

Capture of Megamouth 11 in the Philippines

By John F. Morrissey and Elson T. Elizaga, February 18, 1999

On the night of February 20, 1998, three fishermen in Macajalar Bay, Cagayan de Oro, caught a fish they couldn't identify. A local radio station reported the discovery the following morning. That day, the fish was cut up at a beach in barangay Puerto and distributed to the general public. Subsequent reports, quoting government sources, said the strange fish was a whale shark. But research conducted by one of us (E. E.) revealed that it was a megamouth, an extremely rare species with only 10 previous sightings worldwide.

The history of the discovery of megamouth sharks, *Megachasma pelagios*, is almost as interesting as their biology. This species, which commonly reaches a total length of 500 cm, should have been discovered many years ago. Yet, the first one was not seen until November 15, 1976. This fish, a 446-cm male, was captured by a U.S. Navy vessel off Kahuku Point, Oahu, Hawaii when the crew of the ship retrieved their sea chute in which the shark was entangled. Strangely, this fantastic fish was not described for science until 1983 (Taylor et al., 1983), fully one year after its unique parasites were described (Dailey and Vogelbein, 1982). Then, mysteriously, another megamouth shark was not seen for nearly a decade. At the time, biologists suggested that the rarity of this species was due to the fact that it normally inhabits deep pelagic zones of the sea.

The second specimen was captured in a pelagic gill net off Catalina Island, California, by commercial fishermen on November 29, 1984, almost eight years to the day since the capture of the first specimen (Lavenberg and Seigel, 1985). Today, this 449-cm male is preserved and on public display at the Los Angeles County Museum in California.

Once again, scientists had to wait several years for the capture of another megamouth shark. On August 18, 1988, nearly four years after the second specimen's capture, megamouth 3, a 515-cm male, was washed ashore near the mouth of Mandurah Estuary, about 50 km south of Perth, Western Australia (Berra and Hutchins, 1990; Berra and Hutchins, 1991). Megamouth 3, which was deposited in the Western Australian Museum, was significant because it extended the range of the species to the eastern Indian Ocean. This wide range, from California to Western Australia, is typical of deep-sea species because conditions are relatively uniform in the deep sea.

So, megamouth 1 was not seen until 1976 and it took 12 years to capture only three specimens. Then, inexplicably, megamouth sharks began showing up all over the world! In the 10 years after the capture of megamouth 3, nine more specimens were observed, including six individuals since November 1994! No hypothesis has been proposed to explain this sudden bonanza of megamouth sharks.

Megamouth 4, a large male, was found stranded on a sandy beach in Shizuoka Prefecture, Japan, on January 23, 1989, before it washed out to sea (Nakaya, 1989). Megamouth 5, a five-meter individual, was caught in a set net in Suruga Bay, Japan, on June 12, 1989, and was released alive because it was thought to be a basking shark, *Cetorhinus maximus* (Miya et al., 1992). Megamouth 6, a 495-cm male, is famous because it was tracked continuously for more

than 50 hours after its capture in a drift gill net on October 21, 1990 off Dana Point, California (Lavenberg and Seigel, 1985).

On November 29, 1994, megamouth 7 was discovered stranded by a bird watcher in Hakata Bay, Fukuoka, Japan. This 471-cm specimen was the first female ever examined; hence it was the subject of a multinational scientific examination (Yano et al., 1997). The capture of megamouth 8 was significant because it represented the first record of a megamouth shark in the Atlantic Ocean and because it was much smaller than specimens 1-7. This young male (about 180 cm) was caught on May 4, 1995, in the purse seine of a French tuna fishing vessel off Dakar, Senegal (Séret, 1995).

Surprisingly, megamouth 9 was also a juvenile male from the Atlantic Ocean. But this specimen was accidentally caught in the eastern Atlantic by a Brazilian longliner off South Brazil on September 18, 1995 (A. Amorim, pers. Comm.). The last four specimens were captured recently in the tropical, western Pacific Ocean. Specimen 10 was taken May 1, 1997, off Mie, Japan (Yano et al., in press). The aforementioned specimen 11 was caught in a pelagic gill net. Specimen 12 was captured on April 23, 1998, off Mihama, Japan (Yano, 1998), and specimen 13 was observed being attacked by sperm whales (*Physeter macrocephalus*) on August 30, 1998 off the coast of the island of Nain, North Sulawesi, Indonesia.

Megamouth sharks are now known from all tropical seas, except for the western Indian Ocean, although it appears that this species is both circumtropical and more common than it seems because of its pronounced vertical migration. The telemetric tracking of specimen 6 (Nelson et al., 1997) has confirmed earlier suspicions that this species commonly inhabits the deep sea, which might account for the sporadic discovery of only a dozen specimens. Megamouth 6 was

tracked for more than two diurnal cycles, spending its days at a mean depth of 149 meters (in 700-850 meters of water) and its nights at a mean depth of 17 meters. Hence, this specimen remained in the epipelagic zone, following and feeding on vertically migrating zooplankton (Forward, 1987; Hu, 1978). These tracking data erased earlier concerns that megamouth sharks would have difficulty capturing sufficient planktonic food in the deep sea (Diamond, 1985). Moreover, discovery of this behavior dismisses the need for bioluminescent organs in its mouth, an early hypothesis (Taylor et al., 1983) not supported by histological evidence (Nakaya et al., 1997).

Clearly, *Megachasma pelagios* is a fantastic shark with many secrets still unrevealed. But the answers to our many questions regarding its natural history must await fortuitous observations of additional specimens. ■

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