Department of Sustainability and Environment

Action Statement

Flora and Fauna Guarantee Act 1988 No. 186

Grey Nurse Shark

Carcharias taurus

Description and distribution

The Grey Nurse Shark *Carcharias taurus* is also known as the sand tiger shark in the United States of America and as the spotted ragged-tooth shark in South Africa. It has a large, stout body, grows to at least 3.6 meters and is generally a slow but strong swimmer (Environment Australia 2002). It is distinguished by a small head with an almost conical shaped snout, an elongated upper lobe of the tail fin and long, thin pointed teeth that are positioned in rows in the jaw. As a tooth is broken or lost it is replaced by a tooth from the next row. They are grey/brown in colour with a paler, off-white underbelly and smaller individuals have brown spots that generally fade with increased size. The shark is able to maintain near neutral buoyancy by swallowing air and holding it in their stomachs, allowing them to hover in the water above the bottom.

Grey nurse sharks have a broad inshore distribution, primarily in sub-tropical to cool temperate waters around the main continental landmasses. Relatively little is known about the migratory habits of Grey Nurse Sharks in Australian waters, but they are presumed to migrate in response to water temperatures to breed. In Australia, their distribution includes most of the southern half of the continent, although the species is uncommon in Victorian, South Australian and Tasmanian waters, and has not been found in the Great Australian Bight (Environment Australia 2002). They have been regularly reported from Western Australia (south of Shark Bay), Queensland (south of Mooloolaba) and NSW.

There are only two records of Grey Nurse Shark sightings in Victoria. The first is from Hobson's Bay (in Port Phillip Bay) and is considered unreliable, and the other is an unpublished report from Mallacoota Inlet in the early 1970's. However, their occurrence in Commonwealth waters and waters of NSW, Tasmania and South Australia indicates that it is possible that Victorian waters are part of their range. The Scientific Advisory Committee therefore concluded that the single record from Mallacoota Inlet substantiates the occurrence of Grey Nurse Sharks in Victoria.

Habitat

Where present, the species can be solitary or in aggregations of up to 20 just above the seabed in or near deep sandy-bottomed gutters or rocky caves in the vicinity of inshore rocky reefs and islands. These animals are generally found in depths of 15-40 meters, but have been recorded at depths to about 200 metres on the continental shelf (Pollard *et al.* 1996). Whereas individuals tend to frequent the same locations during the day, they become more active when feeding at night.

Life history and ecology

Grey Nurse Sharks have a relatively low growth rate and take 4-6 years to mature (Branstetter & Musick 1994). Not all females are sexually active and those that are generally only reproduce once every two years (Smith & Pollard 1999).

Victoria The Place To Be

Gestation takes 9-12 months (Last & Stevens 1994) and there is a maximum of two young per litter (one in each uterus). Grey Nurse Sharks are oophagous, where the embryos are nourished by a supply of unfertilised eggs, which the female continues to ovulate during pregnancy. The embryos also feed on other less developed young in the uterus. The average life span of this species in the wild is unknown, although it is likely that larger specimens may be at least 13-16 years (Pollard *et al.* 1996).

The Grey Nurse Shark teeth are designed for grabbing whole prey and the shark is therefore limited to feeding on animals that are smaller than its jaws. Their diet consists of a wide range of fish, other small sharks and rays, squids, crabs and lobsters (Environment Australia 2002). In Australia, it is likely that their diet consists of species such as pilchards, jewfish, tailor, bonito, moray eels, wrasses, sea mullet, flatheads, yellowtail kingfish, small sharks, squid and crustaceans (Environment Australia 2001).

Conservation status

Internationally, the Grey Nurse Shark was listed as 'globally vulnerable' in 2000 by the International Union for the Conservation of Nature (IUCN 2000). They are now fully protected in South Africa, Namibia and Florida (USA).

In Australia, the Grey Nurse Shark is protected in all Commonwealth waters (3 – 200 nautical miles from land) and is listed as two separate populations under the **Environment Protection and Biodiversity Conservation Act 1999***;* as 'critically endangered' on the east coast and 'vulnerable' on the west coast. The species has been protected in NSW since 1994 and is also protected in Western Australia, Tasmania and Queensland.

In Victoria, the Grey Nurse Shark is listed as threatened fauna under the **Flora and Fauna Guarantee Act 1988**. In its final recommendation for the listing as threatened fauna (SAC 1998), the Scientific Advisory Committee determined that the Grey Nurse Shark is very rare in terms of abundance or distribution in Victorian territorial waters.

Decline and threats

There are a number of suggested causes for the observed decline in Grey Nurse Shark numbers. The most identifiable of these is spearfishing. The shark's undeserved reputation as a man-eater led to concerted efforts among spear fishers to wipe out the species along the NSW coastline during the 1950s and 1960s (Cropp 1964) using powerheads. The species was also intentionally killed by line fishers (Last & Stevens 1994).

Current threats to the species are believed to be incidental catch by recreational fishing and various commercial fisheries (such as NSW Ocean Trap and Line and WA Shark Gillnet Fisheries). A much smaller threat includes gillnet meshing near bathing beaches to reduce risks of shark attacks (Pollard *et al.* 1996).

The total number of individuals on the east coast of Australia is low and estimated to be less than 500 individuals. The species is believed to be in decline in NSW (Otway & Parker 2000) and could be as low as 292 remaining individuals. There are concerns that populations have fallen to such critically low numbers that individual animals are now failing to find mates and successfully reproduce. Many areas along the NSW coastline no longer support populations (Otway & Parker 2000).

Previous management action

Several international agreements have been put in place to encourage nations to reduce impacts on the marine environment and in particular shark populations. In Australia, these agreements have been incorporated into domestic arrangements and are outlined below.

International Arrangements

United Nations Convention on the Law of the Sea is an international treaty signed in 1982 to protect and preserve the marine environment. This Convention is principally related to fisheries and the United Nations General Assembly Resolution 49/118 called upon States (sovereign nations) to take into consideration the effects on associated or dependent species when establishing conservation and management measures for target fisheries. As a result of this resolution, the United Nations Food and Agriculture Organisation developed a Code of Conduct for Responsible Fisheries to address fisheries by-catch in 1995.

International Plan of Action for the Conservation and Management of sharks was adopted by the United Nations Food and Agriculture Organisation Committee on Fisheries in 1999 in recognition of the expanding global impacts on populations of sharks, rays and chimaeras. The objective of the International Plan of Action is to ensure the conservation and management of sharks and their long-term sustainable use. All signatories are now required to develop National Plans of Action to implement international objectives into local management arrangements (Anon 2000).

National Arrangements

National Plan of Action for the Conservation and Management of Sharks is currently being jointly finalised by the Commonwealth, States and

Northern Territory and aims to implement local management arrangements that reflect international objectives.

Recovery Plan for Grey Nurse Shark (*Carcharias taurus*) in Australia (Environment Australia 2002) was released after the species was listed as threatened in 1999 under the Environment Protection and Biodiversity Conservation Act 1999. Overall objectives of the Plan are to implement actions that will increase shark numbers in Australia to a level where the species can be safely removed from threatened species on schedules under the Act. This Recovery Plan applies to Commonwealth territorial waters and Commonwealth managed fisheries.

National Policy on Fisheries By-catch (AFFA 1999) was released after all Australian Governments agreed to develop a by-catch policy to address by-catch in all fisheries. By-catch arrangements are being incorporated into Fishery Management Plans for each Victorian managed fishery. The Commonwealth Government subsequently released the *Commonwealth Policy on Fisheries By-catch,* which applies to and requires the development of By-catch Action Plans for all Commonwealth managed fisheries.

Victorian Arrangements

The impacts of humans on shark populations are well recognised and Victoria has a long history in monitoring, research, and management for the conservation of sharks in Victorian waters. Arrangements to reduce the impacts of commercial fishing on shark populations have provided protection within Victoria's inshore waters for grey nurse sharks. These arrangements include:

- a ban introduced in 1988 on the use of 6-6 ½ inch shark monofilament gillnets within Victoria's territorial waters (within 3 nautical miles), to protect large, pupping female school and gummy sharks, thereby also reducing the likelihood of grey nurse sharks becoming accidentally entangled. A ban now applies to the use of any mesh net containing meshes greater than 14 centimetres.
- a limit of a single longline with up to 200 hooks introduced in 1988 for Victoria's longline sector of the Ocean Access Fishery within Victorian territorial waters, thereby reducing the likelihood of interactions with grey nurse sharks.
- a 50 kg trip limit on school and gummy sharks introduced in 1998 in Victoria's longline sector of the Ocean Access Fishery which reduced the incentives to use shark longlines in Victorias territorial waters. In 2000 this trip limit was replaced with a combined catch limit of 2 school and gummy sharks, further reducing the use of shark longlines.
- a ban on the use of mammal blood or any body part as berley to minimise the attraction of sharks to fish hooks, thereby reducing the likelihood of hooking Grey Nurse Sharks.

Conservation objectives

Longterm objectives:

That the Grey Nurse Shark can survive, flourish and retain its potential for evolutionary development in the wild.

Objectives of this Action Statement

1. To continue applying and where appropriate, implement Victorian arrangements consistent with national approaches to minimise impacts on Grey Nurse Sharks;
2. To support national approaches for minimising impacts on grey nurse sharks.

Intended Management Action

The management of threats to grey nurse sharks is particularly relevant for WA, NSW and QLD where the species is known to exist. It is recognised that the distribution of the species in Victorian territorial waters is uncertain and that the main threats to sharks in Victoria, including targeted shark fishing, the use of mono-filament gillnets and certain berleying practices, are banned. The actions in this statement therefore aim to maintain these arrangements to minimise threats to the species in Victoria and to support international and national arrangements to manage threats in international and other Australian waters.

1. Encourage recreational and commercial fishers and divers to report interactions with Grey Nurse in Victorian territorial waters.

   Responsibility: Department of Primary Industries
2. Continue to apply arrangements that minimise impacts of commercial and recreational fishing on sharks in Victorian territorial waters.

   Responsibility: Department of Primary Industries
3. Implement measures, where appropriate to Victoria as specified in the Recovery Plan for the Grey Nurse Shark in Australia and the National Plan of Action for the Conservation and Management of Sharks.

   Responsibility: Department of Primary Industries

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Further information can be obtained from Department of Sustainability and Environment Customer Service Centre on 136 186.

Flora and Fauna Guarantee Action Statements are available from the Department of Sustainability and Environment website: http://www.dse.vic.gov.au

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