

West Coast Estuarine Fisheries

Management Summary

There are three restricted entry estuarine fisheries operating in the metropolitan and south-western regions of the Western Australian coastline, as follows:

- Swan/Canning Estuarine Fishery
- Mandurah Estuarine Fishery (Peel/Harvey Estuary)
- Hardy Inlet Estuarine Fishery

It is expected that the West Coast Estuarine Fishery (Interim) Management Plan, which will provide a more comprehensive management framework for the Swan/Canning and Mandurah estuarine fisheries, will be gazetted in 2003. Existing management arrangements that will be carried over into the new plan include gear restrictions, seasonal and time closures, area closures and boat restrictions. Many of the seasonal and time closures are designed to provide spatial separation between user groups and equitable sharing arrangements for the fish resource.

A discussion paper on alternative management options for the Hardy Inlet Estuarine Fishery will be released for comment in September 2003. It is anticipated that the changes to the management arrangements for this fishery will be finalised in 2003/04.

Estuarine fishing areas, fishing practices and resource-sharing issues are increasingly becoming the subject of community interest. In order to maintain a level of commercial presence and production, while encouraging a resource shift towards the recreational sector, a number of Voluntary Fisheries Adjustment Schemes have been run in the last five years. The outcome of these schemes has seen a significant reduction in the number of commercial fishing units in these estuarine fisheries and the total removal of commercial fishing units in the Leschenault Estuarine Fishery.

Governing Legislation/Fishing Authority

West Coast Estuarine Fishery (Interim) Management Plan
(to commence 2003)

Condition 19 on a Fishing Boat Licence

Condition 17 on a Commercial Fishing Licence

Closed Waters and Permitted Gear Orders under Section 43
of the *Fish Resources Management Act 1994*

Directions to Licensing Officers

Consultation Process

Department–industry meetings

Research Summary

Research monitoring of fisheries and fish stocks in the west coast estuaries is primarily based on CAES returns provided by industry. These data are interpreted using the extensive scientific knowledge of the fish stocks in estuaries derived

from research by Department of Fisheries and Murdoch University scientists during the 1970s and 1980s. This database from commercial fishermen has provided a valuable and consistent source of information for monitoring recreationally important stocks where they are harvested by both groups.

The following status report summarises the research findings for these fisheries.

West Coast Estuarine Fisheries Status Report

Prepared by S. Ayvazian and G. Nowara

FISHERY DESCRIPTION

Boundaries and access

Swan/Canning:	level of access – 4 units
Peel/Harvey:	level of access – 8 units
Leschenault:	level of access – no commercial access
Hardy Inlet:	level of access – 1 unit

The levels of access listed above are as at May 2002. Unit holders in the three west coast estuaries are endorsed to fish a single west coast estuary system only.

The status of the fishery in each of the above estuaries is reviewed annually. Please note that where fewer than five fishers are actively involved in a particular fishery, the data are subject to the Department of Fisheries' confidentiality policy as it relates to the *Fish Resources Management Act 1994* and are not reported. This report presents information for three indicator finfish species from the three west coast estuaries, namely black bream (*Acanthopagrus butcheri*), cobbler (*Cnidogobius macrocephalus*) and King George whiting (*Sillaginodes punctata*). These stocks are not subject to species-specific management plans, but are fished under each estuary's licence arrangement.

Main fishing method

Gillnet/haul net.

RETAINED SPECIES

Commercial production (season 2002): 230 tonnes

Landings

The total landings from west coast estuaries of 230 t during the 2002 season include the following catches of key target species:

Blue swimmer crabs	<i>Portunus pelagicus</i>	78.8 t
Sea mullet	<i>Mugil cephalus</i>	75.0 t
Yellow-eye mullet	<i>Aldrichetta forsteri</i>	26.7 t
Western sand whiting	<i>Sillago schomburgkii</i>	17.2 t
Australian herring	<i>Arripis georgianus</i>	3.8 t
Tailor	<i>Pomatomus saltatrix</i>	3.7 t
Cobbler	<i>Cnidogobius macrocephalus</i>	2.2 t
Other species		22.6 t

Swan/Canning: The 2002 catch level showed a decrease of approximately 10 t from 2001, following a generally declining trend throughout the 1990s (actual figure not available as there were fewer than five operators). The catch from the Swan/Canning Estuary during 2002 was composed primarily of blue swimmer crab, Perth herring and sea mullet with small quantities of black bream and yellow-eye mullet.

Peel/Harvey: Reported catches in the Peel/Harvey Estuary over the past 25 years are shown in West Coast Estuarine Figure 1. While there was little variation in the catches during the early 1990s when the catch was about 350 t, a dramatic decline to 200 t occurred between 1998 and 2000. Moreover, the total catch for 2002 of 172.1 t represents a further decrease by approximately 24 t from the 2001 catch figure. Approximately 48% of the finfish catch comprised sea mullet and yellow-eye mullet during 2002, with approximately 37% of the total 2002 catch consisting of blue swimmer crabs.

Hardy Inlet: The 2002 catch declined by approximately 7 t from the 2001 catch level (actual figure not available as there were fewer than five operators). The majority of the catch was composed of western sand whiting and sea mullet with small quantities of black bream and yellow-eye mullet. There were no reported catches of blue swimmer crabs in 2002.

In addition to these three main west coast estuaries, a catch of less than 10 t of sea mullet was reported from the Wonnerup Estuary for 2002.

Key indicator species

Black bream: Catches of black bream were reported from the Swan/Canning Estuary and the Hardy Inlet during 2002. The reported catches from these estuaries showed a minor increase from the 2001 catches. The actual catches cannot be reported as there are fewer than five operators.

Cobbler: Minor catches of cobbler were reported from the Swan/Canning Estuary, Peel/Harvey Estuary and Hardy Inlet during 2002. The reported catches of cobbler in the Swan/Canning Estuary have been declining from the late 1980s, with 2002 being similar to 2001 and the lowest on record (< 100 kg). The 2002 catch in the Peel/Harvey Estuary is also at the lower end of historical catches. The small 2002 catch of cobbler (< 100 kg) from the Hardy Inlet was the first time this species was reported from the catch since 2000.

King George whiting: King George whiting catches for 2002 were reported from the Peel/Harvey Estuary only. Whilst slightly higher than in 2001, they were still much lower than the exceptionally high catches reported during the late 1990s.

Fishing effort

Fishing effort has been reported as the average number of boats fishing per month. This measure of effort provides a general indication of effort changes over time. In most of these fisheries, the general licence buy-back scheme applied to commercial fishing licences has resulted in a decline in effort and hence reduced catches.

Swan/Canning: The general trend in effort has been a decrease in the mean monthly number of fishing units from around 25 in the mid-1970s to 3 in 2002.

Peel/Harvey: Fishing effort remained at fairly constant levels during the 1990s after a rapid decline during the 1970s and 1980s (West Coast Estuarine Figure 1). More recently there has been a pronounced decline in the number of boats actively fishing, from approximately 16 fishing units in 1998 to the current level of 7 in 2002.

Hardy Inlet: Fishing effort (mean monthly number of fishing units) in the Hardy Inlet has declined from 3 in the 1970s to the current level of only one unit operational in 2002.

Catch rate

Swan/Canning: Annual values of the catch per unit effort for the finfish fishery in the Swan/Canning Estuary have varied over the past 15 years with a declining trend. While targeted fishing effort cannot be determined for individual stocks from the CAES compulsory monthly fishing returns, the general stability of the overall CPUE during the past several years suggests the abundance of the suite of species that make up the overall catch has remained constant.

Peel/Harvey: The catch rate has generally followed the downward trend in catches in this fishery. During the past 10 years, however, the CPUE has remained relatively stable even though the catch and effort have declined, particularly since 1997. While targeted fishing effort cannot be determined from the CAES compulsory monthly fishing returns, the general stability of the overall CPUE over this period suggests the abundance of the suite of species that make up the overall catch has remained constant, though apparently at a significantly lower level than during the period 1975–1985.

Hardy Inlet: Since the early 1990s the trend in the CPUE has generally followed the fluctuations in the catches. The 2002 CPUE has decreased from the 2001 value.

Recreational component: Not assessed for all estuaries

The most recent recreational catch survey data, for the year 1998/99, were reported in the *State of the Fisheries Report 2000/2001*.

In summary, the recreational catch at that time in the Swan/Canning Estuary was estimated to be of a similar magnitude to the commercial catch. For the Peel/Harvey Estuary, the recreational finfish catch at that time was estimated to be about 20% of the total, while for blue swimmer crabs the recreational catch was about 80% of the total. With the cessation of commercial fishing in Leschenault Inlet, the recreational sector takes all of the catch.

Stock assessment completed:

Yes

Basic assessments have been undertaken previously for select indicator species (black bream, cobbler and King George whiting). Annual monitoring assessment of stock trends is undertaken using catch and effort indicators. It must be acknowledged that for species such as black bream and

WEST COAST BIOREGION

cobbler, that exhibit an estuarine-dependent life history, factors other than fishing, e.g. algal blooms, can cause high mortality and may necessitate changes to management.

Black bream: Black bream populations are genetically unique within each west coast estuary. A preliminary yield-per-recruit stock assessment was developed for the black bream stock in the Swan River using biological data for the Swan River population from research by Sarre (1999), the results of which were presented in the *State of the Fisheries Report 1999/2000*. In the last few years the catch data for the Swan River stock have indicated a slightly increased catch associated with a decline in the number of units actively fishing.

Cobbler: Cobbler populations are genetically unique within each west coast estuary. A preliminary yield-per-recruit stock assessment was developed for the cobbler stock in the Swan River using biological data for Swan River cobbler from research by Nel (1983), the results of which were presented in the *State of the Fisheries Report 1999/2000*. The low level of catch in 2001 and 2002 of this once important species suggests that cobbler stocks are no longer a target of the commercial fishers in either the Swan/Canning or Peel/Harvey Estuaries. The decline in catch appears to be the result of both fishery and fishery-independent factors, including lower numbers of fishers operating in the estuaries, and a shift in target species to blue swimmer crabs, particularly in the Peel/Harvey Estuary.

King George whiting: King George whiting spend the early part of their life history (1–3 years) in estuaries before migrating to offshore reef areas at about age 4 where they grow to maturity and breed. They are most vulnerable to capture while residing in the estuaries. The results of a preliminary yield-per-recruit stock assessment which was conducted for King George whiting along the lower west coast using biological data from research by Hyndes et al. (1998) and Potter et al. (1997) were reported in the *State of the Fisheries Report 1999/2000*. The lower catches of King George whiting during 2002 appear to be due to lower recruitment generally and the maturing and offshore movement of the abundant cohort of fish previously recruited into the estuaries in the late 1990s.

Exploitation status: Fully exploited
Breeding stock levels: Not assessed

Black bream: A preliminary egg-per-recruit model was developed for the black bream stock in the Swan River using biological data for the Swan River population from research by Sarre (1999), the results of which were presented in the *State of the Fisheries Report 1999/2000*. Because the size at maturity is less than the legal minimum length, breeding stock levels are believed to be adequate. Black bream possess different growth rates in different estuaries. In all cases, the legal minimum length is set above the length at maturity.

Cobbler: A preliminary egg-per-recruit model was developed for the cobbler stock in the Swan River using biological data for the Swan River population from research by Nel (1983), the results of which were presented in the *State of the Fisheries Report 1999/2000*. Cobbler exhibit different growth rates

depending on the estuary in which they reside. In all cases the size at maturity is less than the legal minimum total length, affording protection to the breeding stock.

King George whiting: The age of King George whiting at first capture is 2+ to 3+ years at approximately 250 mm length. The length at 50% maturity is 413 mm for females. King George whiting breed in the open ocean at age 4+, and juveniles use estuaries and coastal waters as nursery habitats for the first few years of their life. Although the legal minimum length is considerably less than the size at maturity, the current inshore exploitation rate appears to afford some protection for these stocks. Targeted recreational fishing for these fish will need to be monitored to ensure overall fishing mortality does not reduce breeding stock below safe limits.

NON-RETAINED SPECIES

Bycatch species impact: Low

These small-scale, multi-species fisheries using mesh nets are unlikely to generate significant impacts such as discarding, as virtually all species taken are marketed in the greater metropolitan area.

Protected species interaction: Negligible

No protected species occur in these fisheries that are susceptible to capture by the fishing gear used.

ECOSYSTEM EFFECTS

Food chain effects: Not assessed

Habitat effects: Low

The operation of gillnets and haul nets over predominantly sand and mud bottoms is unlikely to have any impact on the habitat of these estuaries.

SOCIAL EFFECTS

During 2002, there was an average of about 18 fishers operating in west coast estuarine fisheries, largely supplying fresh fish to meet demand for locally caught product.

ECONOMIC EFFECTS

Estimated annual value (to fishers) for year (2002):
\$683,000

FISHERY GOVERNANCE

Acceptable catch range: Not available

The appropriate ranges cannot be assessed at this time given the limited data available from the decreasing number of commercial fishers operating in these fisheries.

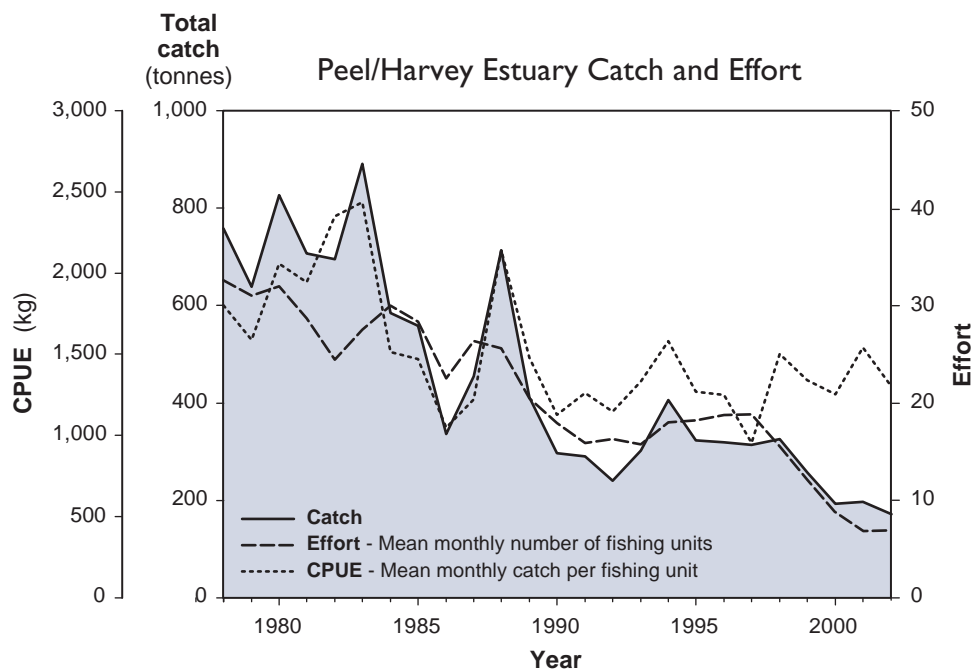
EXTERNAL FACTORS

The estuarine catches since 2001 have generally been lower than in previous years. This appears to be related to a decline in the mean monthly number of boats actively fishing in the estuaries. These reduced levels of fishing activity as a result of voluntary buy-back of commercial access will almost certainly render these valuable long-term commercial catch and effort

data sets less useful in assessing the status of estuarine species in future years.

This will necessitate far greater reliance on the recreational sector and/or independent surveys to provide data that can be

used to determine the status of our important estuarine fish and crustaceans. In addition, even greater cooperation will be required from the remaining commercial fishers to provide information on targeted fishing effort and catches needed to develop a catch curve for these species.



WEST COAST ESTUARINE FIGURE 1

The annual catch, effort and catch per unit effort (CPUE) for the total fishery of the Peel/Harvey Estuary over the period 1978–2002.

Lower West Coast Beach and Embayment Fisheries

Management Summary

Within this sector there are five managed fisheries focused mainly in the Cockburn Sound area, details of which are listed below.

West Coast Beach Bait Managed Fishery: The fishery primarily targets small pelagic fish by the beach seine method within the coastal waters between Moore River and Tim's Thicket, south of Mandurah. The major target species is whitebait, with small quantities of other species being taken.

Continued beach access remains the main management issue relevant to this fishery, particularly where coastal developments restrict vehicle access. A Voluntary Fisheries Adjustment Scheme (VFAS) was implemented during 2002/03 which reduced the number of fishing units from 11 to 3. Consideration will be given to the feasibility of moving to a purse-seine-based fishery in 2003/04.

The review of beach seine fishing in the south-west has prepared recommendations for future management arrangements for consideration by the Minister for Fisheries. Increased development, tourism and marine recreational activities in the area have led to increased resource-sharing pressure and a need to introduce more formal fishery management. A VFAS is also being considered to address some of the resource-sharing issues.

The major target species for the beach seine fisheries is whitebait, with small quantities of other species being taken. As the whitebait stock in the south-west of Western Australia is found mainly in a thin coastal strip close to the coast and the stock size is relatively small, it is considered that the exploitation rate by commercial fishers should not be permitted to increase above current levels.

Cockburn Sound (Crab) Managed Fishery: See West Coast Blue Swimmer Crab Fishery, p. 20.

Cockburn Sound (Fish Net) Managed Fishery: Fish are taken in this fishery by gillnet, beach seine and haul net and the main species targeted are garfish and Australian herring. Other