

West Coast Beach Bait Managed Fishery Status Report

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FISHERY DESCRIPTION

The West Coast Beach Bait Managed Fishery (WCBBF), together with the as yet unmanaged fishing sector to its south, primarily target whitebait (*Hyperlophus vittatus*). The main fishing method is beach seine netting, although non-powered purse seining and haul netting from small boats are also utilised.

Governing legislation/fishing authority

West Coast (Beach Bait Fish Net) Management Plan 1995
Subsidiary legislation under the *Fish Resources Management Act 1994*

Consultation process

Department–industry meetings

Boundaries

The West Coast Beach Bait Managed Fishery extends from the mouth of the Moore River, north of Perth, to Tim's Thicket in the south.

The south-west fishing activities occur from Tim's Thicket south to Point D'Entrecasteaux, with activity typically concentrated in Geographe Bay (Cape Naturaliste to Preston Beach).

Management arrangements

The WCBBF is managed primarily through input controls such as limited entry, temporal and spatial closures and gear restrictions. A Government-funded Fishery Adjustment Scheme has reduced the fishery in recent years from 15 licences to 3 at the end of 2003.

Ongoing management arrangements for the south-west beach seine 'fishery' are yet to be finalised. A discrete group of fishers is endorsed to operate in this area using similar methods to the managed beach bait fishers in the metropolitan and Mandurah areas.

Research summary

A significant research project on the biology and stock assessment of whitebait was completed in 1996. Ongoing monitoring of catches as a de facto indicator of abundance forms the basis of current research.

RETAINED SPECIES

Commercial production (season 2003):

All species 155 tonnes
Whitebait 103 tonnes

Landings

The main target species in this fishery is whitebait, of which 103 t were caught in the 2003 season. The catch of all other species in this fishery was 52 t, which was dominated by sea

mullet, blue sprat, yellow-eye mullet, western sand whiting, buffalo bream and pilchard (West Coast Beach Bait Tables 1 and 2).

Catches of whitebait are discussed here according to the region in which they were landed. Metropolitan and Mandurah landings form part of the West Coast Beach Bait Managed Fishery, while Bunbury landings are from the 'south-west fishery'. Catches in each of the regions have varied significantly from the previous year; large interannual fluctuations in catch of whitebait are typical of this fishery (see 'Breeding stock levels').

Metropolitan: The catch of whitebait for the metropolitan region during 2003 was only 1.6 t, an order of magnitude lower than catches for the preceding three years: (2002: 16 t, 2001: 11 t and 1999: 11.1 t).

Mandurah: The whitebait catch at Mandurah was 8 t, a fourfold increase from the 2002 season (2t) but still below the catches for 2001 (32.1 t) and 2000 (33.6 t).

Bunbury: The Bunbury catch of 92 t was slightly over half that of recent years, with 165 t caught in 2002, 197 t in 2001 and 175 t in 2000.

Fishing effort/access level

There were 10 operators with access to the WCBBF for all or part of 2003, of whom six landed fish during the year. In the southern sector, where the number of licences with access is not yet formally specified, 16 boats landed whitebait in 2003.

Given the schooling behaviour of whitebait (and most of the other retained species), the fishers' methods of targeting schools and the way the effort data are recorded on the monthly returns, the data are not useful for measuring the amount of effort applied to the whitebait stock.

Catch rate

See 'Fishing effort/access level' above.

Recreational component

Nil

There is no recreational fishery for whitebait. Only small catches of a limited number of the other retained species are taken recreationally.

STOCK ASSESSMENT

Assessment complete:

Yes

The annual assessment for the whitebait stocks utilises the total catch as an indicator of abundance, on the reasonable assumption that catchability remains stable but that fishing effort adjusts so as to take a similar proportion of the available stock in all years. The region of the fishery south of Mandurah lands a significant part of the total whitebait catch and as such trends in the 'Bunbury' catch dominate the overall trends. Thus, while reduced effort through fewer operators in the metropolitan region can explain the low catch for that region, the relatively low catch from the unmanaged sector south of Mandurah cannot be attributed to fewer operators. On this basis, abundance in 2003 can be considered to have

been at a relatively low level, which is consistent with the below-average Leeuwin Current in 2002 (see 'Breeding stock levels').

The overall 2003 whitebait catch of 103 t is at the lower bounds of the acceptable range and is lower than expected, underlining the need for further work on the Leeuwin Current/whitebait model. Although there have been licence buy-backs in the northern part of the fishery, the remaining licence holders have expressed the desire to take up purse seining rather than beach seining as the preferred fishing method. Such a major shift in fishing practice would require a substantial change to the management of the fishery and the method of assessment.

Exploitation status: Fully exploited

Breeding stock levels: Adequate

Previous modelling and plankton sampling indicate that the typical stock size of whitebait is probably less than 1,000 t for the entire west coast. The stock is characterised by cycles in abundance apparently related to variations in the Leeuwin Current, where a strong current provides good catches and breeding stocks in the subsequent year. In circumstances of low recruitment, breeding stock levels may become limiting, but are generally protected by the corresponding reduction in effort by this beach-based fishery. The Leeuwin Current has been weaker than average in both 2002 and 2003, so abundance may again be low in 2004.

NON-RETAINED SPECIES

Bycatch species impact: Low

There is typically little non-retained bycatch in the targeted whitebait fishery. Where multi-species schools occur, for example of mixed whitebait and juvenile pilchards, catches are released because of the difficulty of sorting. Most of the fish caught are saleable.

Protected species interaction: Negligible

The deployment of beach seine nets in this fishery is based on visual detection of fish schools and, as such, any protected species can easily be seen and avoided. Furthermore, few individuals of protected species occur in the near-shore fishing areas and are therefore not susceptible to capture.

ECOSYSTEM EFFECTS

Food chain effects: Low

The highly variable recruitment cycle of whitebait, apparently related to oceanographic effects, means that predatory birds and fish cannot rely on the availability of whitebait as a major food source in all years. Furthermore, the constraints of the beach seine gear and fishing method largely limit fishing to within 80 m of the shore, whereas the fish stock is more widely distributed, suggesting that natural predators have greater access to the stock than does the fishery. There may be competition in years of low whitebait abundance between fishermen and the little penguins that breed on Penguin Island and feed in the metropolitan and Mandurah regions of the whitebait fishery where catches are relatively low. Although

the links between little penguins and whitebait are now clear, the impact of any such competition is still not understood. The ecological impact of the fishery has previously been considered to be low and the reduced number of licences would indicate that this continues to be the case. If, however, there is a move towards purse seining for whitebait in these regions this may change the relationship, so potential food chain and direct impacts would need to be investigated.

Habitat effects: Negligible

All fishing occurs over shallow sandy substrate. Near-shore sand habitats are naturally dynamic environments and resident infauna are adapted to cope with physical disturbances, thus the impact of the relatively small amount of very light fishing gear (fine gauge nets) would be negligible.

SOCIAL EFFECTS

Approximately 22 boats with 50 crew participated in the beach bait fishery in 2003. This represents an apparent decrease of approximately 30% from the previous year in numbers of boats fishing (and thus crew).

ECONOMIC EFFECTS

Estimated annual value (to fishers) for year 2003:
\$307,000

Prices paid to fishers for whitebait are dependent on size of the individual fish, with a premium paid for the larger fish. Thus prices paid in 2003 varied from \$2.50/kg to \$3.50/kg, amounting to a net worth of approximately \$307,000.

FISHERY GOVERNANCE

Acceptable catch range for next season:
Whitebait 60–275 tonnes

The catch range previously provided for whitebait (106–331 t) reflected catches achieved since 1990 by operators with access to this stock. The range has been adjusted downwards this year to account for the permanent reduction in number of operators (from 15 to 3 licences) in the WCBBF, which constitutes the metropolitan and Mandurah regions of the broader whitebait fishery. It should be noted, however, that the major portion of the whitebait catch is taken from the Bunbury sector, which does not yet have a formal management plan in place.

The expected low abundance of whitebait in 2004 indicates that catches will again be at the lower end of the acceptable range.

New management initiatives (2003/04)

The Department is exploring the option of changing the existing beach-seine-based managed fishery to a purse-seine-based fishery, given the ongoing issues associated with local council by-laws excluding fishers from beaches. The Department is also in the process of streamlining the administrative clauses in the legislation. Furthermore, the Department is looking to progress the southern fishing sector to a formal managed fishery.

EXTERNAL FACTORS

Annual catches in this fishery will most likely continue to exhibit large fluctuations under the influence of environmental factors. The fishery will therefore continue to be regulated through limited entry access and gear restrictions. Further research into the Leeuwin Current/whitebait relationship is needed, and will be undertaken when time becomes available.

Ongoing urbanisation of Western Australia's south-west region continues to impact on this fishery, as sectors of the community press to restrict access to beaches by the four-wheel-drive vehicles needed to transport the beach seining gear and catches.

WEST COAST BEACH BAIT TABLE 1

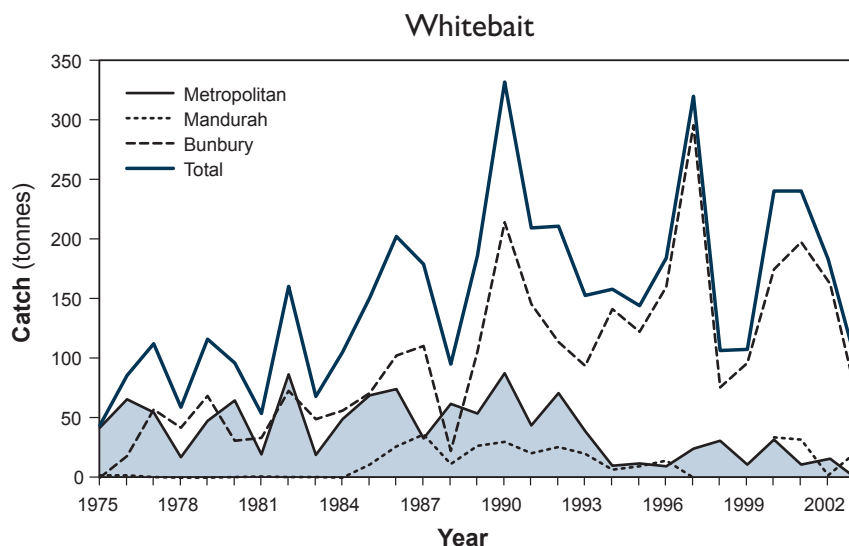
Catches in 2003 of retained species other than whitebait from the West Coast Beach Bait Managed Fishery. Numbers in brackets indicate that part of the catch taken from Cockburn Sound.

SPECIES	CATCH (tonnes)
Mullet, sea <i>Mugil cephalus</i>	3.3 (1.1)
Sprat, blue <i>Spratelloides robustus</i>	3.7 (3.7)
Others	1.1 (0.8)
Total	8.1 (5.6)

WEST COAST BEACH BAIT TABLE 2

Catches in 2003 of retained species other than whitebait from the south-west beach seining sector:

SPECIES	CATCH (tonnes)
Mullet, sea <i>Mugil cephalus</i>	16.0
Mullet, yellow-eye <i>Aldrichetta forsteri</i>	9.6
Sprat, blue <i>Spratelloides robustus</i>	9.1
Whiting, western sand <i>Sillago schomburgkii</i>	5.5
Bream, buffalo <i>Kyphosus sp.</i>	1.6
Pilchard <i>Sardinops sagax</i>	1.5
Others	0.9
Total	42.2



WEST COAST BEACH BAIT FIGURE 1

Total annual catch of whitebait for each sector from 1975 to 2003.