First megamouth shark from the western Indian Ocean and South Africa

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WE REPORT THE FIRST MEGAMOUTH shark (*Megachasma pelagios*) from the coast of South Africa and the first vouchered specimen from Africa. This adolescent female was approximately 4.6 m total length and weighed 260 kg.

On 20 April 2002, a megamouth shark [*Megachasma pelagios* Taylor, Compagno & Struhsaker, 1983 (Class Chondrichthyes; Order Lamniformes; Family Megachasmidae)] was stranded at Nature's Valley

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Fig. 1. The female megamouth shark (*Megachasma pelagios*) that was stranded at Nature's Valley on 20 April 2002. Photographs by H. van der Wat.

(33°59′S, 23°34′E) in the Western Cape Province. It is the first record of this species in South Africa and the western Indian Ocean and is the 17th reported worldwide since its discovery off Hawaii in 1976. It is also the first specimen collected in Africa. A previous, verbal record was based on a specimen caught off Senegal that was discarded before it could be saved.[1]

The animal was in reasonably good condition when it was delivered to the Port Elizabeth Museum, but the skin was scuffed and there was some damage to the fins. The natural colour of this species is blue-grey dorsally and off-white ventrally. Our specimen was darker with white patches where there had been abrasions. It had white tips to the pectoral and pelvic fins and the ventral lobe of the caudal fin. Spotting on the chin, which has been reported in some individuals, was not evident on the Nature's Valley specimen. Measurements were taken after Compagno.[2]

The shark measured 312 cm precaudal length (PCL), and 347 cm fork length; total length was estimated to be about 466 cm. The last had to be estimated because the tip of the caudal fin was missing. It is uncertain whether the tip of the caudal fin was lost before, during or after stranding. The mass was estimated at 260 kg based on the combined masses of dismembered parts.

The stomach was empty apart from traces of fluid consistent with crustacean remains. The teeth are small (maximum height 7 mm of lower right tooth in 7th row), as is typical of this planktivore, and are similar in size to other females reported.[3] The teeth are smaller than those reported for males (10 mm height for lower teeth[4]). Sexual variation in dentition is widely reported in chondrichthyans and is associated with mating behaviour.[5] The specimen appeared to be highly emaciated compared with others of approximately the same length. For example, the male holotype measured 309 cm PCL and weighed 750 kg (ref. 4), the female from Fukuoka, which was described as immature, measured 332 cm and weighed 790 kg (ref. 6). The male which stranded at Mandurah measured 343 cm and weighed 690 kg (ref. 7). Calculation of a condition factor [CF = (mass/PCL^3) × 10^6] for each of the above specimens — 25.4, 21.6, and 17.1 versus 8.6 for the Nature's Valley specimen — emphasizes the differences. The liver of the South African specimen was dark in colour, had little oil content and weighed only 8 kg (3% of total body mass), which is typical of an animal in poor health.

This female was immature, with the uteri exhibiting partial expansion in the posterior section and appeared to be similar to the description of reproductive development given by Castro *et al.*[8] The posterior part of the uterus was 9.4 cm wide for the posteriormost 40 cm. The oviduct was 6.2 cm wide along 40 cm of its length. The ovary and shell gland were poorly differentiated and not easily examined in detail because they were not well preserved. No hymen was detected at either vaginal opening.

Megamouth sharks are epipelagic and have been found in circumtropical waters.[9] Although our specimen is the first record from the western Indian Ocean, it supports the belief that the distribution of this species is circumglobal. They are diurnal vertical migrators that move between at least 8 and 166 m in water of 380 to 4600 m depth.[4,10] Considering that our specimen is the most southerly record known and the most westerly from the Indian Ocean, its emaciated condition suggests that it was at the extreme of its natural range. With the possible exception of the loss of the caudal tip, the specimen indicated no injuries other than those probably suffered while stranding, suggesting that it had been cast ashore by tidal currents. It is possible that it was transported south by the Agulhas Current and may have been killed by association with upwelled cold water. Upwelling is typical along the coast near Nature's Valley following easterly winds, as happened during April 2002.

A mould has been made to produce casts of the shark for exhibition in museums for educational purposes. The entire skeleton, viscera and gills were saved for deposition in the South African Museum fish collection (SAM 36030) and for detailed description of the shark's morphology, which will be published elsewhere.

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