

Harrison's dogfish (*Centrophorus harrissoni*) is caught off the south-east and west coast of Australia and has declined due to excessive fishing pressure.



The golden dogfish (*Centroscyrnus crepidater*) is targetted for its flesh by trawlers off south-east Australia.



Deepwater sharks dogged b

Eating fish and chips on the beach seems a harmless enough past-time. But many fish fillets marketed as flake come from a group of small sharks known as dogfish.

According to CSIRO Marine Research scientist, Ross Daley, catches of dogfish are unregulated, and a lack of adequate catch records means some dogfish species are probably being fished at unsustainable levels.

At least one species of dogfish, Harrison's dogfish (*Centrophorus harrissoni*), is now rarely caught and is no longer targetted.

Other types of dogfish are now sought, both as a source of flake and for their squalene-rich livers. Many dogfish are also caught as bycatch, by boats trawling for ling, orange roughy, blue grenadier and other commercial scalefish.

Daley recently prepared a draft report for the Fisheries Research and Development Corporation on the state of dogfish fisheries. Through independent surveys, studies aboard commercial vessels and at wholesale fish markets, he found that dogfish catches were under reported by between 54 and 100 percent. Sharp declines in catch rates for several species of dogfish found in Australia were also observed.

'Orange roughy boats operating out of Hobart have not had cost effective access to the Melbourne Fish Market,' Daley says.

'So in the past almost all dogfish has been discarded and almost none is recorded in logbooks. However, new markets are

developing and catch records are improving, showing that waste is now lower.'

Other catches in the South East Trawl have been underestimated due to confusion over methods of recording weights.

'Some catches were reported as whole weight, but many were reported as carcass weight – after the head, fins, gills and belly flap were discarded. This can lead to underestimates of the total catch,' Daley says.

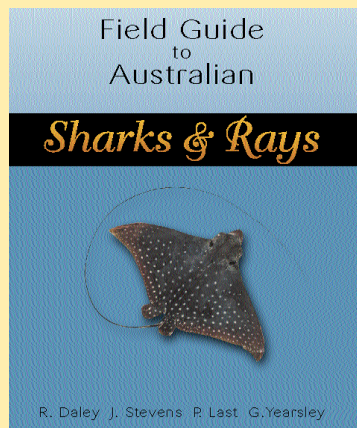
Fish at risk

At particular risk from overfishing are several species of endeavour dogfishes (*Centrophorus* spp.) that inhabit the waters of the upper continental slope (200–600 m).

These include the seriously depleted Harrison's dogfish, and the rapidly disappearing southern dogfish. In 1992, catches of endeavour dogfish in the Southern Shark Fishery peaked at 383 tonnes (carcass weight), but subsequently plummeted to just seven tonnes in 1998.

Daley says endeavour dogfishes are particularly vulnerable to overfishing because they are fished throughout their depth range, and cannot take refuge in deeper water. They also have only one or two large pups at a time, which can be caught by nets from birth.

Mid-slope dogfish (500–1500 m) on the other hand, such as small-spine sharks (*Centroscyrnus* spp.) and platypus sharks (*Deania* spp.), can take refuge below the 1200 m limit of most commercial trawling



Know your catch

CSIRO Marine Research has produced a field guide to aid in the identification of Australia's 300 species of sharks and rays. *The Field Guide to Australian Sharks and Rays* will help to improve the accuracy of catch information collected by the Australian Fisheries Management Authority, thereby supporting sustainable fisheries management.

The guide contains photographs and species information from CSIRO's National Fish Collection. It is being distributed to Commonwealth fishing operators, and to scientists and observers involved in collecting catch information.

Guide details can be found at <http://www.marine.csiro.au/LeafletsFolder/53guide/53.html>



Southern dogfish (Centrophorus uyato) is caught off south-east, south-west and north-west Australia. It has been nominated for protection as a conservation-risk species.

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operations. These species produce 10–15 small pups at a time and may be more resilient to trawl fisheries.

With the endeavour dogfishes in decline, however, mid-slope dogfish are at risk of overfishing as they are increasingly targetted to fill a gap left in the market. If catches remain unregulated, they may suffer the same fate as their upper slope counterparts.

Daley says it is too late to protect endeavour dogfishes through fisheries regulations, but *C. harrissoni* and *C. uyato* have been nominated for protection under the Environment Protection Biodiversity and Conservation Act. If these nominations succeed, the species will need a recovery plan. This could mean imposing restrictions on equipment used in particular areas or at particular times.

Before such recommendations can be implemented, however, more information on the movement and behaviour of dogfish species is needed.

‘We need to know where and how big the home ranges are for these sharks in order to identify appropriate areas for conservation,’ Daley says. ‘So we’re hoping to undertake electronic tagging studies, possibly similar to those being done on white sharks.’

Contact: Ross Daley (03) 6232 5352, email: ross.daley@csiro.au.

Wendy Pyper