

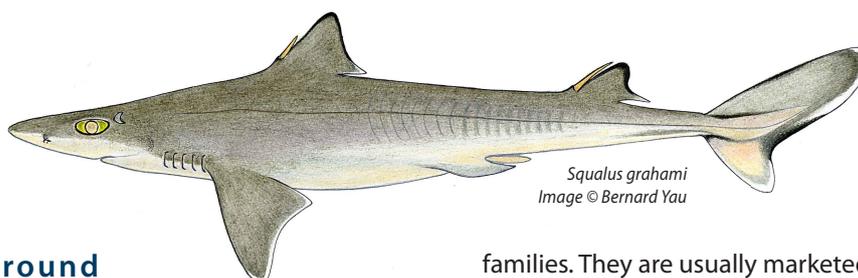
# Dogfish

## (Squaliformes)

### EXPLOITATION STATUS UNDEFINED

Species identification issues are significant. One species, *Squalus megalops*, is still relatively abundant off NSW, but there are very serious conservation issues for many other dogfish species. Exploitation status to remain 'undefined' until better risk assessments are available.

SCIENTIFIC NAME	STANDARD NAME	COMMENT
<i>Squalus megalops</i>	piked spurdog	Distribution southern Australia (QLD - WA); endemic
<i>Squalus albifrons</i>	eastern highfin spurdog	Queensland-NSW; endemic
<i>Squalus grahami</i>	eastern longnose spurdog	Queensland-NSW; endemic
<i>Squalus montalbani</i>	Philippine spurdog	Indo-Pacific - NSW, WA
<i>Squalus chloroculus</i>	greeneye spurdog	Southern Australia; endemic
<i>Centrophorus harrissoni</i>	Harrisson's dogfish	SW Pacific; Queensland-NSW
<i>Centrophorus moluccensis</i>	Endeavour dogfish	Indo-Pacific; NSW, WA
<i>Centrophorus niaukang</i>	Taiwan gulper shark	Japan , Taiwan– northern Australia; recently caught off Coffs Harbour
<i>Centrophorus squamosus</i>	leafscale gulper shark	Southern Australia; cosmopolitan
<i>Centrophorus zeehaani</i>	southern dogfish	Southern Australia; endemic
<i>Centroscymnus coelolepis</i>	Portuguese dogfish	Southern Australia; cosmopolitan
<i>Centroscymnus owstonii</i>	Owston's dogfish	Southern Australia; cosmopolitan
<i>Centroselachus crepidater</i>	golden dogfish	Southern Australia; cosmopolitan
<i>Deania calcea</i>	brier shark	Southern Australia; cosmopolitan
<i>Deania quadrispinosa</i>	longsnout dogfish	Southern Australia; cosmopolitan



### Background

The taxonomy of Australian dogfishes was reviewed in 2007 by CSIRO scientists. Where previously it was thought that there was a small number of species with world-wide distributions, the study confirmed that some were a complex of species, each with relatively small regional distributions. Many Australian dogfishes are now believed to be endemic (found only in Australian waters), although a number have a cosmopolitan distribution (found in many of the world's oceans).

NSW dogfish landings are mainly from the outer shelf and upper slope depths (100-700m) and include several species from a number of

families. They are usually marketed in three groupings: greeneye or spiky dogfish/spurdog (*Squalus* spp.; Squalidae), Endeavour sharks (most *Centrophorus* spp.; Centrophoridae) and rough-skin or platypus sharks (*Deania* spp.; Centrophoridae). Three species of 'black rough-skin sharks' (two *Centroscymnus* species and *Centroselachus crepidater*; family Somniosidae) and the leafscale gulper shark (*Centrophorus squamosus*) also occur on the NSW midslope (depths > 700 m) but to date there has been only limited commercial fishing at these depths.

The most common species of dogfish in NSW is the small piked spurdog (spiky dog) found in relatively shallow outer-shelf and upper slope depths (100 to 580 m) around the southern half

of Australia. Males mature at about 38 cm total length (TL) and grow to a maximum of about 45 cm (0.6 kg); females mature at 48 cm and reach a maximum of about 60 cm (1.5 kg). Typical of deepwater sharks, piked spurdog fecundity is very low with females bearing up to 5 young every two years. Several larger species of *Squalus* are also found off NSW, mostly inhabiting upper slope depths (200-700m). These dogfishes have maximum lengths between 70 and 100 cm and fecundities between 5 and 10 young; they are also unlikely to breed more frequently than every two years.

The deepwater shark family Centrophoridae includes large dogfishes internationally referred to as gulper sharks. Five species of *Centrophorus* and two species of *Deania* have been recorded from NSW waters. Harrison's dogfish is mainly found off eastern Australia (central Queensland to Bass Strait), the southern dogfish occurs between central NSW and WA, while the Endeavour dogfish has a more northern distribution along the east and west coasts of mainland Australia. Landings of the leafscale gulper have recently increased off NSW in depths > 700m, and at least two specimens of the large Taiwan gulper shark were recently caught off Coffs Harbour. The maximum length of Endeavour, Harrison's and southern dogfishes is about 100-115 cm TL whereas leafscale and Taiwan gulpers grow to about 170 cm. Gestation in gulper sharks takes at least two years with the smaller species producing only one or two young while the leafscale and Taiwan gulpers bear 4-8 pups. Studies of leafscale gulper sharks from the Atlantic suggest the age at maturity is between 30 and 35 years, and that the species attains a maximum age in excess of 60 years.

The two species of *Deania* caught off NSW – the longsnout dogfish and the more common brier shark - are both taken on the slope, mainly in depths between 500 and 1000 m. Males grow to about 100 cm and females to 120 cm TL with maturity at about 80% of their maximum length. Litter sizes are relatively large with up to 17 pups recorded from Australian specimens.

The slow growth rates and low fecundities of deepwater sharks make them particularly susceptible to over-exploitation. Apart from the spiky dogfish and possibly the brier shark, offshore trawling has greatly depleted the stocks of upper slope dogfishes off NSW. A trawl survey in the 1990s found that the relative abundances of the larger spurdogs (*Squalus* spp.) had been reduced to less than 10% of the catch rates achieved 20 years earlier, while the numbers of Endeavour sharks (*Centrophorus* spp.) were less than 1% of their earlier catch

rates. Subsequently, several species have been red-listed by the International Union for the Conservation of Nature and Natural Resources (IUCN) as 'vulnerable', with Harrison's dogfish listed as critically endangered. In Australia concerns about the severely depleted status of many species have led to increased research and management measures aimed at conserving the remaining stocks of these species.

### Additional Notes

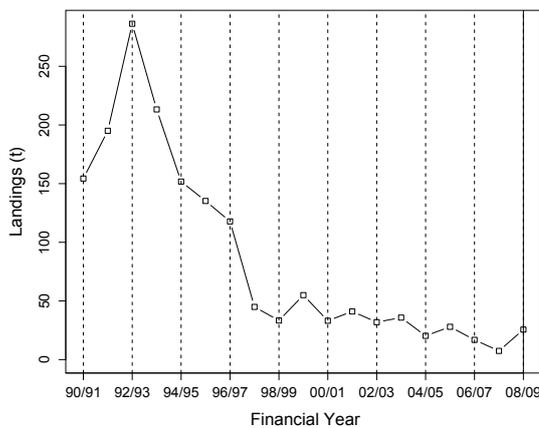
- Recent landings of this group are small. Low numbers are harvested by the Ocean Trap and Line Fishery, as well as the Ocean Trawl Fishery. Difficulties with species identification in past catch reporting makes species-based assessment difficult.
- There are three categories of conservation status for this group: *Squalus megalops* is abundant; most *Centrophorus* spp. and other deepwater *Squalus* spp. are almost totally extirpated from NSW trawl grounds (with 100% mortality when caught in trawls); and the status of other dogfish species is unknown (Graham *et al.*, 1997).

### Catch

#### Recreational Catch of Dogfish

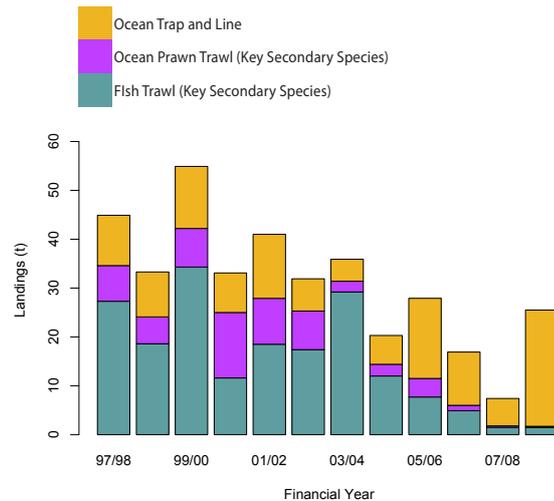
The annual recreational harvest of dogfish in NSW is likely to be less than 10 t.

#### Historical Landings of Dogfish



**Commercial landings (including available historical records) of dogfish for NSW from 1990/91 to 2008/09 for all fishing methods. Note that the decline in reported catch during the 1990s was in part due to changes in catch recording requirements for fishers with both NSW and Commonwealth licences.**

### Landings by Commercial Fishery of Dogfish



**Reported landings of dogfish by NSW commercial fisheries from 1997/98. Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.**

### Further Reading

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- Graham, K.J. (2003). [The impact of trawling on the stocks of sharks and rays on the NSW upper slope](#). Deepsea 2003 Conference. (27-29 November). Dunedin, New Zealand.
- Graham, K. J. (2005). Distribution, population structure and biological aspects of *Squalus* spp. (Chondrichthyes : Squaliformes) from New SouthWales and adjacent Australian waters. *Marine and Freshwater Research* **56** (4): 405-416.
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- Graham, K.J., N.J. Andrew and K.E. Hodgson (2001). [Changes in relative abundance of sharks and rays on Australian South East Fishery trawl grounds after twenty years of fishing](#), *Marine and Freshwater Research* **52**: 549-61.
- Kyne, P. and C. Simpfendorfer (2007). A collation and summarization of available data on deepwater Chondrichthyans: biodiversity, life history and fisheries. Queensland, IUCN SSC Shark Specialist Group Report: 137 pp.
- Last, P.R. and J.D. Stevens (2009). [Sharks and Rays of Australia. 2nd Edition](#). Melbourne, CSIRO.
- Last, P.R., W.T. White and J.J. Pogonoski (2007). Descriptions of new dogfishes of the genus *Squalus* (Squalioidea: Squalidae). CSIRO Marine and Atmospheric Research Paper No. 014: 130 pp.

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Please visit the CSIRO website, <http://www.marine.csiro.au/caab/> and search for the species code (CAAB) 37 020006, 37 020038, 37 020041, 37 020047, 37 020048, 37 020010, 37 020001, 37 020053, 37 020009, 37 020011, 37 020025, 37 020019, 37 020012, 37 020003 and 37 020004, common name or scientific name to find further information. Please note that common names have been adopted from Last and Stevens (2010) and may differ to those contained on the CAAB website.