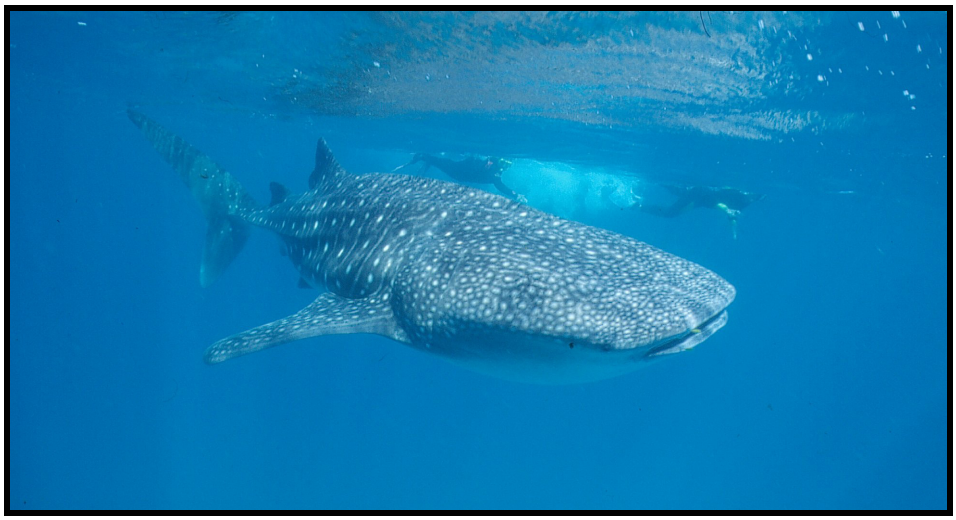
CITES Identification Manual

Whale Shark

(*Rhincodon typus* Smith 1829)



by

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For

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CITES Identification Manual for the Whale Shark

Rhincodon typus (Smith, 1829)

Taxonomy

Class	Elasmobranchii
Order	Orectolobiformes
Family	Rhincodontidae
Species	Rhincodon typus

Scientific Synonyms

Rhiniodon typus Smith, 1828;

Common Names

English	whale shark
Indian	Panai meen, Uravi, Pullian surrow, Pulli-udoombu, Makara sravu, Osman shira, Karaj, Bharait, Bahiri, Vori mas meer, Barrel
Pakistan	Mhor
Sri Lanka	Muni-muthu-mora
Philippines	Butanding, balilan, toki, tawiki, tuki-tuki
China	Jing Sha, tofu shark
Japan	Ebisuzame
France	Requin-baleine
Spain	Tiburon ballena, pez dama
Taiwan	Tofusa, tofu shark

Conservation status

The whale shark is protected in the waters of very few of the approximately 100 countries where this species is known to visit. While protected in Honduran and some US waters, the Maldives brought in legislation to protect whale sharks in 1995 and the Philippine government banned the hunting of whale sharks in 1998. India followed in mid-2001. However, some illegal hunting still continues.

At several other locations, unregulated fishing for whale sharks is apparent. The effort is expanding, with the number of whale sharks caught (relative to effort) appearing to

decline. In Western Australian waters, the whale shark is fully protected under the *Wildlife Conservation Act 1996* and the *Fish Resources Management Act 1994*. The whale sharks are identified as both a migratory species and recently a threatened species on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act).

The whale shark is listed on the Bonn Convention for the Conservation of Migratory Species of Wild Animals (CMS). This identifies the whale shark as a species whose conservation status would benefit from the implementation of international cooperative agreements.

Distribution

Whale sharks have a broad distribution in tropical and warm temperate seas, usually between latitudes 30^0N and 35^0S. They are known to inhabit both deep and shallow coastal waters and the lagoons of coral atolls and reefs. Australia is one of the most reliable locations to find whale sharks, with large numbers sighted each year at Ningaloo Marine Park (NMP) in Western Australia. Regular sightings have also been recorded from many other regions including India, the Maldives, Taiwan, Seychelles, Honduras, South Africa, Kenya, Belize, Mexico, the Galapagos Islands, Chile, Thailand, the Philippines, northern Borneo, Malaysia, Mauritius and Indonesia.

This species is thought to prefer surface sea-water temperatures between 21 - 25^0C. Sightings at NMP, however, are most common in water temperatures around 27^0C. The sharks (regularly) appear at locations where seasonal food 'pulses' are known to occur. The predictable annual whale shark aggregation at NMP is closely linked with an increase in productivity of the region, associated with a mass coral spawn which occurs around March/April each year.

Characteristics

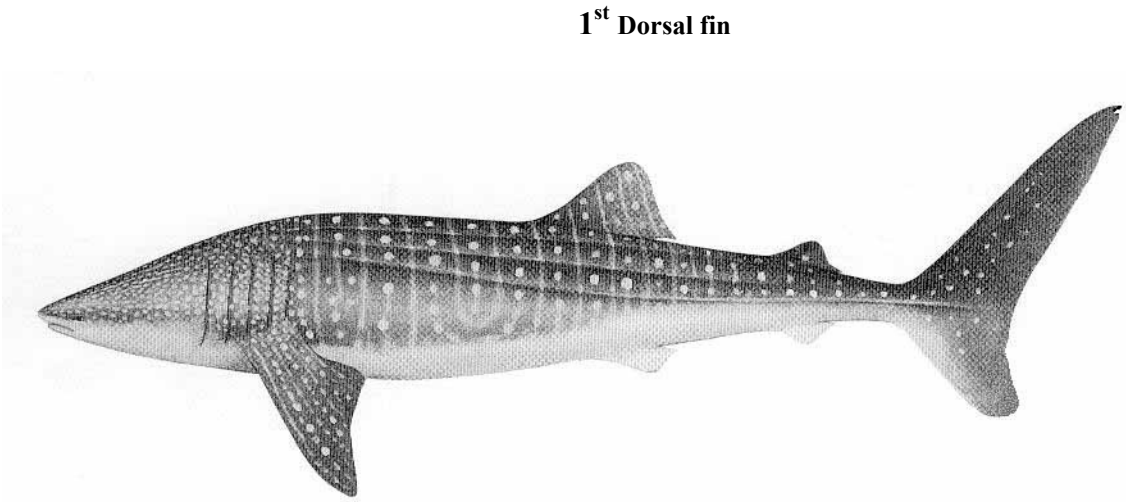
WHOLE SPECIMENS: Whale sharks have a moderately stout, fusiform body, with three prominent longitudinal ridges on its upper flanks extending from near the gill region to the caudal peduncle. The head is broad and dorso-ventrally flattened, with a large and nearly terminal transverse mouth. The nostrils have a rudimentary barbell.

The colour of whale sharks has been reported as ranging from blue-grey to grey-brown, with a 'checkerboard' pattern of lines and spots on the dorsal and lateral surfaces. The ventral surface of these sharks typically has a light white colouration.

The size at birth of whale sharks is between 58 – 64 cm. The whale shark is the most fecund of any shark, with

the only pregnant female ever recorded with a litter size in excess of 300 individuals.

Size at maturity for whale shark is suggested at between 8 – 9 m for males and around 9 m for females.



TRADED PRODUCTS: Traded products derived from whale sharks include fins, livers (liver oil), jaws, meat (fresh, frozen or salted for human consumption), stomach and intestines (for food), cartilage (used in health supplements), and skin (for leather products). While processed meat, oil and cartilage are almost impossible to identify without undertaking DNA testing in the laboratory, individual jaws, fins and fin sets can be identified more easily, especially where traded intact or only partly processed.

FINS: Shark fins are among the world's most expensive fishery products. They are processed to yield shark fin needles, a tasteless gelatinous product used, with other ingredients, to prepare shark fin soup, particularly in the Asian markets. Almost every species of shark have commercially valuable fins. However, the value of these is dependant on factors such as colour, size, thickness and fin needle content.

Shark fins are often graded individually according to size and colour (because of the difficulty involved to identify fins to species when imported dried). However, larger fins are worth more than smaller fins, and 'white' fins are generally worth more than 'black' fins because they have a higher needle content. Grading systems differ considerably between countries, and may also

take into account water content, rehydration capacity, number and length of needles, degree of whiteness, presence of blemishes and the general quality of initial processing. Whale and basking shark fins tend to demand high prices in the marketplace because of their relatively large size.

Fins usually enter international trade for the first time intact (dried or frozen) with the skin on, or semi-prepared (with the skin, cartilaginous base plate and remaining meat removed but the fibres intact). Fin shape is unaltered by removal of the skin and base plate. Further preparation of fins may include the removal of the hard cartilage of the dorsal fins and the cartilaginous platelets between the two layers of fin needles before drying.

Fins are then processed to produce fin needles or fin nets. This is carried out by soaking and boiling to remove the gelatinous fin ray membrane and expand and expose the fin needles (which occur as a bundle in the centre of the fin). Fin needles may be further processed to sun-dried fin nets.

Although there has been limited research undertaken on whale shark fins, it appears that the skeletal structure of the pectoral fins is characteristic. However, radiography is required to examine the fin cartilage in intact fins.

With the exception of the anal and pelvic fins, the fins of whale sharks are large. The 1st dorsal and tail (caudal) fins reach to over one and a half (1.5) metres in height in mature adults. They are generally grey to grey-black in colour, with few white spots distributed randomly. Pectoral fins are generally a dark grey colour on the dorsal surface (again with spots although more concentrated at the leading edge) and are essentially white on the ventral surface. The anal and pelvic fins are essentially white in colour, although the latter has some evidence of white spots on a pale grey background.

The first dorsal fin becomes more triangular as the shark becomes larger, and is approximately triangular when the species reaches maturity (around 8m in males). The caudal fin is semi-lunate, with the upper lobe considerably larger than the lower lobe. The upper lobe has a small sub-terminal notch on the trailing edge near the top of the fin.

The dorsal fin on its own is easy to recognise as a whale shark, despite the size/maturity of the specimen, because of the white spots present. However, the 2nd dorsal fin sometimes lacks these spots in juveniles and would be more difficult to identify as that of a whale shark unless found in conjunction with the caudal, pectoral fin or 1st dorsal fin.

SHARK FIN SETS:

A fin set which has the above features of: 1) a triangular dorsal fin grey to grey-black in colour (with few white spots); 2) a caudal fin that is grey to grey-black (with white spots); and is semi-lunate in shape with a sub-terminal notch; and 3) has pectoral fins that are falcate, dark grey colour on the dorsal surface (with concentrated white spots) and white on the ventral surface – can be confidently identified as being from a whale shark.

Photographs and x-rays of fins are attached to aid identification.

TEETH AND JAWS:

The most distinctive feature of jaws of the species is their size (up to 1.5 m diameter). The transverse mouth is enormous and houses up to 3000 teeth, aligned in 300 rows which are covered by a velum of skin and not used in the feeding process. The teeth are small (less than 6mm in length), with a singular hooked cusp.

TRADE:

Most of the world trade in shark fins involves imports, exports and re-exports between China, Hong Kong, Taiwan and Singapore. Hong Kong Customs data record shark fin imports from 125 countries and re-exports to 75 countries during the period 1980-1995 (Rose 1996). Many of the fins entering Hong Kong are processed in China before being re-exported in processed form via Hong Kong. There was extensive trade in whale shark fins exported from India and the Philippines to a lesser extent, although this has been reduced significantly since whale shark hunting was banned in both countries recently.

Photograph of whale shark 1st dorsal fin

Photograph of whale shark caudal fin

Photograph of caudal fin – base

Photograph of whale shark left pectoral fin

Photograph of whale shark 2nd dorsal fin

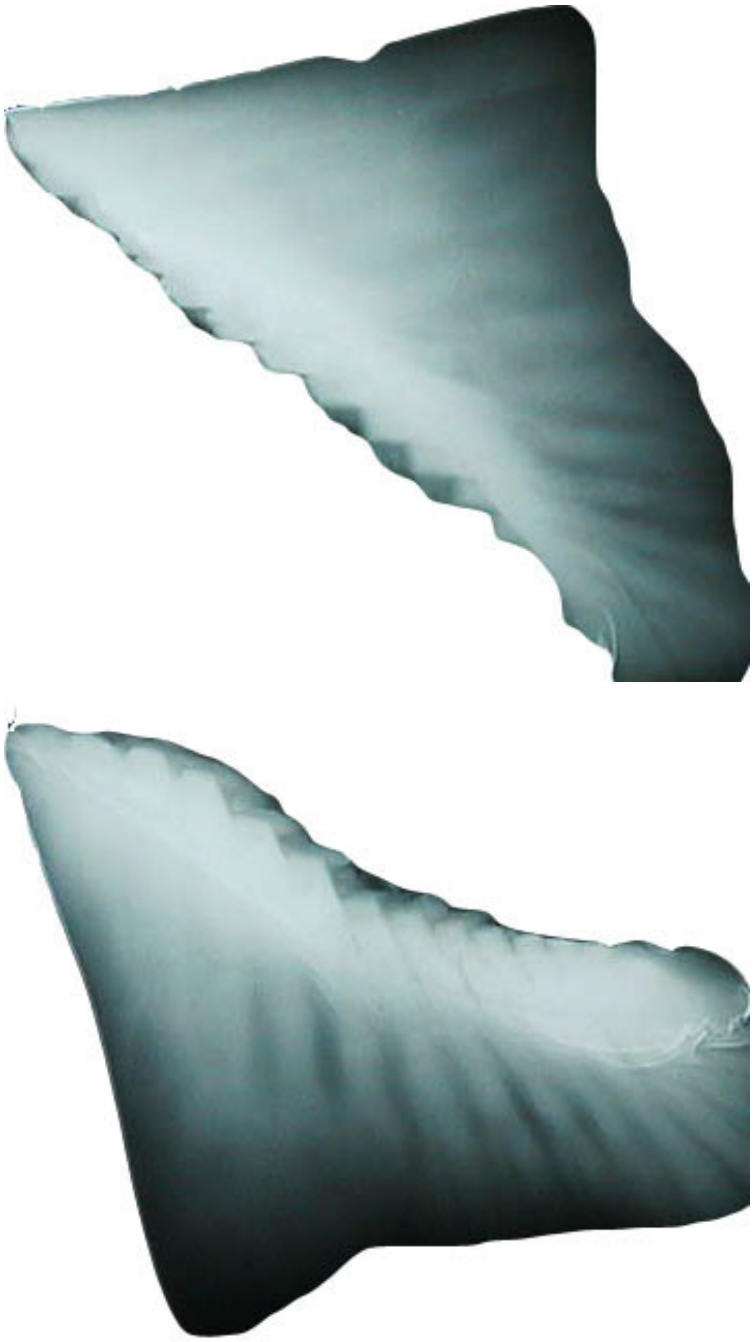
Photograph of whale shark pelvic fins

Photograph of whale shark anal fin

Dorsal fin x-ray image

Pectoral fin x-ray image

Pelvic fin x-ray images



Please note:

Due to the cartilaginous nature of shark fins, the small size and relative immaturity of the shark specimen (<4m TL) used to construct this 'Manual', it is apparent that the x-rays of the fin established a very low level of calcification in the fin rays. As a result, a lower than ideal level of fin ray identification was possible.

However, given the large size of the majority of whale sharks captured and utilised for trade, it will be possible to identify most fins (as originating from a whale shark) through the presence of a unique patterning and colouration on the dorsal and lateral surface of the fins. To increase the chance of a positive identification of products traded from this species, it would be advisable to prepare a simple 'protein fingerprinting' kit. This should then be made available to Customs officials to assist with the accurate determination of the species of shark from which the traded fins originated.