

WEST COAST BEACH BAIT FIGURE 1

Total annual catch of whitebait for each sector from 1975 to 2002.

West Coast Purse Seine Managed Fishery

Management Summary

This fishery is based primarily on the capture of pilchards (*Sardinops sagax*) and the tropical sardine *Sardinella lemuru* (previously called scaly mackerel, hereafter referred to as sardinella) by purse seine boats in the waters off the west coast of Western Australia. However, the management plan also covers the take of Perth herring (*Nematalosa vlaminghi*), yellowtail scad (*Trachurus novaezelandiae*), Australian anchovy (*Engraulis australis*) and maray (*Etrumeus teres*). The product has a variety of uses, being sold for human consumption, angling bait, commercial bait, tuna grow-out food and pet food. The tuna feed market is the main consumer of sardinella, and human consumption the major end user for pilchards.

As in the South Coast Purse Seine Managed Fishery, the spread of a *Herpesvirus* through the west coast in 1995 and again in 1998/99 had a serious impact on the pilchard stock. The possibility of a further outbreak represents a real threat to the fishery.

The fishery operates between 33° S latitude and 31° S latitude and there are also two purse seine development zones currently operating north and south of this area. The Southern Development Zone consists of three operators who operate purse seine nets in the waters between 33° S latitude and Cape Leeuwin. The Northern Development Zone covers the waters between 31° S latitude and 22° S latitude and consists

of one active operator (whose catch is not currently reported for confidentiality reasons). While the managed fishery and the Southern Development Zone mainly target pilchards, the Northern Development Zone targets sardinella.

The fishing season runs from 1 April to 31 March of the following year. The pilchard catch allocation (cap) for the 2002/03 licensing period remained set at 720 t. For 2003/04, following recovery of the stock, the pilchard catch cap has been increased to 1,000 t, and there is also a limit of 1,500 t on the take of other small pelagic fish permitted to be taken by licensees. Ninety per cent of the allocation of the available catch has been apportioned to holders of a managed fishery licence, 3% is provided for supplementary access endorsement holders and 7% for operators in the Southern Development Zone. The Northern Development Zone continues to have an informal trigger catch cap of 2,700 t for sardinella.

The determination of a pilchard and other small pelagic fish catch cap and the process for allocation among licensees is considered to be a temporary measure until more formal output controls are implemented in the fishery. Management arrangements are currently based on limited entry, capacity setting and controls on gear and boat size; however, it has been accepted for some time that the fishery should be managed under an individually transferable quota (ITQ) arrangement.

The framework that would see the change to ITQ management has been developed in consultation with stakeholders and is close to being finalised. The new management plan proposes to include the Northern and Southern Development Zone operators.

Further to improving current management arrangements for purse seining off the west coast, the Department is also considering longer-term strategies that will lead to improved ecosystem-based management. The commercial take of small pelagic fish will be considered in relation to its effect on other species in the ecosystem that depend on them as a food source.

The catch-cap-setting process is coordinated through the Purse Seine Management Advisory Committee, an expertise-based committee established to advise the Minister on matters relating to the management of purse seine fishing in Western Australia.

Governing Legislation/Fishing Authority

West Coast Purse Seine Management Plan 1989
West Coast Purse Seine Managed Fishery Licence
Fisheries Notice no. 312 – Purse seine prohibition
Fisheries Notice no. 571 – Pilchard fishing prohibition
Fisheries Notice no. 476 – Net hauling restrictions
Condition 176 on a Fishing Boat Licence
Condition 93 on a Fishing Boat Licence (specific area)

Consultation Process

Purse Seine Management Advisory Committee
Department–industry meetings (as required)

Research Summary

Research on this fishery continues to utilise CAES data, biological monitoring of catches and spawning biomass estimates from egg surveys. The most recent bi-annual survey of spawning biomass was undertaken in July–August of 2002. These data are compiled into the following status report and ultimately will be used to set and review total allowable catches (TACs) once the fishery moves to quota management.

The need to introduce a new management approach, following the post-mass-mortality period when the fishery was essentially closed in some regions, was originally presented to the Purse Seine MAC during 2001. This initiative was further developed during 2002 to focus on capping TACs at a level that would enable the fishery to endure severe downturns in recruitment. In addition, once the stock had recovered annual changes in TACs, whether up or down, would not be allowed to exceed 25%. Under this relatively conservative management approach, TACs could be set for three-year periods with appropriate trigger points, thereby providing a significantly more stable fishery than is presently the case, allowing industry to make better informed business decisions. However, before this can be progressed, the co-dominance of pilchards and sardinella, a feature not relevant to the south coast purse seine fisheries, has been recognised as a significant issue that needs to be addressed.



West Coast Purse Seine Managed Fishery Status Report

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FISHERY DESCRIPTION

Boundaries and access

The boundaries of this fishery are 'all Western Australian waters between 31° south latitude (near Lancelin) and 33° south latitude (near Cape Bouvard) and on the landward side of the 200 nautical mile Australian Fishing Zone limit, but excluding those waters within the boundaries of the Marmion Marine Park Reserve No. 1'. Access to the fishery is under a limited entry system with eight full licences and six supplementary access holders. No quota system is in place at present. As there is currently no evidence for separate adult assemblages along the lower west coast (in contrast with the situation on the south coast), catch data from the developmental purse seine fishing zone, which lies between Cape Bouvard and Augusta, is included in the total for the West Coast Purse Seine Managed Fishery.

Main fishing method

Purse seine net.

RETAINED SPECIES

Pilchard is typically the dominant species in the catch, with sardinella important in recent years. In addition, smaller quantities of maray are commonly caught, while small catches of anchovies and yellowtail scad also occur periodically.

Commercial production (2002): **1,365 tonnes**

Landings

The combined catch of pilchards, sardinella and maray for the managed fishery area increased to 1,347 t in 2002; the southern developmental zone did not contribute any catch during this year. This level of harvest is still considerably less than the catches in the mid-1990s (West Coast Purse Seine Figure 1). Encouragingly, the contribution of pilchards to the combined catch increased from less than 148 t in 2001 to 512 t in 2002. The sardinella catch increased from 596 t in 2001 to 701 t in 2002. In addition, a substantial catch of 136 t of maray (traditionally a minor retained species) was landed for the year. A very small number of anchovy (0.4 t) were recorded in 2002, whilst 6 t of yellowtail scad were landed. Overall the catch reflects an increased availability or abundance of pilchards, and an increasing trend toward the utilisation of other species available to the fishery.

Fishing effort

A small number of vessels continued to participate in the fishery in 2002. Together they fished a total of 543 days, an effort decrease of 36% over 2001 (738 days). The recent significant changes in catches (i.e. fewer pilchards) and associated restructuring in the fishery (e.g. development of new markets for sardinella) have impacted on the effort being applied in the fishery. It is not possible to estimate effort

separately for the different species being targeted.

Catch rate

The estimated catch rate for all small pelagics was 2,514 kg/day. Note that because factors other than abundance are influencing fishing effort, it is currently difficult to determine how this estimate relates to those from previous years.

Recreational component: Nil

Stock assessment completed: Yes

Stock assessment is completed for pilchards, which are fully exploited on the west coast. Although no stock assessment has been undertaken for sardinella in the Fremantle region, application of results obtained from a detailed study on sardinella in the Geraldton region indicate that the stock on the lower west coast is at the southern limit of its geographic range and is fully exploited when it occurs off Fremantle.

A spawning biomass survey conducted in 2002 provided evidence that the pilchard stock was recovering strongly after the 1998/99 mass mortality event. The average age of the west coast pilchard catches is 3 years, which is indicative of a healthy stock that has experienced recent good levels of recruitment. However, assuming there has been strong recovery, as has been the case on the south coast, availability of the stock to the fleet has remained very low. The issue of stock availability continues to remain unresolved.

Exploitation status: Fully exploited

Pilchards and sardinella are fully exploited.

Breeding stock levels: Increasing

See 'Stock assessment' above.

NON-RETAINED SPECIES

Bycatch species impact: Low

This fishery targets specific schools of small pelagic fish so bycatch is insignificant. Small pelagic fish which are sometimes caught but for which there are no stable markets for the quantities involved include yellowtail scad (*Trachurus novaezelandiae*), blue mackerel (*Scomber australasicus*) and *Decapterus macrosoma*, a tropical scad.

Protected species interaction: Low

Pilchards and other small pelagic fish are consumed by several species of seabirds, pinnipeds, cetaceans and protected sharks (white shark), but there is currently no evidence to indicate any indirect interactions between these and the purse seine industry in this region.

ECOSYSTEM EFFECTS

Food chain effects: Moderate

Small pelagic fish, typically pilchards or anchovies, occupy a pivotal position of energy transfer in food webs in which they occur and are often the main link between primary (phytoplankton) and secondary (zooplankton) production and

larger predators. This trophic position has been termed the 'wasp's waist' since pilchards feed on many species and are eaten by many species. It should be noted, however, that in 'normal' circumstances (i.e. in the absence of disease events or extended periods of very poor recruitment) the quota for pilchards is set at 10–15% of the spawning biomass, thus leaving 85–90% available to natural predators.

The concept of managing ecosystems, rather than single species, has been presented to the Purse Seine MAC during 2001. Small pelagic fish represent a conceptually easy group for which to begin implementing ecosystem-based fisheries management. For example, various seabirds will predate on a variety of species of small pelagics and therefore the whole suite of small pelagic fish must be considered during management deliberations, not simply the primary target species. This is particularly the case in pelagic ecosystems (a) characterised by low productivity, as is the case in southern Western Australia, and (b) in which the dominant species can change in abundance inter-annually (e.g. due to environmental factors), as is the case along the lower west coast. This issue represents a complex shift in the management philosophy for purse seine fisheries in Western Australia and continues to undergo further development. The completion of FRDC project 98/203 (Gaughan et al. 2003) and further work by Murdoch University has now provided clear evidence that some species of seabird are heavily reliant on pilchards and sardinella. These data, derived from local studies, have proven to be invaluable when discussing food chain effects during management deliberations.

Habitat effects: Negligible

Purse seining appears to have very little effect on the habitat. Although the purse seine gear used in Western Australia can contact the sea floor in some areas, the relatively light construction of the gear suggests that there is no significant impact occurring to, for example, seagrass beds.

SOCIAL EFFECTS

The west coast purse seine industry has undergone a major restructure in recent years. Following the mass mortality event of 1998/99, some licence holders and crew had to obtain income from elsewhere; however, the industry is now growing again. Including vessel crews, the industry provided direct employment for 24 people during 2002.

ECONOMIC EFFECTS

Estimated annual value (to fishers) for year (2002):
\$1.6 million

During 2002, pilchards and maray were sold as individually quick frozen bait and blocks to commercial and recreational markets, whilst pilchards and sardinella were processed for human consumption. All three species were also utilised as tuna feed. The average price of sardinella was \$800/t, whilst pilchard fetched \$900/t.

WEST COAST BIOREGION

FISHERY GOVERNANCE

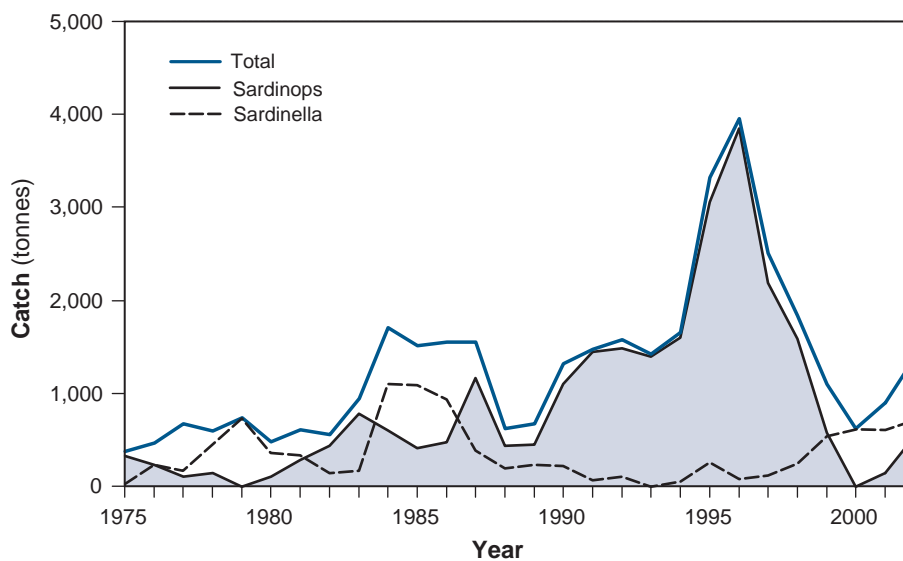
Acceptable catch (or effort) range: Not available

Management arrangements are currently based on limited entry with controls on gear and boat size; however, it has been accepted for some time that the fishery should be managed under a catch quota arrangement. The framework of arrangements that would see the change to quota management has been developed following consultation with stakeholders but has yet to be legislated. This situation remains unchanged from last year due to uncertainty about the recovery of the pilchard stocks. Until this issue is addressed, an acceptable catch range cannot be provided.

EXTERNAL FACTORS

The major factor influencing the pilchard stock has been the impact of the virus epidemic in 1998/99. The fishery is also heavily influenced by the contribution of the two dominant pelagic species, which dictates the make-up of the catch in any one year. The influences of environmental factors on the two species are not yet well understood, but oceanographic variability appears to affect the distribution and availability of both species.

West Coast Purse Seine Annual Catch



WEST COAST PURSE SEINE FIGURE 1

Annual catches of pilchards and sardinella along the lower west coast.

West Coast Demersal Scalefish Fishery

Management Summary

The 'west coast demersal scalefish fishery' describes the most important subset of the State's wetline fishery that has access to species or fishing methods not currently subject to a management plan. The wetline fleet comprises both 'wetline only' vessels and vessels with other managed fishery licences, and is only limited by the overall ceiling on fishing boat licences. Wetline fishing targets mainly demersal finfish using handlines and droplines. The major areas for wetline catches within the west coast bioregion are the Abrolhos Islands, mid-west coast, Perth metropolitan area and the south-west coast.

The west coast demersal scalefish fishery focuses primarily on West Australian dhufish (*Glaucosoma hebraicum*) and pink snapper (*Pagrus auratus*), but also takes baldchin groper (*Choerodon rubescens*) and a range of other species. These species are also caught in the demersal gillnet and longline fishery and by the recreational sector, including charter boats.

Widespread community concern over the unrestricted access of the wetline vessels to a wide range of species led to a study of the fishing activity of wetliners published as Fisheries Research Report no. 118 (Crowe et al. 1999). This document took a 'snapshot' of the fleet at 30 June 1998 and examined its seven-year fishing history (six years for the Abrolhos Islands). The report summarised catch data of dhufish, pink snapper and baldchin groper.