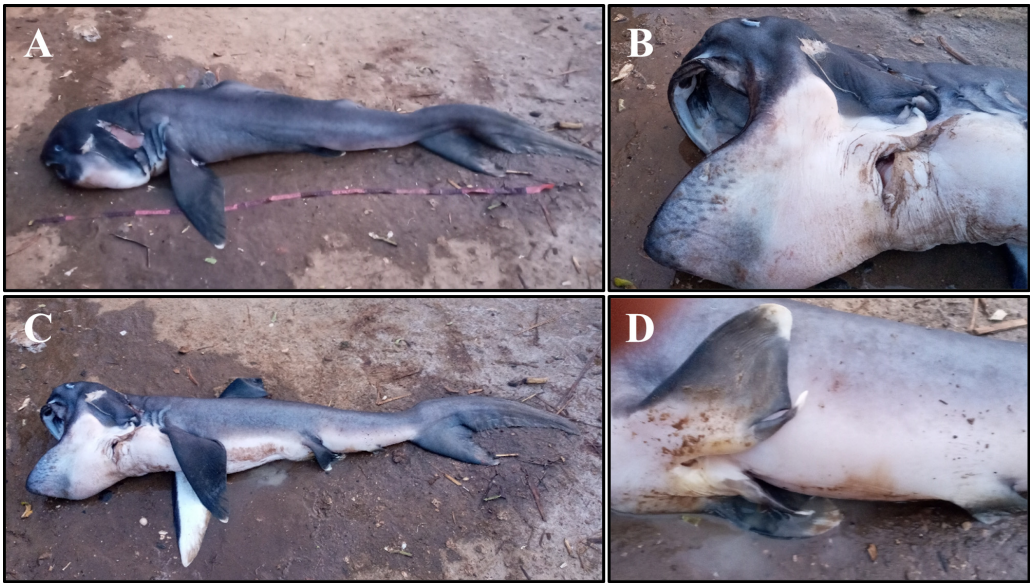


**FIGURE 2.** Megamouth shark *Megachasma pelagios* from Chole market, Pemba Island, Zanzibar Archipelago, United Republic of Tanzania. A) full view of shark with tape measure (10-cm increments in black and pink) placed alongside for size reference; B) close up view of head with mouth open; C) full view of shark demonstrating dorsal and ventral colouration; and D) close up view of pelvic fins and claspers confirming the sex to be male. Photographs by the Wildlife Conservation Society, Tanzania Marine Program.

This record of *M. pelagios* is the first ever from the United Republic of Tanzania or anywhere along the East African coastline and represents the 274th published record globally after the two most recent sightings in September 2022 off California (Skelton *et al.* 2023). Furthermore, this specimen is only the 8th record from the Indian Ocean, the 6th record from Africa, the second record of this species from FAO Major Fishing Area 51—Western Indian Ocean (FAO 2023), and the first ever record from the Western Indian Ocean Marine Province as defined by Spalding *et al.* (2007). Pemba Island is over 3,500 km (straight-line distance) from the closest previous record of this species, the individual from South Africa (Smale *et al.* 2002), thus considerably increasing the information available on the global distribution range of this species. This specimen is also the 92nd male ever recorded.

This new record of *M. pelagios* increases the global number of records for this species to 274 and the number of known shark species in the United Republic of Tanzania to 60, demonstrating the value of long-term, species-level catch monitoring to provide information on species distributions and species affected by fisheries. The importance of photographic records for species and size verification, particularly for identifying rare and infrequently encountered species, is also highlighted. A national chondrichthyan species checklist, assimilating all confirmed species, would be of value for the conservation and management of this imperilled group in the United Republic of Tanzania.

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