West Coast Demersal Scalefish Fishery Status Report

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Main Features

Status

Stock level	Inadequate
Fishing Level	
Commercial:	Acceptable
Recreational:	Unacceptable in 2005/06 (last available complete estimate)

Current Landings

Commercial sector:

WCDSIMF (2009)	303 t
DGDLF (2008/09)	77 t
Total	380 t

Indicator species	WCDSIMF (2009)	DGDLF (2008/09)
Pink Snapper	110 t	9 t
West Australian Dhufish	48 t	15 t
Baldchin Groper	11 t	3 t

Recreational sector (2005/06, last estimate)

Indicator species:	
Pink Snapper	40 t
West Australian Dhufish	186 t
Baldchin Groper	28 t

Charter sector (2009)

Indicator species:	
Pink Snapper	10 t
West Australian Dhufish	9 t
Baldchin Groper	7 t

Fishery Description

The West Coast Demersal Scalefish Fishery (WCDSF) includes mostly line-fishing operations by commercial, charter and recreational sectors. Up to about 100 species, mostly from the west coast inshore demersal scalefish suite, are caught in the fishery each year, with fishers in each sector primarily targeting West Australian Dhufish (*Glaucosoma hebraicum*) and Pink Snapper (*Pagrus auratus*). Substantial catches are also taken of other species in this suite, such as Baldchin Groper (*Choerodon rubescens*), Red Throat Emperor (*Lethrinus miniatus*) and Bight Redfish (*Centroberyx gerrardi*). A range of species is taken in offshore waters that belong to the west coast offshore demersal scalefish suite, including Eightbar Grouper *Hyporthodus octofasciatus*, Hapuku *Polyprion oxygeneios*, Blue-eye Trevalla *Hyperoglyphe antarctica* and Ruby Snapper *Etelis carbunculus*.

Commercial

A limited number of commercial fishers operate in the West Coast Demersal Scalefish (Interim) Managed Fishery (WCDSIMF). Fishers use handlines and droplines to target demersal species. However, fishers in the West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery (WCDGDLF), the Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (JASDGDLF), the West Coast Rock Lobster Managed Fishery, the Cockburn Sound Pot and Line Fishery and Commonwealth Western Deepwater Trawl Fishery operators also catch demersal species. Note, the WCDGDLF and the part of the JASDGDLF that operates within the boundaries of the WCDSF is referred to collectively as the demersal gillnet and demersal longline fisheries (DGDLF) in this section.

Fishing and Aquatic Tour Industry (Charter)
Demersal scalefish are targeted by the fishing activities of the charter boat industry in the West Coast Bioregion. Line fishing is the main method used by operators licensed to fish in that sector. A small number of fishing tour operators also cater for recreational diving charters.

Recreational
Recreational fishers that target demersal species in the WCDSF are almost exclusively boat-based. Line fishing is the main method used by recreational fishers, although spear fishing also occurs, but mainly in shallow waters, i.e. < 20 m deep.

Governing legislation/fishing authority

Fish Resources Management Act 1994

Fish Resources Management Regulations 1995

Commercial
Fishing Boat Licence

West Coast Demersal Scalefish (Interim) Management Plan 2007

West Coast Demersal Scalefish Interim Managed Fishery Permit

Fishing and Aquatic Tour Industry (Charter)
Fish Resources Management Regulations 1995 and recreational fishing regulations

Fishing Tour Operator Licence, Restricted Fishing Tour Operators Licence and/or Aquatic Eco-Tourism Licence

Recreational
Recreational fishing regulations

Consultation process

Commercial
Meetings between the Department of Fisheries and permit holders in the West Coast Demersal Scalefish Interim Managed Fishery.

The Western Australian Fishing Industry Council

Fishing and Aquatic Tour Industry (Charter)
Recreational Fisheries Advisory Committee (RFAC)

Charter Boat Owners & Operators Association

Recfishwest

Recreational
RFAC and a network of 12 Regional Recreational Fishing Advisory Committees

Recfishwest

Boundaries

Commercial fishery
The WCDSIMF encompasses the waters of the Indian Ocean just south of Shark Bay (at 26°30’S) to just east of Augusta (at 115°30’E) and extends seaward to the 200 nm boundary of the Australian Fishing Zone (AFZ). The commercial fishery is divided into five management areas comprising four inshore zones and one offshore zone. The inshore zones, i.e. Kalbarri, Mid-West, Metropolitan and South-West, extend outwards to the 250 m depth contour, while the Offshore zone extends from the 250 m depth contour to the boundary of the AFZ (West Coast Demersal Scalefish Figure 1). The Metropolitan Inshore zone was closed to commercial operators in the WCDSIMF and WCDGDLF (West Coast Demersal Scalefish Figure 1) in November 2007.

Fishing and Aquatic Tour Industry (Charter) and Recreational fishery
The boundaries applicable to the charter and recreational sectors in the West Coast Bioregion encompass the waters of the Indian Ocean just south of Shark Bay (at 27°00’S) to just east of Augusta (at 115°30’E) and extend seaward to the 200 nm boundary of the AFZ (West Coast Demersal Scalefish Figure 1). The exact latitudes and longitudes delineating the tour management zones of the charter fishery are listed in Schedule 15 of the Fish Resources Management Act 1994.

Management arrangements

Commercial
The West Coast Demersal Scalefish (Interim) Managed Fishery was established in January 2008, following the introduction of the *West Coast Demersal Scalefish (Interim) Management Plan 2007*. Access to the Fishery is restricted to 61 Interim Managed Fishery Permit holders. Gear and other restrictions apply (in the form of maximum numbers of lines and hooks and arrangements regulating the carriage of lines and fish) and boats are monitored under the Vessel Monitoring System (VMS).

Each of the four inshore management areas is allocated a maximum number of hours of fishing time that may be fished on an annual basis. Units are allocated to permits and provide entitlement in “hours” of fishing time. The use of VMS allows fishing effort to be monitored and entitlement acquitted accordingly. The total capacity of the Fishery restricts fishing effort at a level to ensure that the demersal scalefish catch limits are not exceeded. The capacity can be adjusted, as required.

The primary management objective is to maintain scalefish catches to at least 50 % of those of scalefish catches recorded in the West Coast Bioregion during 2005/06. The catch in each management zone also should not exceed 50 % of the 2005/06 catch in that zone. Additional specific management objectives (50 % of the 2005/06 catch) are set for each indicator species (Pink Snapper, Western Australian Dhufish and Baldchin Groper) in the WCDSIMF and in each zone in which they are an indicator. The status of the three indicator species are used to indicate the status of the entire west coast demersal suite of scalefish species.

Fishers are required to report their catch using daily/trip statutory fishing returns, which provide the Department of Fisheries with fine-scale reporting (10nm x 10nm blocks) for enhanced catch and effort analyses.

Fishing and Aquatic Tour Industry (Charter)
There are three types of fishing and aquatic tour licence categories.

Fishing Tour Operators Licence: The focus is on fishing activities where fish can be taken home at the end of the tour.

Restricted Fishing Tour Operators Licence: The focus is on eco-tourism activities, such as snorkelling or scuba diving, with fishing only allowed for the purpose of a meal eaten during the course of the tour. No fish can be taken home at the end of the tour and any fishing for a meal must be done with a handline. Fishing rods are not permitted on this tour category.

Aquatic Eco-Tourism Operators Licence: The focus is entirely on eco-tourism activities and fishing is strictly prohibited.

Within each category, there is the provision for a boat-based operation (boat size larger than 7.5 m), a combination land/aircraft/boat (boat size less than 7.5 m) based operation and a land-based operation. Except where extraordinary circumstances can be demonstrated by the applicant, new Fishing Tour Operators Licences are no longer granted. Applications for Restricted Fishing Tour Operators Licences and Aquatic Eco-Tourism Operators Licences are still considered. Currently, the consideration of any Tour Operator's Licence Application is carried out in accordance with Regulations 128B and 128J of the Fish Resources Management Regulations 1995 and Ministerial Policy Guideline No. 12 'Assessment of Applications for the Granting, Renewal or Transfer of Fishing Tour Operators Licences and Aquatic Eco-Tourism Operators Licences' All fishing is subject to recreational fishing regulations (see below).

Catches reported in this document are from records of fishing from all vessels operating under the Fishing Tour Operators Licence and those vessels that fished operating under the Restricted Fishing Tour Operators Licence.

Recreational
The recreational fishery for west coast demersal scalefish is managed using input (e.g. size limits, seasonal spawning closures for particular species and spatial closures) and output controls (e.g. limits on the numbers of fish that can be taken by individuals and boats).

A suite of new management arrangements was introduced during 2009/10 aimed at reducing the recreational take of demersal scalefish in the West Coast Bioregion by at least 50% from 2005/06 levels. Fishing for "high risk" demersal scalefish will be prohibited during a two month closed season between 15 October and 15 December. From 15 December 2009 the existing boat limit for "high risk" species will be revoked and the "high risk" species category (combined daily bag limit of four fish) will be separated into a "high risk demersal" species category (combined daily bag limit of two fish) and a "pelagic" species category (combined bag limit of two fish).

The individual daily bag limit for dhufish will be reduced from 2 to 1 fish and a boat limit of two dhufish will apply on a private recreational boat. A boat limit of six dhufish will apply on a licensed charter boat. The minimum legal size limit for pink snapper will increase from 45 cm to 50 cm when taken from the waters of the West Coast Bioregion, south of Lancelin.

To assist in minimising the effects of barotrauma, boat fishers will also be required to carry a 'release weight' to fish for, or be in possession of demersal scalefish in the waters of the West Coast Bioregion. From 2 March 2010 all persons fishing from a powered boat anywhere in the state will be required to hold a Recreational Fishing from Boat Licence or fish in the company of a licence holder. The Recreational Fishing from Boat Licence will provide a state-wide database of recreational boat fishers for survey purposes.

Research summary

Research in the WCDSF is focused on monitoring the status of the indicator species for the fishery, which are West Australian Dhufish, Pink Snapper and Baldchin Groper. They were chosen both because of their importance to the fishery, but also because of their inherent vulnerability to fishing, e.g. they are long-lived, have low natural mortality and are relatively slow growing. Their status is used to indicate the status of the entire west coast inshore demersal suite of scalefish species.

Fish frames of the indicator species are collected from both recreational and commercial fishers in the different zones of the West Coast Bioregion (West Coast Demersal Scalefish Figure 1). Otoliths are used to determine age compositions for each zone and, from which, estimates of fishing mortality are calculated which enables the status of the stocks to be determined.

Surveys of boat-based recreational fishing continued in 2009.

Catch and effort data both for the commercial and charter sectors were monitored from fishers' daily/trip logbooks, which provide fine-scale data from 10 nm × 10 nm and 5 nm × 5 nm blocks, respectively. Onboard validation of logbook entries will be conducted in the future.

Estimates of the number of individuals of demersal species caught as bycatch by the Rock Lobster fishery were determined from at-sea monitoring in 2008/09. Full details are reported in the Rock lobster fishery status report.

A WAMSI-funded project is underway to investigate the stock structure of West Australian Dhufish, Pink Snapper and Baldchin Groper in the West Coast Bioregion and is a collaboration between the Department of Fisheries, CSIRO and Murdoch University. The project is using both genetic and otolith microchemistry techniques, but is also examining oceanographic influences on larval dispersal.

A project to investigate site-fidelity of adult Pink Snapper to Cockburn Sound spawning aggregations commenced in 2009, using acoustic telemetry techniques.

Surveys of the numbers of Pink Snapper eggs in Cockburn Sound were conducted to produce an estimate of spawning stock biomass using a daily egg production model.

A State NRM-funded project focused on small juvenile West Australian Dhufish (< 150 mm in length) also commenced in early 2010.

Retained Species

Commercial production

WCDSIMF (2009)	**303 tonnes**
DGDLF (2008/09)	**77 tonnes**
Total	**380 tonnes**

Indicator species

WCDSIMF (2009)	
Pink Snapper	**110 tonnes**
West Australian Dhufish	**48 tonnes**
Baldchin Groper	**11 tonnes**
DGDLF (2008/09)	
Pink Snapper	**9 tonnes**
West Australian Dhufish	**15 tonnes**
Baldchin Groper	**3 tonnes**
Total	
Pink Snapper	**119 tonnes**
West Australian Dhufish	**63 tonnes**
Baldchin Groper	**14 tonnes**

Mackerels, bluefin tunas, sharks and rays are not permitted to be retained by fishers in the West Coast Demersal Scalefish Interim Managed Fishery (WCDSIMF). Catches of these species are reported elsewhere.

Landings

As permits are issued for the calendar year, commercial catches will now be reported in the same way. This is in contrast to years prior to the commencement of the WCDSIMF, for which, catches were reported according to financial year.

In 2009, 303 t of scalefish were caught by commercial fishers in the WCDSIMF, which was 110 t less than in 2008, of the total catch, 281 t comprised demersal species. The lower overall catch would have been influenced by the introduction of the entitlements in the latter year and the effects that had on fishing behaviour as permit-holders rearrange their fishing activities under the new management plan. Commercial catches in the Kalbarri, Mid-west, South-west and Offshore zones in 2009 were 118, 116, 63 and 6 t, respectively, and those zones comprised 112, 101, 62 and 6 t of demersal species.

The WCDSIMF catch in 2009 consisted of 72 scalefish species or species groups, 51 of which belong to the west coast inshore and offshore demersal scalefish suites and 21 are from either the west coast pelagic or nearshore scalefish suites. Six species comprised 87 % of the total catch and included the three demersal indicator species, *i.e.* Pink Snapper (110 t), West Australian Dhufish (48 t) and Baldchin Groper (11 t). The other three species/species groups were the Redthroat Emperor (41 t), Redfish (*Centroberyx* spp 42 t) and the pelagic Samson Fish (16 t). Catches of species from the west coast offshore demersal suite, such as Eightbar Grouper and Hapuku, were each less than 2 t.

Catches of scalefish in the DGNDLF in 2008/09 (77 t) comprised 64 t of demersal species. These catches have declined from those of demersal species in 2007/08 (84 t) (West Coast Demersal Scalefish Table 1).

West Australian Dhufish: The total WCDSIMF catch of 48 t of dhufish in 2009 was 27 t less than in 2008. Of that, approximately 3, 30 and 15 t were caught in the Kalbarri, Mid-West and South-west zones, respectively (West Coast Demersal Scalefish Figure 2). The catch of dhufish in the DGDLF was 14.5 t in 2008/09, which is less than in 2007/08 (19.9) (West Coast Demersal Scalefish Table 1).

Pink Snapper: The WCDSIMF catch of Pink Snapper in 2009 (110 t) was lower than in 2008 (141 t). The vast majority of Pink Snapper was caught in the Kalbarri (66 t) and Mid-west zones (41 t), with only 3 t taken in the South-west zone (West Coast Demersal Scalefish Figure 3). In the DGDLF, the catch of Pink Snapper fell from 14 t in 2007/08 to 8.6 t in 2008/09 (West Coast Demersal Scalefish Table 1).

Baldchin Groper: In 2009, approximately 11 t of Baldchin Groper was landed, almost exclusively in the Mid-west (10 t) and Kalbarri zones (1 t), with approximately 8 t of that being caught by WCDSIMF entitlement holders operating within the boundaries of the Abrolhos Zone A of the West Coast Rock Lobster Fishery (Abrolhos zone). The total catch is similar to the 12 t taken in 2008 and below the limit of 17 t for the WCDSIMF (West Coast Demersal Scalefish Figure 4). The DGDLF catch of Baldchin Groper increased slightly to 3.2 t in 2008/09 from 2 t in 2007/08 (West Coast Demersal Scalefish Table 1).

Last available recreational catch estimate (excluding charter, 2005/06)

Dhufish:	**186 tonnes**
Pink Snapper:	**40 tonnes**
Baldchin Groper:	**28 tonnes**

The last published creel survey was conducted in 2005/06 which estimated that 186 t of dhufish and 28 t of baldchin groper were retained, similar to the catch levels of these species by the commercial sector during the same period. The 40 t of pink snapper retained by recreational boat fishers in this period was much lower than the commercial sector (278 t) in that year.

Subsequently, creel based surveys of boat-based recreational fishers in the Metropolitan zone of the West Coast Bioregion were undertaken in 2007/08; for the whole Bioregion in both 2008/9 and 2009/10. Analyses of these data are still being completed using the updated techniques suggested by an independent review of the recreational estimation techniques that occurred in 2009/10. In addition to publishing the estimates for the new surveys, the Department will re-analyse the historical recreational catch and effort data and generate new estimates of recreational catch and effort for the West Coast Demersal Scalefish fishery. Using the new analysis methods, it is likely that historical recreational catch estimates will increase and there will be wider confidence limits around these estimates.

Charter catch (2009)

Pink Snapper: 10 tonnes

West Australian Dhufish: 9 tonnes

Baldchin Groper: 7 tonnes

The charter boat catches of Pink Snapper and West Australian Dhufish in 2009[1] were lower than in the 2007/08 financial year, i.e. 10 vs 22 and 9 vs 15 t, respectively, while those of Baldchin Groper were similar to 2007/08 (7 vs 8 t) (West Coast Demersal Scalefish Table 2). Those three species were the highest ranked in terms of catch, while catches of other species, where weights could be determined, did not exceed 4 t.

Fishing effort/access level

Commercial

Permit holders in the WCDSIMF are allowed to fish from 1st January to 31st December each year and are allocated entitlements (hours) to fish in specific zones of the fishery in that year. Entitlements based on hours were allocated for the first time for the 2009 fishing year.

Previously only statutory logbooks were required which produced estimates of effort as days fished, i.e. the sum of the days on which each vessel fished in each zone. This did not reflect the number of hours fished. The total number of days fished in 2008 (2,435) and 2009 (1,445) is markedly lower than in the financial years prior to the WCDSIMF, e.g. 8,486 days in 2006/07.

Commercial fishers now report the hours spent searching and fishing, the length of their fishing sessions and their trips in statutory daily/trip logbooks. The calculation of effort and the most appropriate measure for use in the calculation of catch per unit effort (CPUE) will be reviewed in 2012, as part of the next stock assessment.

In 2009, 46 permitted vessels fished for approximately 14,700 hours. In the Kalbarri zone, 4,056 fishing hours were reported by 17 vessels, while 8,015 (35 boats) and 2,623 hours (8 boats) were reported for the Mid-west and South-west zones, respectively. Note that some vessels have entitlements to fish in more than one zone.

Recreational

Total recreational fishing effort for the West Coast Bioregion is not yet available for 2009.

Fishing and Aquatic Tour Industry (Charter)

During 2009[2], 67 charter licenses reported having undertaking charter fishing operations on 14,731 days which represents about 67 % of the effort in the 2007/08 financial year.

1 At the time of writing this report, 90 % of charter fishery logbooks had been submitted for 2009.

2 At the time of writing this report, 90 % of charter fishery logbooks had been submitted for 2009.

Stock Assessment

Assessment complete

Yes (last full assessment 2007/08)

Assessment method (Full) Fishing mortality

(Intervening Period) Catch by sector

Breeding stock levels

Pink Snapper: Inadequate

West Australian Dhufish: Declining

Baldchin Groper: Declining

Assessments of the status of the stocks in the WCDSF are conducted primarily from the determination of estimates of rates of fishing mortality (F), using a range of methods, for each of the indicator species (West Australian Dhufish, Pink Snapper and Baldchin Groper). The estimates of F for these indicator species are used to reflect the status of the entire inshore demersal suite of species in the West Coast Bioregion. In addition to periodic assessments of fishing mortality, annual monitoring of fishery status is achieved by comparing catch and effort data (if available) in each sector of the fishery with catch limits for those sectors.

Age compositions of the indicator species derived from samples collected in 2007/08, were dominated by fish less than 15, 10 and 15 years of age, respectively, for dhufish, snapper and baldchin. Using the resultant F values and other ancillary information within a weight of evidence based approach, indicated that the breeding stocks for both dhufish and baldchin were declining while that of pink snapper was considered to be inadequate. Two independent external reviews supported these conclusions. For further details see the State of the Fisheries Report 2008/09.

There is limited biological information for targeted offshore demersal species (Eightbar Grouper, Bass Groper, Hapuku, Blue-eye Trevalla and Ruby Snapper). These deepwater species are particularly vulnerable In the west coast Bioregion to overfishing, as the limited knowledge of their biology indicates that they are long-lived and would therefore have low rates of natural mortality and productivity (Wakefield and Newman, 2008[3]; Wakefield et al., 2010[4]). In addition, some aggregate to spawn and most suffer barotrauma due to the depths in which they are fished (> 250 m). Risk to the stocks of these species is considered to be medium.

3 Wakefield, C.B., & Newman, S.J. (2008) Age estimation and reproductive status of an exceptionally large blue-eye trevalla (*Hyperoglyphe antarctica*, Centrolophidae) captured off the south coast of Western Australia. Cybium, 32, 321-324.

4 Wakefield, C.B., Newman, S.J. & Molony, B.W. (2010) Age-based demography and reproduction of hapuku, *Polyprion oxygeneios* (Polyprionidae), from the south coast of Western Australia: implications for management. ICES Journal of Marine Science, 67, 1164-1174.

Using the assessments of the indicator species as outlined above, the ecological risks to the suites of inshore and offshore demersal species in the West Coast Bioregion are currently assessed as being high and medium/high respectively (see Fletcher, *et al.,* 2010[1] for details). The inshore suite also has high risks associated with meeting the social and economic objectives for the community. This combination of factors means that this suite of species has been assigned an urgent priority for Departmental actions. The urgent priority and high ecological risk associated with the inshore demersal suite indicates that this suite will require a high level of monitoring and assessment. The offshore suite is currently considered to have a medium level priority.

Non-Retained Species

Bycatch species impact **Medium**

Line fishing for demersal species using baited hooks is highly selective. Other species that are caught but not retained during demersal fishing activities (this includes inedible species e.g. Silver Toadfish and small species, such as wrasses) are often susceptible to the effects of barotrauma and the substantial numbers of these released fish may not survive.

Protected species interaction **Negligible**

As line fishing is highly selective, interactions with protected species are minimal. Commercial and charter fishers are required to record protected species interactions in their logbooks. During 2009, charter vessels interacted twice with grey nurse sharks and twice with Albatrosses. Each animal was released alive.

Ecosystem Effects

Food chain effects **Low**

An FRDC study examined the last 30 years of catch data by all commercial fisheries in this region and found no evidence of any shift in community structure of this suite of species or in the relative proportion of different trophic levels in the catch.

Habitat effects **Negligible**

The main fishing method used in the commercial and recreational fishery for demersal species (line fishing), has little physical impact on the benthic environment.

[1] W.J. Fletcher, J. Shaw, S.J. Metcalf & D.J. Gaughan (2010) An Ecosystem Based Fisheries Management framework: the efficient, regional-level planning tool for management agencies. Marine Policy 34 (2010) 1226–1238

Social Effects

Commercial

A total of 61 permits to fish in the WCDSIMF were used on 46 permitted vessels in the fishery during 2009 and, on average, employed one crew member.

Fishing and Aquatic Tour Industry (Charter)

Licenses to fish in the charter sector of the WCDSF are reissued on a financial year basis. Thus, data is presented for the last two financial years. In 2008/09, there were 131 charter operators who were licensed to operate in the West Coast bioregion via a Fishing Tour Operators Licence and 21 who held a Restricted Fishing Tour Operators Licence and/or an Aquatic Eco-Tourism Operators Licence, while in 2009/10, 125 were licensed only to fish and 23 to fish and run eco-tours. The number of people employed in the charter industry has not been estimated.

Recreational Fishing

Approximately 70,000 recreational fishing from boat licenses have been issued across the state since 2nd March 2010.

Economic Effects

Estimated annual value (to commercial fishers)

for year 2009 **$2.94 million**

The estimated value of the WCDSIMF in 2009 ($2.94 million) was less than that of the previous reported financial year, i.e. 2007/08 ($3.4 m), as a result of the reduction in effort and catch. Catches of West Australian Dhufish and Pink Snapper contributed $828,000 ($17.06/kg) and $1,034,000 ($9.47/kg), respectively, to the fishery, while Redthroat Emperor contributed $325,000 ($7.99/kg), Bight Redfish $272,000 ($7.29/kg) and Baldchin Groper $136,000 ($12.10/kg). Prices per kg vary with supply and demand and are based on the average price in 2009. Values reported are for the fishing year of 2009, not financial year.

Fishery Governance

Commercial

Current Fishing (or effort) level **Acceptable**

Catch (or effort) limit range:

WCDSIMF **449-469 tonnes**

WCDGDLF/JASDGNDLF (West Coast Bioregion)

80 tonnes

All commercial **< 550 tonnes**

The catch limit for demersal species in the WCDSIMF for 2009 (449-469 t) was based on 50 % of the 2005/06 catch of wetline fishers in the Kalbarri, Mid-west and South-west zones and also allows ca. 30 t to be taken in the Offshore zone. Acceptable catch levels for each of the indicator species in each zone in which they are an indicator are similarly based on 50 % of their 2005/06 catches (West Coast Demersal Scalefish Table 3). Note that there is now no longer any commercial wetline or gillnet/longline fishing in the Metropolitan zone.

The total commercial catch of demersal species in the WCDSIMF of 303 t in 2009 was below the catch limit, reflecting the restrictions placed on effort in the fishery. Similarly, the total catch of each indicator species in the WCDSIMF and of all species in each zone was below their respective limits (West Coast Demersal Scalefish Table 3). The catch of each indicator species in each zone was below its limit for that zone, except in the case of Pink Snapper in the Kalbarri and the Mid-west zones, where the catch was approximately the same as the limit.

For the purposes of Integrated Fisheries Management, commercial catches of scalefish species by the WCDSIMF and DGDLF in the West Coast Bioregion in 2009 would have been likely to be below the acceptable catch level for that year.

Recreational/charter

Current Fishing level **To be determined**

Catch (or effort) limit range (2009/10):

< ca. 200 tonnes

The proposed catch limit range for the suite of demersal species in the recreational and charter sectors in the West Coast Bioregion for the 2009/10 year is at most 50 % of the 2005/06 level, i.e. < 200 tonnes. The level of reduction to the recreational catch will be dependent on the effect the changes to the management had on those sectors.

New management initiatives

Commercial

A review of the first year of operation of the Fishery since the introduction of entitlements will occur during the latter half of 2010. Formal decision rules will be developed to determine how the various target catch reductions by the different commercial sectors will be most efficiently achieved.

Recreational/Charter

A review of the effectiveness of the newly introduced recreational arrangements to achieve the 50% reduction in catch from 05/06 levels will be made during the latter half of 2010. The formal Integrated Fisheries Management arrangements for this fishery are expected to be finalised.

External Factors

Recruitment success of both West Australian Dhufish and Pink Snapper is highly variable and influenced by environmental factors. Thus, the stocks of those species and catches in the fishery mainly rely on a limited number of strong recruitment years. This is likely to be similar for other long-lived species in the WCDSF.

Cockburn Sound is the only known spawning aggregation location for Pink Snapper in the West Coast Bioregion. Furthermore, juveniles use the area as a nursery for approximately one and a half years following settlement, before leaving Cockburn Sound. Ongoing industrial development in the area may have detrimental effects on the environmental conditions that are important for both spawning and juvenile survival and thus influence future recruitment success from Cockburn Sound to the West Coast Bioregion.

The Commonwealth Western Deepwater Trawl Fishery fishes in waters along the west coast of Australia in waters from the 200 m isobath to the boundary of the AFZ and between approximately Exmouth and Augusta. This fishery overlaps the WCDSF and has obtained substantial catches, in several years, of demersal species of interest, e.g. Ruby Snapper *Etelis carbunculus* and Deepwater Flathead *Platycephalus conatus*. The geographical overlap of catches by the two fisheries indicates that they are likely to be fishing the same stocks.

The Commonwealth's South-west Marine Bioregional Plan incorporates the aim of introducing marine reserves, which are likely to contain areas closed to fishing. This has the potential to restrict access to fishing in parts of the West Coast Bioregion to all sectors, i.e. commercial, recreational and charter.

WEST COAST DEMERSAL SCALEFISH TABLE 1.

Catches of the demersal gillnet and demersal longline fisheries in the West Coast Bioregion (WCB) from 2006/07-2008/09, which comprises those of the West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery and the part of the Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery that operates in the WCB.

	2006/07	2007/08	2008/09
West Australian Dhufish	19.2	19.9	14.5
Pink Snapper	16.8	14.0	8.6
Baldchin Groper	3.7	2.0	3.2
Other scalefish	85.8	61.6	51.1
Demersal species	96.3	83.6	64.2
Total scalefish	**125.5**	**102.4**	**77.4**

WEST COAST DEMERSAL SCALEFISH TABLE 2.

Catches of West Australian Dhufish, Pink Snapper and Baldchin Groper by charter fishers in the West Coast Bioregion between 2005/06 and 2009.

	2005/06	2006/07	2007/08	2009
West Australian Dhufish	20.5	18	15	9
Pink Snapper	17	24	22	10
Baldchin Groper	10	11	8	7

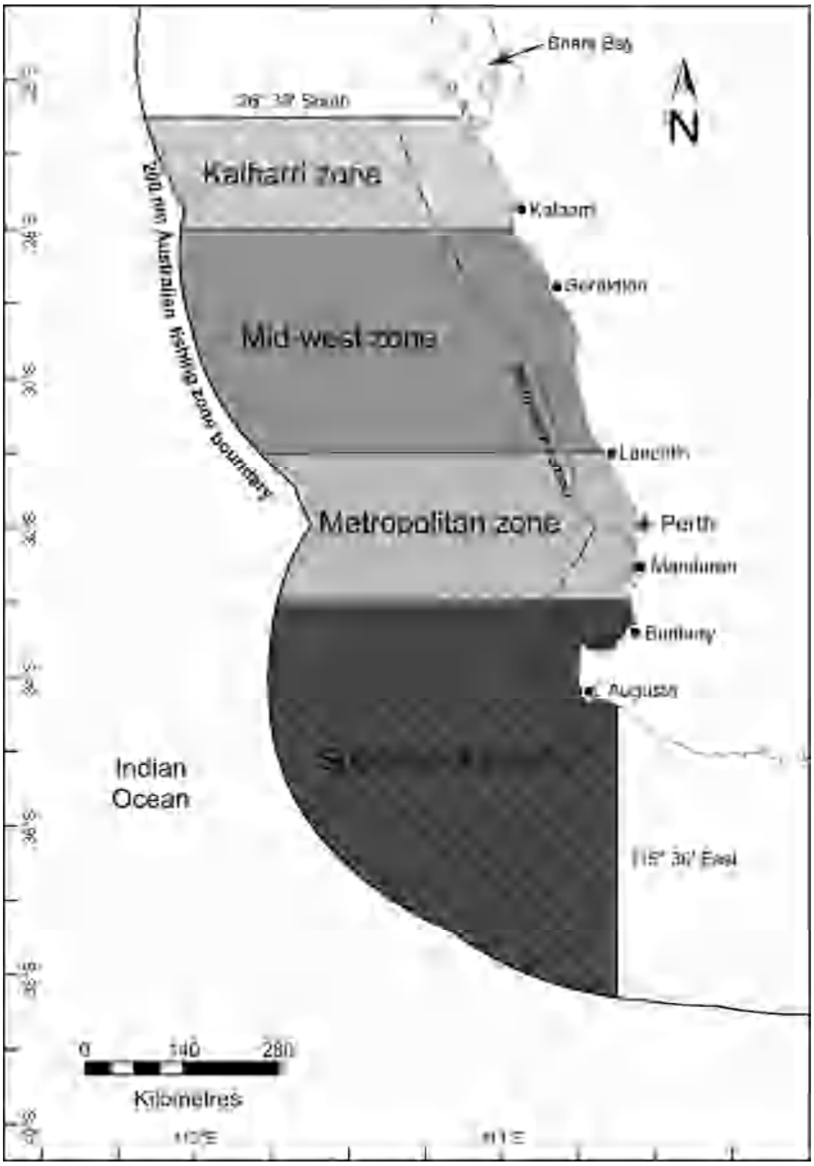
WEST COAST DEMERSAL SCALEFISH TABLE 3.

Acceptable catch levels for each zone and the indicator species in each zone of the WCDSIMF and their totals.

	Zone				
	Kalbarri	Mid-west	South-west	Offshore	Total WCDSIMF[A]
WCDSIMF	150	197	82	20-40	449-469
West Australian Dhufish	-	44	19	-	72
Pink Snapper	65	43	12		120
Baldchin Groper		9[B]			17

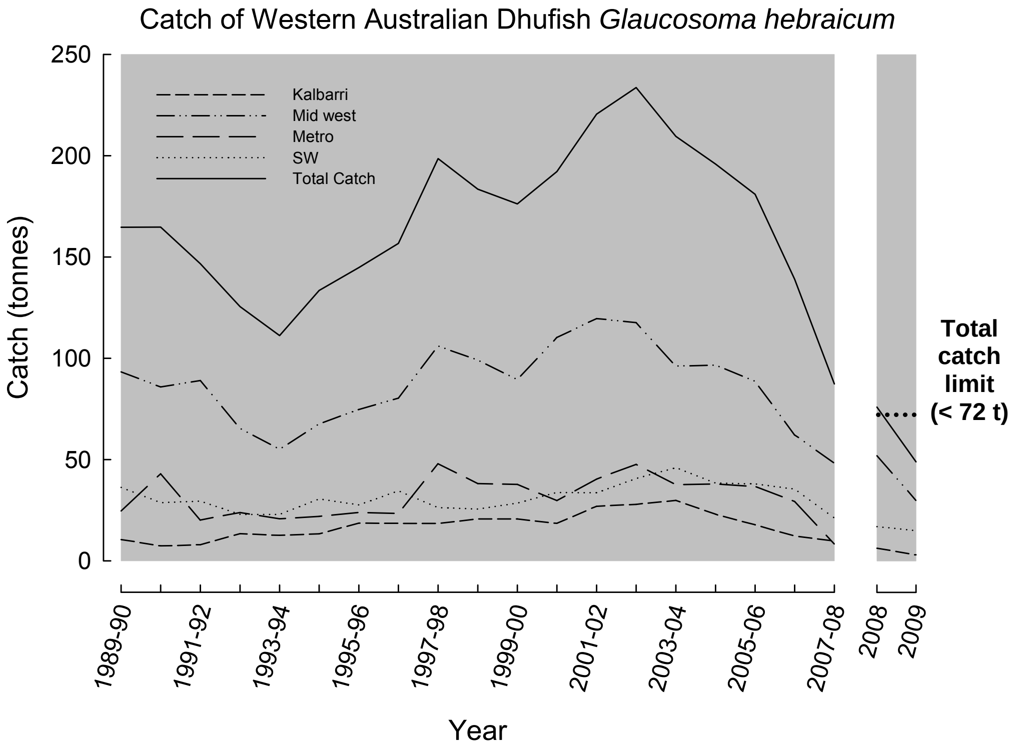
[A]Total catch limit for the WCDSIMF represents the sum of the limits in each zone. Indicator species are taken not only in zones where they are an indicator. Thus, the total catch limit for indicator species for the WCDSIMF is, in some cases, greater than the sum of the zones.

[B]The limit for Baldchin Groper represents the limit for the area of the Rock lobster fishery Zone A (Abrolhos Islands), where this species is an indicator.



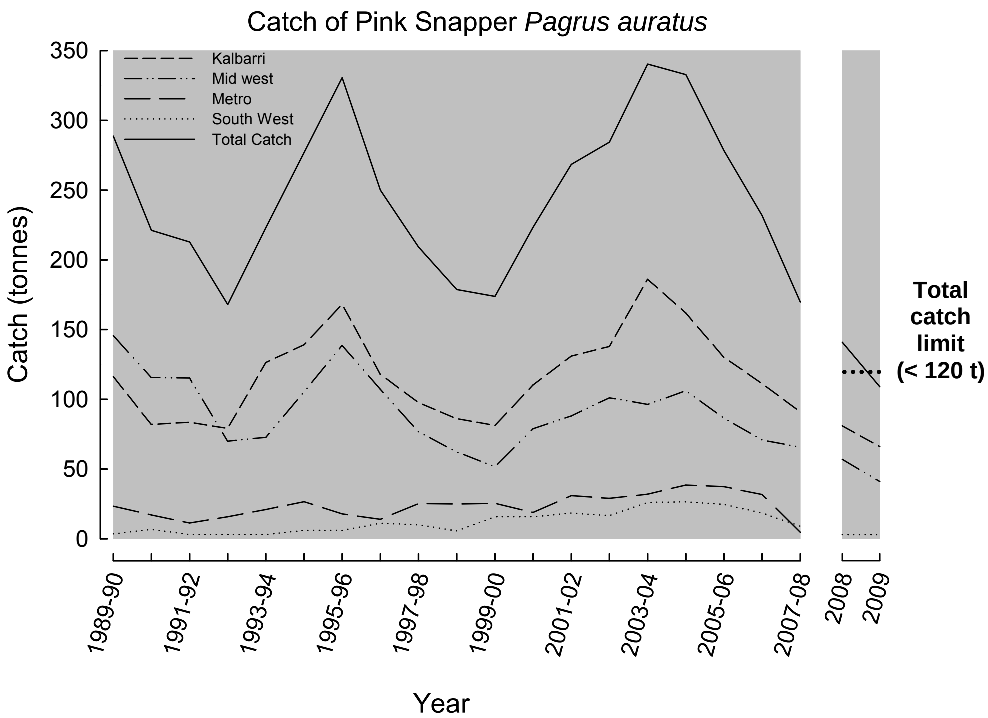
WEST COAST DEMERSAL SCALEFISH FIGURE 1

Map showing the boundaries of the West Coast Demersal Scalefish Fishery. Note the northern boundary of 26°30’ S applies to the commercial fishery and is the proposed future boundary for the charter and recreational fishery. The Kalbarri, Mid-west, Metropolitan and South-west zones applicable to the recreational and charter sectors extend from the coast seawards to the Australian Fishing Zone boundary (AFZ), while for the commercial sector those four zones extend from the coast to the 250 m depth contour. The commercial fishery also comprises an offshore zone, which encompasses the waters from the 250 m depth contour outwards to the boundary of the 200 nm AFZ and from 26°30’ S to 115°30’ E.



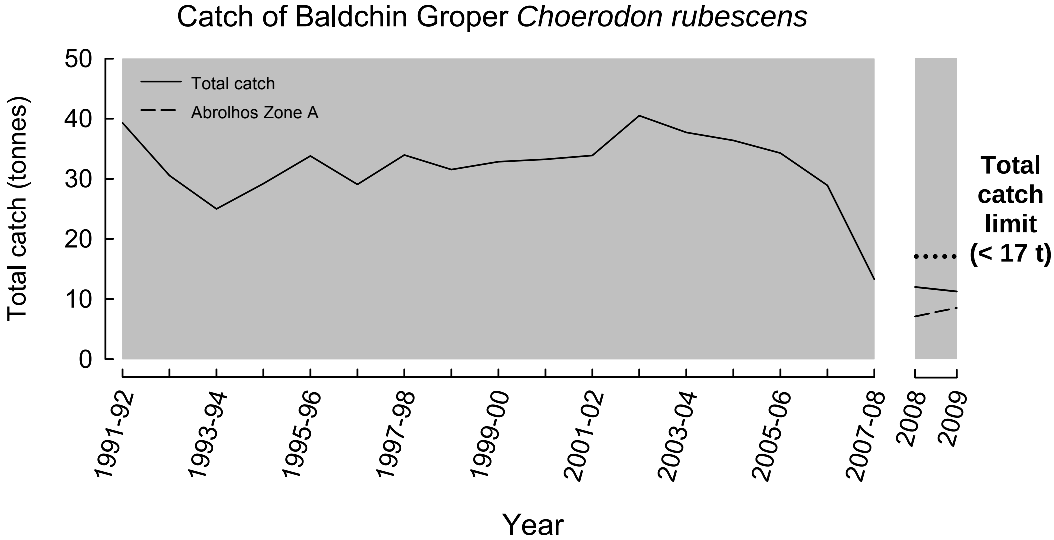
WEST COAST DEMERSAL SCALEFISH FIGURE 2

Total catch and catch by zone of West Australian Dhufish *Glaucosoma hebraicum* by commercial wetline fishers in the West Coast Bioregion between 1989/90 and 2007/08 and in the West Coast Demersal Scalefish (Interim) Managed Fishery in the calendar years 2008 and 2009.



WEST COAST DEMERSAL SCALEFISH FIGURE 3

Total catch and catch by zone of Pink Snapper *Pagrus auratus* by commercial wetline fishers in the West Coast Bioregion between 1989/90 and 2007/08 and in the West Coast Demersal Scalefish (Interim) Managed Fishery in the calendar years 2008 and 2009.



WEST COAST DEMERSAL SCALEFISH FIGURE 4

Total catch of Baldchin Groper *Choerodon rubescens* by commercial wetline fishers in the West Coast Bioregion between 1991/92 and 2007/08 and total catch in the West Coast Demersal Scalefish (Interim) Managed Fishery and catch in the Abrolhos Zone A of the Western Rock Lobster fishery in the calendar years 2008 and 2009.

Octopus Fishery Status Report

A. Hart and D. Murphy

Management input from R. Gould and M. Coloper

Main Features

Status		Current Landings	
Stock level	Acceptable	Commercial – Statewide	71 t
Fishing level	Acceptable	Recreational – Statewide (2001 estimate)	17 t

Fishery Description

The octopus fishery in Western Australia primarily targets *Octopus cf. tetricus*, with occasional bycatch of *O. ornatus* and *O. cyanea* in the northern parts of the fishery, and *O. maorum* in the southern and deeper sectors.

Fishing activities targeting octopus in Western Australia can be divided in four main categories. The West Coast Rock Lobster Managed Fishery (WCRLF) harvests octopus as a by-product, and currently accounts for the majority of total octopus landings. The Cockburn Sound (Line and Pot) Managed Fishery (CSLPF), uses unbaited or passive (shelter) octopus pots; the Developmental Octopus Fishery (DOF) uses both passive shelter pots and active (trigger pots) traps to selectively harvest octopus. Recreational octopus fishing consists of by-catch from recreational lobster and crab pots, and targeted octopus fishing, mostly by SCUBA divers. In addition to these 4 main sectors, numerous trawl and trap fisheries land small amounts of octopus as a by-product.

Governing legislation/fishing authority

Cockburn Sound (Line and Pot) Management Plan 1995

Instrument of Exemption (Section 7(3)(c) of the *Fish Resources Management Act 1994*)

West Coast Lobster Management Plan 1993

Consultation process

Meetings between the Department of Fisheries and industry

Developing Fisheries Advisory Committee

Boundaries

Recreational octopus fishing is permitted to operate throughout Western Australian waters, with the exception of