

## Threatened species in NSW

# Grey nurse shark

*Carcharias taurus*



Photo by Justin Gilligan

### Threatened Species Unit

Fisheries Conservation and Aquaculture Branch  
Port Stephens Fisheries Centre

### Introduction

Grey nurse sharks are a large shark native to subtropical to cool temperate waters. Once widely distributed, they are now mainly restricted to Australia and the east coasts of the USA, Uruguay, Argentina and South Africa. In Australia there is an east coast population, and a west coast population.

Despite their fierce appearance, grey nurse sharks are not a threat to divers or swimmers unless provoked. Their placid nature, combined with their occupation of shallow inshore reef areas, has allowed diving with grey nurse sharks to become the focus of an ecotourism industry.

Concern about the conservation status of grey nurse sharks was raised in the 1980s, resulting in the species becoming protected in NSW in 1984. Despite this protection, grey nurse sharks have declined to the point where they are now listed as an **endangered species**.

The east coast population of grey nurse sharks is also listed as a critically endangered species under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

There are heavy penalties for harming, possessing, buying or selling them, or for harming their habitat. Special rules apply for fishing and diving in critical habitat sites (see 'Legal implications').

### Description

Grey nurse sharks have large, stout bodies tapered at each end, a pointed snout and small eyes.

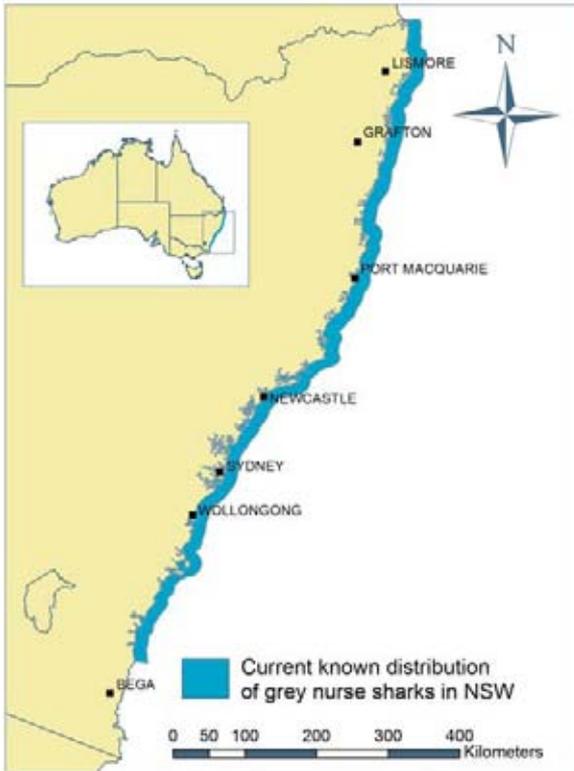
The upper surface of grey nurse sharks is bronze coloured, and the underside is pale white. Juveniles often have dark spots on the lower half of the body and the caudal (tail) fin. These spots fade as the shark becomes larger, but sometimes persist on adults.

They have two distinctive large dorsal (top) fins of similar size. The first dorsal fin is set well back from the pectoral (side) fins. The anal fin is similar in size to both dorsal fins. The mouth extends beyond the front of the eye, and has long, protruding teeth.

Grey nurse sharks have sometimes been confused with whaler sharks by fishers; however, there are key anatomical features that may be used to identify grey nurse sharks, including protruding teeth and two dorsal fins of almost equal size.

Grey nurse sharks can grow to a maximum length of 3.2m.





Distribution of grey nurse sharks in NSW

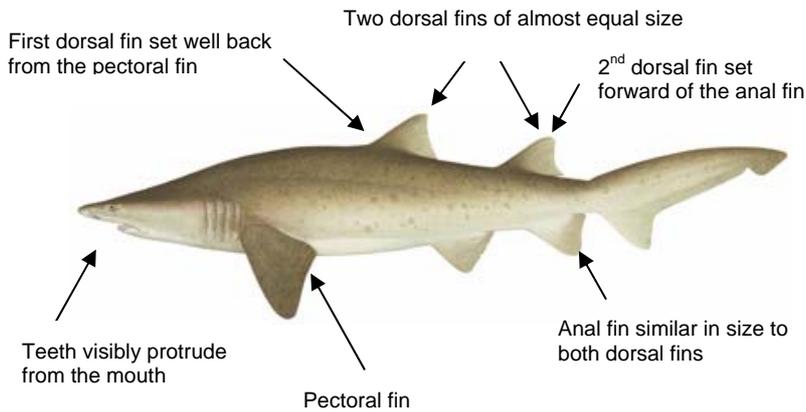


Photo by Justin Gilligan

## Habitat and ecology

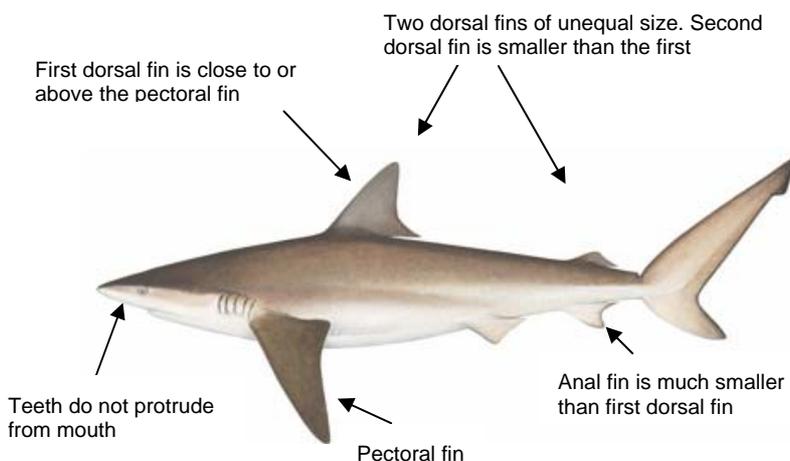
- Grey nurse sharks are found predominantly in inshore coastal waters.
- They have been recorded at various depths, but are mainly found in waters between 15 and 40 m deep, and spend the majority of the time in waters less than 30 m deep. The deepest depth recorded in NSW DPI tracking of grey nurse sharks is 98 m.
- Grey nurse sharks gather at a number of key sites along the coast of NSW and southern Queensland. These sites have gravel or sand filled gutters, rocky reefs or caves, and are called aggregation sites.
- Individuals spend most of their time in proximity to aggregation sites (typically within 300–1300 m); however, this varies between individual sites.
- Grey nurse sharks migrate between aggregation sites. In NSW, tagged sharks have been recorded moving over 800 km between sites in relatively short periods of time, and show site fidelity by returning to the same sites in consecutive years.
- The species is mainly active at night, and feeds on a wide range of bony fishes, sharks and rays.
- Mating is believed to occur in spring, and females are likely to give birth in late winter and early spring at their aggregation sites.
- Grey nurse sharks reproduce slowly, producing an average of one pup per year. This is due to their unusual reproductive strategy, known as intra-uterine cannibalism.
- Females release numerous eggs into their two uteruses. The pups develop, and when they are about 10 cm long, they hunt and eat their siblings until only one remains in each uterus. The remaining pups continue their development by eating the eggs released by their mother. After a 9–12 month gestation period, the two pups are born at a length of about 1 m. Females then enter a resting stage for around one year, before their next breeding season.
- As a result of this two-yearly reproductive cycle, grey nurse sharks have a very low reproductive rate, and therefore a low potential for the population to recover from the currently estimated 460 individuals.
- Recent Australian and international research indicates that sexual maturity is reached in about 7 years for males, and approximately 12 years for females, at respective lengths of around 2.1m and 2.6m.
- The late onset of sexual maturity and low reproductive rate makes the species extremely vulnerable to human-induced pressures.

## Grey nurse shark



Grey nurse sharks are coloured grey-brown or bronze on the upper parts of their body, with a pale white underbelly. Brownish spots occur on the upper body and tail fin, and are most prominent in juveniles. They differ from whaler sharks in that their teeth visibly protrude from the mouth. The two dorsal fins and anal fin are of almost equal size, and the first dorsal fin is set well back from the pectoral fins. The second dorsal fin is set forward of the anal fin.

## Whaler shark



Whaler sharks are coloured blue, grey or bronze on the upper parts of their body, with a creamy white underbelly. They differ from grey nurse sharks by having dorsal fins of unequal size, and teeth that do not protrude from the mouth. The first dorsal fin is much larger than the second dorsal fin, and is located above the back of the pectoral fin. The second dorsal fin is located directly above the anal fin, unlike that of the grey nurse shark.

Differences between grey nurse sharks and whaler sharks. Illustrations © R.Swainston/www.anima.net.au

### Why are grey nurse sharks threatened?

- Hook and line fishing in areas important for the survival of threatened species has been identified as a key threatening process affecting grey nurse sharks.
- Past declines in numbers due to targeted fishing and hunting.
- Accidental capture leading to internal injuries and death, resulting from hooking by commercial and recreational fishing gear.
- Capture in beach safety (shark) mesh nets.
- Illegal capture for sale of the fins.
- They have a very low potential for population recovery.

### Conservation and recovery actions

- Maintain existing bans on taking grey nurse sharks in NSW, Queensland and Commonwealth waters.
- Reduce the impacts of fishing and beach safety (shark) meshing activities.

- Educate fishers on how to identify grey nurse sharks and why reducing the impacts of fishing is so important.
- Establish marine protected areas and sanctuary zones around critical habitats and known key aggregation sites.
- Regulate fishing and diving activities, to minimise impacts on grey nurse sharks.
- Reduce the impacts from NSW commercial fisheries identified as a high risk to grey nurse sharks including:
  - Mandatory use of circle hooks for all unattended line fishing methods (non-offset circle hooks in waters < 92 m), to reduce gut and oesophageal hooking.
  - Prohibiting wire trace on bottom setlines in all waters within 3 nautical miles of the coast, and within buffer zones of all grey nurse shark critical habitats and key aggregation sites.
  - Mandatory reporting of threatened species interactions.
  - Implementing closures for high-risk ocean trap and line gear around critical habitat and key aggregation sites.

- Implement the Protected, Threatened and Pest Species Sighting Program: **Report any sightings of the species on the NSW DPI 24-hour automated message-taking service by calling (02) 4916 3877.**

### Legal implications

It is illegal to catch and keep, buy, sell, possess or harm grey nurse sharks (or any other threatened species in NSW) without a specific permit, licence, or other appropriate approval – significant penalties apply. For endangered species, these penalties can include fines of up to \$220,000 and up to two years in prison.

There can also be significant penalties for causing damage to the habitat or critical habitat of a threatened species without approval.

Special rules apply for fishing and diving in grey nurse shark critical habitat sites at:

- Julian Rocks near Byron Bay
- Green Island and Fish Rock (mid-north coast)
- The Pinnacle near Forster
- Big Seal and Little Seal at Seal Rocks
- Little Broughton Island near Port Stephens
- Magic Point near Maroubra
- Bass Point near Shellharbour
- The Tollgate Islands at Batemans Bay
- Montague Island near Narooma

For more information on the location of these grey nurse shark critical habitats, or for fishing or diving rules at particular sites, check with your local NSW DPI office or website at [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au)

The impacts of developments or activities that require consent or approval in accordance with the *Environmental Planning and Assessment Act 1979* must be assessed and considered by consent or determining authorities. Where such actions are likely to result in a significant impact on a threatened species or its habitat, a detailed species impact statement must be prepared. A species impact statement is mandatory to assess the impact of any development or activity within critical habitat that requires approval under the *Environmental Planning and Assessment Act 1979*.

Strategies to be adopted for promoting the recovery of the grey nurse shark must be set out in the NSW DPI Priorities Action Statement.

A recovery plan is also being prepared for grey nurse sharks in accordance with the provisions of the *Fisheries Management Act 1994* to promote the recovery of the species.

### Bibliography and further reading

Last PR, Stevens JD 1994, *Sharks and Rays of Australia*, CSIRO Division of Fisheries, Australia.

Otway NM, Parker PC 2000, *The biology, ecology, distribution and abundance, and identification of marine protected areas for the conservation of threatened Grey Nurse Sharks in south east Australian waters*, NSW Fisheries Final Report Series No. 19, NSW Fisheries, Sydney, NSW, Australia, 132 pp.

Otway NM, Burke AL, Morrison NS, Parker PC 2003, *Monitoring and identification of NSW critical habitat sites for conservation of grey nurse sharks*, NSW Fisheries Final Report Series No. 47, 62 pp.

Otway NM, Burke AL 2004, *Mark-recapture population estimate and movements of Grey Nurse Sharks*, NSW Fisheries Final Report Series No.63. 53 pp.

Otway NM, 2004, A grey future for the grey nurse, *Proceedings of the Australian Association of Veterinary Conservation Biologists*, R Woods (Ed), Canberra, ACT, Australia, pp 8-27.

### For further information

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