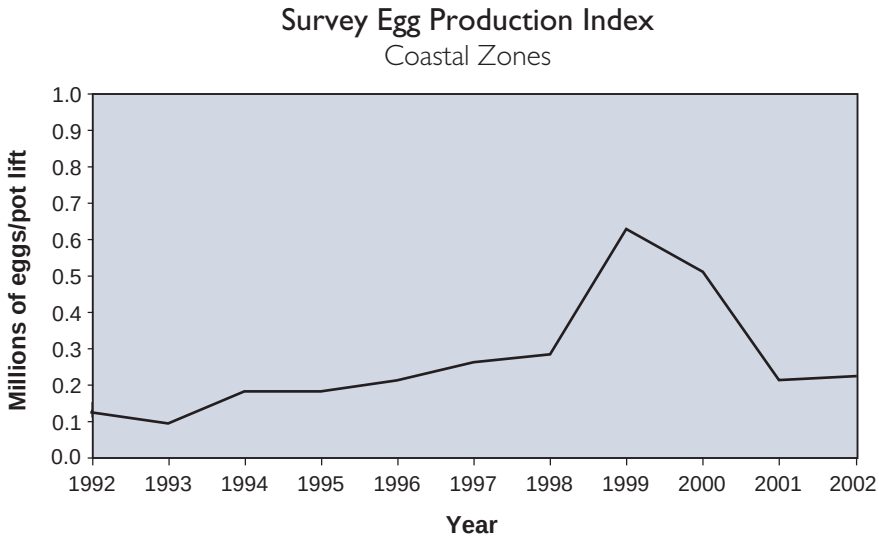


WEST COAST ROCK LOBSTER FIGURE 5

Annual indices of puerulus settlement for the Abrolhos (A Zone), Seven Mile Beach (Dongara) (B Zone) and Alkimos (C Zone).

Minor Scallop Fisheries

Management Summary

Several minor trawl fisheries contribute to the Western Australian scallop catch – primarily the Abrolhos Islands and Mid West Trawl Managed Fishery (AIMWTF), the South West Trawl Managed Fishery (SWTF) and the small South Coast Trawl Fishery. Each fishery takes saucer scallops (*Amusium balloti*), which typically have highly variable recruitment. As a consequence, the catch in these fisheries varies greatly from year to year. In particular, the catch in the South Coast Trawl has shown large variations in recent years with significant catches being taken in 2000 and 2001.

All scallop fisheries operate under input controls, with restrictions on boat numbers and gear as well as seasonal and area closures.

The South West Trawl Management Plan was amended during 2002/03 to allow for the unitisation of fishing gear, which took effect on 1 October 2002.

Bycatch reduction devices were fully implemented in the AIMWTF as a licence condition for the 2002 Abrolhos Islands season.

The Vessel Monitoring System (VMS), a satellite tracking system used to monitor the movement of vessels within the waters of a fishery, was introduced into management arrangements for the AIMWTF in April 2001.

A draft application has been submitted for the AIMWTF and the South Coast Trawl as part of Environment Australia's ecological sustainability reporting process under the *Environment Protection and Biodiversity Conservation Act 1999*. A final application is being developed which will be submitted to EA in 2004.

Governing Legislation/Fishing Authority

Abrolhos Islands
Abrolhos Islands and Mid West Trawl Management Plan 1993
Abrolhos Islands and Mid West Trawl Managed Fishery Licence

South West Trawl
South West Trawl Management Plan 1989
South West Trawl Managed Fishery Licence

South Coast
Trawling Prohibition (Whole of State) Notice 1992 (Order)
Surface Trawl Net Fishery (South Coast) Notice 1992
Trawling for Scallops (South Coast) Notice 1992
Condition 73 and/or 79 on Fishing Boat Licences

Consultation

Department–industry meetings

Research Summary

Research monitoring of the scallop stocks in each fishery is undertaken utilising fishers' monthly returns data, and an industry-based pre-season survey in the case of the Abrolhos sector.

Advice on the status of stocks and appropriate season opening and closing dates is provided to industry advisory bodies.

The following status reports summarise the research findings for these smaller scallop fisheries.

Abrolhos Islands and Mid West Trawl Managed Fishery Status Report

Prepared by E. Sporer and M. Kangas

FISHERY DESCRIPTION

Boundaries and access

The boundaries of this fishery are *'all the waters of the Indian Ocean adjacent to Western Australia between 27°51′ south latitude and 29°03′ south latitude on the landward side of the 200 m isobath'*.

The permitted fishing area opened on 4 April and closed on 31 May but all boats had ceased fishing by 10 April 2002. In this fishery, the fishing gear (net size) is unitised, with one headrope unit converting to 4 fathoms. For the 2002 season, 182 fathoms of the entire entitlement of 46 headrope units, or 184 fathoms, were utilised by 15 boats that operated in the fishery.

The Port Gregory trawl fishery operates as part of the AIMWTF. The permitted fishing area opened on 1 March for prawns and 4 April for scallops, and was closed on 31 October 2002.

Main fishing method

Otter trawl.

RETAINED SPECIES

Commercial production (season 2002):
195 tonnes whole weight

Landings

The total landings for the 2002 season were 195 t whole weight of scallops compared to 1,182 t whole weight in 2001 (Abrolhos Islands Scallop Figure 1). The catch prediction for the 2002 season, based on pre-season survey, was between 200 and 300 t whole weight. The catch was just below this predicted catch range but still within the defined acceptable catch range for this fishery. In 2002, 1.1 t of king prawns and 0.6 t of coral prawns were reported as landed in the Port Gregory area.

Fishing effort

A total of 1,048 trawl hours (nominal effort) were recorded for the 2002 season, equivalent to 912 standardised trawl hours (standardised to 14 fathoms headrope length). This is much lower than the 3,998 standardised trawl hours recorded in 2001 owing to the much lower abundance of scallops in 2002 (Abrolhos Islands Scallop Figure 1). This effort level represents a fishing season of 6 days' duration in 2002, compared to 21 days in 2001.

Catch rate

The catch rate in 2002 was 218 kg/hr (whole weight, standardised effort), compared with 296 kg/hr for 2001.

Recreational component: **Nil**

Stock assessment complete: **Yes**

This fishery is highly variable, being dependent on sporadic recruitment which appears to be strongly influenced by environmental conditions, e.g. the Leeuwin Current. A pre-season survey has occurred since 1997 and is planned to continue. A preliminary investigation of the relationship between catch rates during surveys and subsequent catch has been undertaken for six years of surveys (1997–2002). The spatial distribution of the recruitment is very patchy and not all possible recruitment areas are covered by the survey. Derivation of a more reliable survey abundance–catch relationship will require several more years of data and an extension of the survey to cover more of the potential settlement area.

Exploitation status: **Fully exploited**

Breeding stock levels: **Adequate**

The annual fishing season is managed so that the majority of the mature scallops are able to spawn before fishing occurs. Breeding stocks are therefore adequate, and recruitment is dependent only on environmental conditions each year.

Projected catch next season (2003):
2,900–4,350 tonnes whole weight

Using the November 2002 survey data, the projected catch range for 2003 is likely to be 2,900–4,350 t whole weight for the surveyed areas, which should result in a record catch for the Abrolhos Islands. During the survey, all areas showed evidence of moderate to high levels of recruitment.

NON-RETAINED SPECIES

Bycatch species impact: **Low**

The trawl fleet operates over a very small portion of the licensed fishing area, focusing on scallop aggregations on the relatively bare sand habitat associated with this species. On average over the last five years (1998–2002) only 8% of the area of the main trawl grounds has been fished, which represents just 4% of the total fishery area. Owing to the focused nature of this fishery and the large mesh size (100 mm), little bycatch is taken during the typically short fishing season.

Protected species interaction: **Low**

While turtles do occur in the Abrolhos Islands, these species are towards the southern extent of their range, and do not breed in the Abrolhos because water temperatures are too low. Consequently, interactions with turtles are already minimal, and with grids becoming compulsory in the fishery during 2003 their capture should be eliminated. Few other protected species occur in this area.

ECOSYSTEM EFFECTS

Food chain effects: **Low**

The total biomass taken by this fishery is very small. Moreover, due to the high natural variability of this scallop stock it is unlikely that any predators are highly dependent on this species.

Habitat effects: **Low**

The fishers operate over a very small proportion (4%) of the licensed area and therefore few areas are impacted by trawling. Moreover, the areas associated with scallops are sandy habitats and these are not impacted significantly by trawl gear. An underwater survey was undertaken by the Department of Fisheries in 1994 to delineate trawlable habitats in the Abrolhos Islands and trawling is largely contained within these areas.

SOCIAL EFFECTS

This scallop fishery utilises large numbers of crew (up to 13 per vessel) to carry out on-board processing during the short period of fishing in the season. The estimated employment for the year 2002 was 200 skippers and crew.

ECONOMIC EFFECTS

Estimated annual value (to fishers) for year 2002: **$600,000**

The estimated value of the catch has been based on the average wholesale price per kilogram obtained in the Shark Bay fishery, that is $3.30/kg whole weight or $16.50/kg meat weight. Meat weight is approximately 20% of the whole weight.

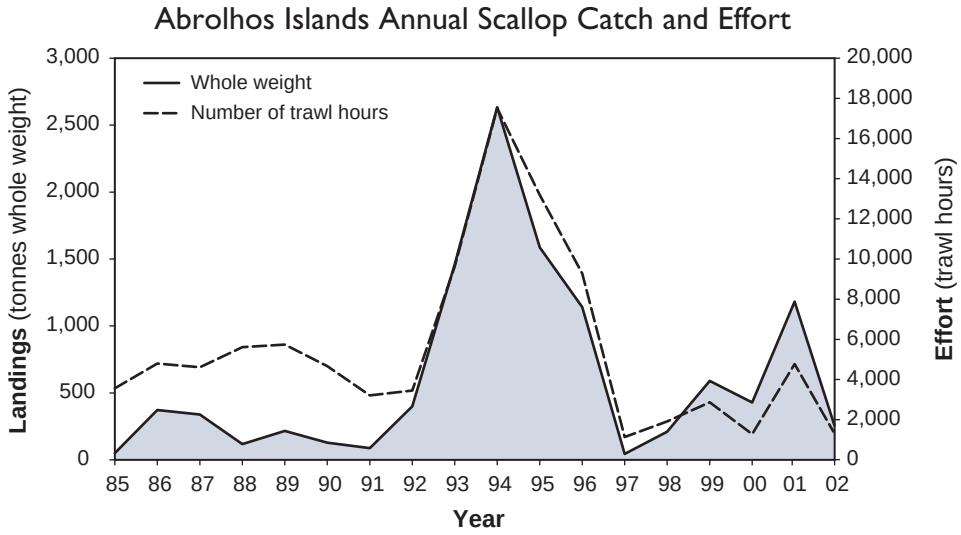
FISHERY GOVERNANCE

Acceptable catch range: **50–600 tonnes whole weight**

Apart from the exceptional catches of the mid-1990s, which were due to unusual environmental conditions increasing the success of recruitment, the catch range for this fishery has been 50–600 t whole weight. This range is predicted to be exceeded during the 2003 season due to the observed good pre-season recruitment, which resulted from favourable environmental conditions.

EXTERNAL FACTORS

The high level of recruitment seen in 2002 following a very low catch season highlights the dependence of recruitment success upon environmental conditions such as the Leeuwin Current rather than spawning stock levels, and illustrates the extreme annual variability in recruitment. As more years of pre-season survey and catch/effort data become available, the relationship between environmental factors and recruitment will be further evaluated.



ABROLHOS ISLANDS SCALLOP FIGURE 1

Annual scallop landings for the Abrolhos Islands and Mid West Trawl Managed Fishery, 1985–2002.

South West Trawl Managed Fishery Status Report

Prepared by M. Kangas and E. Sporer

FISHERY DESCRIPTION

Boundaries and access

The boundaries of this fishery are *'all the waters of the Indian Ocean adjacent to Western Australia between* 31°43′*27″ south latitude and 115°08′ east longitude where it intersects the high water mark at Cape Leeuwin, and on the landward side of the 200 m isobath'.*

The area is further divided into four management zones, with a limited number of operators (indicated in brackets) permitted access to fish within each zone as follows:

Zone A from 31°43′27″ S to 32°16′ S (3 boats)
Zone B from 32°16′ S to 115°08′ E (12 boats)
Zone C north-east of Cape Naturaliste (4 boats)
Zone D Comet Bay off Mandurah (3 boats)

A total of 14 boats are licensed to operate in this fishery, some in more than one zone. Zone A and B boats may fish between 1 January and 15 November, access to Zone C occurs between 1 July and 30 September, and Zone D boats can fish all year round. Eight boats operated in the fishery during 2002.

Main fishing method

Otter trawl.

RETAINED SPECIES

Commercial production (season 2002): Prawns 15 tonnes
Scallops 6 tonnes whole weight

Landings

The total landings for the season were 15 t of western king prawns (*Penaeus latisulcatus*) and 6 t whole weight of scallops. The catch of king prawns was 50% up on the catch of 2001 and at average catch levels for the last five years (15.5 t). The scallop catch was down from the 23 t caught in both 2001 and 2000. The fishery also lands a mixture of by-product species, of which the most abundant species recorded were 11 t of redfish (*Centroberyx* spp.), 8 t of western sand whiting (*Sillago schomburgkii*), 4 t of blue swimmer crabs (*Portunus pelagicus*), 2 t each of squid and mixed skates and rays and 1 t each of sole, flounder and flathead.

Fishing effort

A total of 258 days were recorded as being fished by 8 boats in 2002.

Catch rate

Not available.

Recreational component: **Nil**

Stock assessment complete: **Not assessed**

Exploitation status: **Not assessed**

Breeding stock levels: **Not assessed**

NON-RETAINED SPECIES

Bycatch species impact: **Low**

Trawling for scallops is focused on a few small offshore areas, while the prawn catch is mainly taken from Comet Bay. An extensive study (Laurenson et al. 1993a) of the environmental effects of this fishery has shown that the fishery has minimal impact on bycatch species.

Protected species interaction: **Negligible**

Protected species susceptible to capture by trawling do not occur significantly in this fishing area.

ECOSYSTEM EFFECTS

Food chain effects: **Low**

The food chain effects are considered to be low owing to the low overall exploitation rate and the very small percentage (< 5%) of the fishing area within the legislated boundary that is trawled annually.

Habitat effects: **Low**

Laurenson et al. (1993a) consider that the fishery has minimal impact on the benthic sand habitats involved.

SOCIAL EFFECTS

The estimated employment for the year 2002 was 24 skippers and crew.

ECONOMIC EFFECTS

Estimated annual value (to fishers) for year 2002:
Prawns $200,000
Scallops $40,000

Prawns: Wholesale prices for prawns vary depending on the type of product and the market forces operating at any one time. Generally, prices for king prawns averaged $13.40/kg.

Scallops: The estimated value of the catch has been based on the average wholesale price per kilogram obtained in the Shark Bay fishery, that is $3.30/kg whole weight or $16.50/kg meat weight. Meat weight is approximately 20% of the whole weight.

FISHERY GOVERNANCE

Acceptable catch range: **Not available**

EXTERNAL FACTORS

The level of fishing activity and quantity of catch within the South West Trawl Managed Fishery is variable. This variability has largely been driven by the level of scallop recruitment to these grounds and also the product price paid to fishers.

South Coast Trawl Fishery Status Report

Prepared by M. Kangas and E. Sporer

FISHERY DESCRIPTION

Boundaries and access

Access to the south coast trawl zone is limited, with only four boats currently endorsed to take scallops in the fishery. These endorsements are governed by two fishing boat licence conditions. Condition 73 authorises the use of demersal trawl nets off the south coast of Western Australia in State waters east of 115° E longitude (Cape Leeuwin) and is attached to all four licences. Condition 79 authorises demersal trawling for scallops within the Recherche Archipelago and is attached to only three of the current licences.

Main fishing method

Otter trawl.

RETAINED SPECIES

Commercial production (season 2002):
669 tonnes whole weight

Landings

The scallop catch of 669 t whole weight in 2002 was a 180% increase compared to 2001, and second only to the very high catch of 2,722 t recorded in 2000. While the south coast trawl is principally a scallop fishery, two licence holders reported landings of mixed finfish during 2002, of which the main species recorded were 8 t of blue mackerel (*Scomber australasicus*), 3 t each of trevally (*Pseudocaranx dentex*) and redfish (*Centroberyx* spp.) and 2 t of leatherjacket (Monacanthidae).

Fishing effort

The annual effort expended in this scallop fishery is an outcome of initial fishing surveys used by operators to estimate stock abundance of scallops and likely benefits of continued fishing. As a consequence, the level of effort utilised each year closely follows stock abundance and catch levels. In 2002, 425 fishing days were recorded.

Catch rate

Not available.

Recreational component: **Nil**

Stock assessment complete: **Not assessed**

Exploitation status: **Not assessed**

Breeding stock levels: **Not assessed**

NON-RETAINED SPECIES

Bycatch species impact: **Low**

The large-mesh (100 mm) trawl gear used in scallop fisheries takes minimal bycatch. The areas trawled by the fleet also represent a very small percentage of the fishing area within the legislated boundary, therefore bycatch species impact is considered to be minimal.

Protected species interaction: **Negligible**

Protected species susceptible to capture by trawling do not occur significantly in this fishing area.

ECOSYSTEM EFFECTS

Food chain effects: **Low**

The extremely variable recruitment and resultant fluctuating biomass of the scallops which occur in this area preclude the fishery having any significant impact on the general food chain in the region.

Habitat effects: **Low**

Trawling has minimal impact on the benthic sand habitats in this scallop fishery.

SOCIAL EFFECTS

The estimated employment for the year 2002 was 16 skippers and crew.

ECONOMIC EFFECTS

Estimated annual value (to fishers) for year (2002):
$4.4 million

FISHERY GOVERNANCE

Acceptable catch range: **Not available**

EXTERNAL FACTORS

The level of fishing activity and quantity of catch within the south coast trawl is highly variable. This variability has largely been driven by the level of scallop recruitment to these grounds and also by the product price paid to fishers. Scallop catches in 2002 continue to be higher than those seen in the fishery in general over the last 10 years (except the very high catch seen in 2000), indicating the presence of additional localised spawning stock to replenish stocks after the very strong settlement in 2000.