

Joint Authority Southern Demersal Gillnet and Demersal Longline Fishery and West Coast Demersal Gillnet and Demersal Longline Interim Managed Fishery

MANAGEMENT OVERVIEW

Joint Authority Southern Demersal Gillnet and Demersal Longline Fishery (JASDGLDF):

During 1996/97, the Minister for Fisheries approved the implementation of a five-year management package for this fishery. This package was developed by the WA Demersal Gillnet and Demersal Longline Fishery Management Advisory Committee (WADGDLFMAC) in response to an identified need to restore and maintain targeted shark stocks at 40% of their original biomass.

The fishery is midway through the phased effort reductions specified in the five-year package, and the results of scientific monitoring indicate that the reductions made to date have arrested the decline and are setting the fishery on track to achieving its biomass targets.

Having developed good stock assessment models, Fisheries WA will continue to monitor the effectiveness of management arrangements in the fishery in close association with the WADGDLFMAC.

West Coast Demersal Gillnet and Demersal Longline Interim Managed Fishery (WCDGDLIMF):

Extensive research carried out on the commercially important shark species off the Western Australian coast indicates that this fishery shares a unit stock with the Joint Authority Southern Demersal Gillnet and Demersal Longline Fishery. The biomass targets for the south coast fishery also apply to the west coast fishery, and the introduction of the management plan through the WA Demersal Gillnet and Demersal Longline Fishery Management Advisory Committee was an important part of the management of the key species throughout their distribution.

Fisheries WA plans to progress management of this fishery from interim managed fishery status to managed fishery status upon completion of what has been a lengthy objections process.

COMPLIANCE AND COMMUNITY EDUCATION OVERVIEW

The fishery extends right through the southern region. Compliance monitoring concentrates on the time/gear unit requirements and net length controls. Officers from Bunbury, Busselton, Augusta, Albany and Esperance are all involved in compliance monitoring. Where possible, aerial surveillance is used to check

compliance with time/gear requirements. There were no reported breaches in this fishery, with good levels of compliance throughout.

Some commercial/recreational conflict continues in the Geographe Bay and mid-south coast areas, where recreational fishers are concerned about the possible effects of demersal nets on reef species. An ongoing education program by local compliance and management officers is carried out to generate a better understanding in the local community about commercial operations.

RESEARCH OVERVIEW

A major FRDC-funded study of the shark fishery on the south and west coasts of Western Australia, undertaken over the period 1993/94 to 1998/99, has provided a detailed basis for managing the fishery. The extensive information from these studies has been incorporated in two FRDC final reports, and the data sets incorporated into the Fisheries WA research data records.

Research monitoring of the fishery involves analysis of CAESS data and biological sampling of commercial catches. These research data are used to provide the following status report on the fishery.

Fishery Status Report

Main Features

Stock assessment complete:

Completed for three species - *whiskery, dusky whaler and gummy sharks*

Exploitation status:

<i>Whiskery shark</i>	<i>Over-exploited</i>
<i>Dusky whaler</i>	<i>Fully exploited</i>
<i>Gummy shark</i>	<i>Fully exploited</i>

Breeding stock levels:

<i>Whiskery shark</i>	<i>38.3% of virgin level</i>
<i>Dusky whaler</i>	<i>Not determined</i>
<i>Gummy shark</i>	<i>42.7% of 1975 level</i>

Previous catch projections for year 1997/98:

<i>Whiskery shark</i>	<i>200-250 tonnes</i>
<i>Dusky whaler</i>	<i>400-500 tonnes</i>
<i>Gummy shark</i>	<i>275-325 tonnes</i>

Catch current season (1997/98):

<i>Whiskery shark</i>	<i>231 tonnes</i>
<i>Dusky whaler</i>	<i>408 tonnes</i>
<i>Gummy shark</i>	<i>317 tonnes</i>

Estimated annual value (to fishers) for year 1997/98:

Total of shark and scalefish in JASDGLDF and WCDGDLIMF: \$4.3 million

continued over

Catch projection next year (1998/99):

<i>Whiskery shark</i>	200-250 tonnes
<i>Dusky whaler</i>	400-500 tonnes
<i>Gummy shark</i>	275-325 tonnes

Recreational component:

Small

Boundaries and Access

Joint Authority Southern Demersal Gillnet and Demersal Longline Fishery: The JASDGDLF was declared a limited entry fishery in 1988. It covers the waters from latitude 33° S to the WA/SA border. For the purposes of management, the fishery is composed of two zones:

- Zone 1, the western zone located between latitude 33° S and longitude 116°30' E; and
- Zone 2, the eastern zone located between 116°30' E and the WA/SA border (129° E).

The fishery is currently managed using effort controls in the form of time/gear units. One unit allows a fisher to use one 'net' for one month. When management was introduced a net length was 600 m, but a 10% effort reduction in 1992 brought it to 540 m. In June 1994, further effort reductions were put in place. A 30% net length reduction in Zone 2 reduced the amount of net associated with one unit to 380 m, while in Zone 1, 20% of units were suspended. The 20% and 30% effort reductions were maintained in the 1995/96, 1996/97 and 1997/98 seasons.

West Coast Demersal Gillnet and Demersal Longline Interim Managed Fishery: An interim management plan for the demersal gillnet and demersal longline fishery between latitude 33° S and North West Cape was introduced in 1997/98, and is currently in the 'appeals process'. Shark fishing between Shark Bay and North West Cape has been prohibited to protect breeding stocks of whaler sharks. Access to the WCDGDLIMF during 1997/98 was limited to 38 fishers who had powered net drum endorsements. Substantially fewer vessels are expected to have access after objections are finalised and the final management plan is introduced.

Annual Production**Main fishing method**

Demersal gillnet.

Landings

JASDGDLF:

Total shark catch	911.1 tonnes
Total scalefish catch	118.2 tonnes
Whiskery shark catch	156.5 tonnes
Dusky whaler catch	240.4 tonnes
Gummy shark catch	310.9 tonnes
Other shark catch	203.3 tonnes

WCDGDLIMF:

Total shark catch	476.7 tonnes
Total scalefish catch	108.2 tonnes
Whiskery shark catch	75.3 tonnes
Dusky whaler catch	167.2 tonnes
Other shark catch	234.2 tonnes

Fishing effort

JASDGDLF: 180,786 kilometre gillnet hours.

WCDGDLIMF: 170,266 kilometre gillnet hours.

Effort is expressed as kilometre gillnet hours, with longline effort being converted to gillnet equivalent effort.

Catch rate

See Stock Assessment section.

Stock Assessment

Stock assessment is carried out for the three main shark species caught by the fishery – whiskery, dusky whaler and gummy shark. Details of the stock assessment are contained in 'Fisheries status and stock assessment for the Southern and West Coast Demersal Gillnet and Demersal Longline Fisheries', No. 6, January 1999, provided by Fisheries WA researchers to the WADGDLF MAC. A summary of the results of the stock assessments follows.

Whiskery shark: The catch of whiskery shark increased slightly in 1997/98, with catches relatively constant in all areas. Catch rates for whiskery sharks decreased substantially during the late 1970s and early 1980s. Since reaching these low levels, the catch rates have only slowly declined. Estimates of the current level of biomass (relative to the virgin level) range from 19% to 47%, with the best estimate at 38.3%. Estimates of current biomass levels are substantially higher than in previous years as a result of an improved method of assessing the status of the stock. At this level of biomass, the whiskery shark stock is still considered over-exploited. Risk assessment was used to calculate the probability of attaining the stock target set by the WADGDLF MAC (40% or greater of the virgin level of biomass by 2010). It was estimated that an effort reduction of 50% of the 1996/97 effort level would be required for there to be a 70% chance of meeting this stock target. The 1997/98 level of effort is approximately 11% lower than in 1996/97.

Dusky whaler: The catch of dusky whalers in 1997/98 was substantially below that of the previous year. Catch rates of dusky whalers are difficult to interpret because of the long period from entering the fishery to attainment of maturity. The difficulties with interpreting the catch and effort information make estimation of current biomass levels impossible. To overcome the limitations of using catch and effort data in the assessment of the dusky shark stock, a tagging study is used to estimate the age-specific exploitation rate. Demographic analyses incorporating these results

indicate the current level of fishing is not over-exploiting the stock, provided the exploitation rate of mature animals does not exceed 4%. This is a reasonable assumption as there is no dedicated fishery targeting this sector of the stock.

Gummy shark: The total catch of gummy sharks in 1997/98 was similar to that for the previous three seasons. Catch rates of gummy sharks have remained relatively stable since the early 1980s, before which catch rates had declined. Estimates of the current level of biomass (relative to the 1975 level) range from 22.6% to 60.2%, with the best estimate at 42.7%. At this level of biomass, the gummy shark stock is considered fully exploited. Risk assessment was used to calculate the probability of attaining the stock target set by the WADGDLFMAC (40% or greater of the 1975 level of biomass by 2010). To achieve this target the effort level in the fishery needs to be less than 70% of the 1993/94 level to ensure that the stock target of 40% of original biomass is met. The 1997/98 level of effort is approximately 4% higher than in 1996/97 and 70.1% of the 1993/94 level of effort.

Breeding Stock Levels

Whiskery shark	Best estimate 38.3% of virgin level and stable
Dusky whaler	Not determined, but considered likely to be above 40% of the virgin level
Gummy shark	Best estimate 42.7% of 1975 level and stable

Catch Projection for Year 1998/99

Whiskery shark	200-250 tonnes
Dusky whaler	400-500 tonnes
Gummy shark	275-325 tonnes

Product Value for Year 1997/98

<i>JASDGLDF:</i>	\$2.84 million (shark and scalefish)
<i>WCDGDLIMF:</i>	\$1.44 million (shark and scalefish)

The estimate of the value of the fishery declined substantially from previous years, due largely to a review of the prices that fishers obtain for product. Product values for these fisheries do not include the value of shark fins, which are not reported on catch returns. At approximately 5% of live weight, and a price of \$20/kg, the estimated value of fins produced by these fisheries is \$1.4 million.

General Comments

Stock assessment indicates the need for further effort reductions to meet or maintain the long-term stock biomass targets for whiskery and gummy sharks respectively. Management measures addressing these

concerns are planned for introduction in the fisheries over the next three years. Assuming these measures are effective, the current level of exploitation of dusky whaler sharks appears to be sustainable, while the other two species are expected to stabilise and their breeding stock levels to gradually recover to acceptable levels.

North Coast Shark Fishery

MANAGEMENT OVERVIEW

The Western Australian-controlled sector of the North Coast Shark Fishery is managed by a notice implemented under section 43 of the *Fish Resources Management Act 1994*. This notice was first gazetted in May 1993 and covers the taking of shark in all waters off the north coast, from longitude 114°06' E to 123°45' E with longline, and from 114°06' E to the WA/NT border with dropline.

The taking of shark by longline and gillnet between 123°45' E and the WA/NT border is controlled by Joint Authority between Western Australia and the Commonwealth.

In light of changes to this fishery, in terms of jurisdiction and area, resulting from the most recent Offshore Constitutional Settlement arrangements in February 1995, FisheriesWA plans to implement a management strategy with one of the main aims being the minimisation of scalefish bycatch taken in the fishery.

There is a lack of knowledge regarding the dynamics of the target species in this fishery, and the lack of research in this area is a direct result of low fishing activity. The paucity of knowledge on northern shark species is not a problem unique to Western Australia, and to address this concern FisheriesWA is part of a cooperative approach to shark research across northern Australia that includes CSIRO and the Northern Territory and Queensland fisheries agencies.

COMPLIANCE AND COMMUNITY EDUCATION OVERVIEW

Limited fisheries compliance activities were directed at in this fishery in 1998/99. In view of its overall low level of production, it is likely to continue to have a low priority.

RESEARCH OVERVIEW

Research to monitor the status of the northern shark stocks has been undertaken as an extension of the south and west coast shark research project. To improve the state of knowledge on this sector, a