

# SOUTH COAST BIOREGION

## ABALONE TABLE 2

Roe's abalone catch and effort<sup>1</sup> by quota period.

QUOTA PERIOD <sup>2</sup>	ROE'S TAC kg whole weight <sup>3</sup>	ROE'S CAUGHT kg whole weight	DIVER DAYS <sup>4</sup> (Roe's divers only)	Kg WHOLE WEIGHT per diver day (roe's divers only)
1990	105,000	117,558	881	120
1991	101,000	110,334	758	130
1992	105,000	112,275	644	155
1993	128,000	116,390	735	139
1994	125,960	119,849	804	128
1995	125,960	115,218	975	106
1996	125,960	122,065	950	117
1997	126,790	119,080	750	137
1998	93,960 <sup>5</sup>	86,530	608	123
1999	119,900 <sup>6</sup>	108,278	849	116
2000	115,900 <sup>6</sup>	107,683	759 <sup>7</sup>	120
2001	107,900 <sup>6</sup>	99,173	681	127
<b>2002</b>	<b>107,900</b>	<b>97,660</b>	<b>655</b>	<b>131</b>

### Notes

1. Data source: quota returns.
2. The length of quota period has varied with management changes, and for simplicity has been recorded against the nearest calendar year.
3. Standard conversion factors for meat weight to whole weight for Roe's abalone were 2.5 prior to 2000 and 3.0 from 2000.
4. Effort (diver days) for dedicated roe's divers only. This year, database improvements allowed a better estimate, and consequently, figures vary from last year. A standardisation multiplier (2.3) was applied to 1999–2002 diver days estimates from Area 7, to account for the increase in catch rates arising from the lifting of the daily catch limit of 100 kg.
5. Reduced quota for a six-month season.
6. Industry-instigated voluntary 6 t reduction in quota for 1999 and voluntary 4 t reduction in 2000 and a 2 t reduction in 2001 in response to concerns over the low abundance of legal-sized abalone in Area 8.
7. Prior to 2000, effort estimates (diver days) extracted from days when catch was processed; from 2000 onwards, effort estimates extracted from daily CDR counts.

## South Coast Estuarine (Interim) Managed Fishery

### Management Summary

The South Coast Estuarine Fishery (Interim) Management Plan 2001 was approved by the Minister and published in the Government Gazette on 22 January 2002. The new management arrangements came into force on 1 July 2002 and expire on 30 June 2005.

The new arrangements have better defined permitted fishing methods and times. They have also provided for transferability of authorisations when the number of units in the fishery has been reduced to the optimum level of 15.

#### Governing Legislation/Fishing Authority

South Coast Estuarine Fishery (Interim) Management Plan 2001  
South Coast Estuarine (Interim) Managed Fishery Permit

### Consultation Process

Department–industry meetings

### Research Summary

Research monitoring of fish stocks in south 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 also provides 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 this fishery.

## South Coast Estuarine (Interim) Managed Fishery Status Report

Prepared by S. Ayvazian and G. Nowara

### FISHERY DESCRIPTION

#### Boundaries and access

The following estuaries and inlets located between Cape Beaufort and the WA/SA border are reported under the South Coast Estuarine (Interim) Managed Fishery (SCEF): Broke Inlet, Irwin Inlet, Parry Inlet, Wilson Inlet, Princess Royal Harbour, Oyster Harbour, Waychinicup Inlet, Beaufort Inlet, Gordon Inlet, Hamersley Inlet, Culham Inlet, Jerdacuttup Lakes, Oldfield Inlet, Torradup Inlet and Stokes Inlet. The level of access stood at 25 fishing units in July 2002, a reduction from the previous year as a result of the Voluntary Fisheries Adjustment Scheme. South coast licensees have access to each of these individual south coast estuaries, except Beaufort Inlet where only three licensees a year are granted entry.

Under new management arrangements introduced in July 2002, Parry Inlet and Torradup Inlet were closed to commercial fishing. The SCEF is a multi-species fishery targeting many finfish species. This report presents specific data for three of the most important estuarine fish stocks, namely black bream (*Acanthopagrus butcheri*), cobbler (*Cnidoglanis macrocephalus*) and King George whiting (*Sillaginodes punctata*).

#### Main fishing method

Gillnet/haul net.

### RETAINED SPECIES

**Commercial production (season 2002): 259.5 tonnes**

#### Landings

The total reported landings of 259.5 t from the south coast estuaries in 2002 incorporate molluscs and crustaceans as well as finfish, and are composed of the following species:

Cobbler	<i>Cnidoglanis macrocephalus</i>	92.1 t
Black bream	<i>Acanthopagrus butcheri</i>	36.9 t
Sea mullet	<i>Mugil cephalus</i>	25.7 t
Australian herring	<i>Arripis georgianus</i>	14.9 t
Blue swimmer crabs	<i>Portunus pelagicus</i>	12.9 t
Leatherjacket	Monacanthidae	12.0 t
King George whiting	<i>Sillaginodes punctata</i>	11.3 t
Flathead	Platycephalidae	11.3 t
Yellow eye mullet	<i>Aldrichetta forsteri</i>	10.0 t
Silver bream	<i>Rhabdosargus sarba</i>	8.5 t
Pink snapper	<i>Pagrus auratus</i>	2.1 t
Other species		21.8 t

The reported total commercial catch from south coast estuaries shows a decline from the peak catch in 1992. The reported 2002 catch figure has decreased from the 2001 levels by 14 t (South Coast Estuarine Figure 1). Catches in Beaufort Inlet, Gordon Inlet, Hamersley Inlet, Irwin Inlet, Jerdacuttup Lakes, Oldfield River, Stokes Inlet and Wilson Inlet were each more

than 1 t greater than in 2001. Broke Inlet, Oyster Harbour and Princess Royal Harbour each had 2002 catches reduced by more than 1 t compared to the 2001 catches. Culham Inlet and Parry Inlet showed only minor changes in catches from last year. There were no reported catches in 2002 from Torradup Inlet which, along with Parry Inlet, was closed to commercial fishing in July 2002.

While over 40 species of finfish, sharks, rays and invertebrates are represented in the annual catch from south coast estuaries, the predominant finfish species are usually cobbler, King George whiting, sea mullet, Australian herring and black bream.

**Black bream:** In 2002, the reported catches of black bream in south coast estuaries increased by 9 t from 2001 levels, continuing a general trend towards an increased catch in the last four years (South Coast Estuarine Figure 2). Catches from Beaufort and Stokes Inlets accounted for this increased catch.

**Cobbler:** During 2002, the catch was concentrated in four south coast embayments/estuaries, namely Wilson Inlet, Oyster Harbour, Princess Royal Harbour and Irwin Inlet, with the highest catches (83%) reported from Wilson Inlet. In a number of estuaries, special regulations specific to the target fishing of cobbler have been introduced to protect spawning aggregations and areas. The 2002 catches in Wilson Inlet have increased by 19 t from the 2001 catch. This catch level represents the highest reported catch of cobbler in Wilson Inlet since 1985 (South Coast Estuarine Figure 3).

**King George whiting:** During 2002, the majority of catches were reported from Wilson Inlet. The King George whiting catch from Wilson Inlet for 2002 was an increase over 2001 levels but continues at levels similar to those reported during the early 1990s (South Coast Estuarine Figure 4). The very high 1998 catches resulted from high juvenile recruitment into Wilson Inlet several years earlier. This same trend was reflected for the King George whiting catch from all of the south coast estuaries.

#### Fishing effort

Fishing effort has been reported as the average number of boats fishing per month. This measure of effort gives only a very general indication of effort changes. The number of days fished is also recorded, but it is not possible to determine effort targeted towards individual species from this measure.

Since 1992, the overall fishing effort in the SCEF has declined, and in 2002 this trend continued due to the removal through the VFAS of several fishing units (South Coast Estuarine Figure 1).

#### Catch rate

Catch per unit effort closely followed the trend in catches overall in south coast estuaries until 1997 when the CPUE began to increase whilst fishing effort has decreased.

**Recreational component:** Not assessed

**Stock assessment completed:** Yes

**Black bream:** Black bream populations are genetically unique within each south coast estuary. A preliminary yield-per-recruit

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stock assessment was developed for the black bream stock in the Wellstead Estuary using biological data for the Wellstead Estuary population from research by Sarre (1999), the results of which were presented in the *State of the Fisheries Report 1999/2000*. Based on the trends in both catch and CPUE, the black bream stocks have increased in abundance since 1999.

*Cobbler*: The multi-species targeting aspects of the effort data from Wilson Inlet make a formal assessment of the State's major cobbler fishery in this estuary difficult. However, the current level of catch (which is at an historical high), and average catch per vessel operating, indicate that this valuable stock is trending to higher abundance over the past decade.

*King George whiting*: Approximately 84% of the south coast catch of King George whiting is fished from Wilson Inlet, which provides critical nursery habitat for this species to the age of 3+ years. High catches during the late 1990s were most likely related to a substantial increase in recruits entering the estuary, and not to changes in the overall fishing effort level in this estuary. Catches have now returned to pre-1998 levels. This indicates that the stock abundance is varying independently of fishing effort at this time.

*Australian herring*: See Australian Herring Stock Status Report, pp. 125–127.

**Exploitation status:** Fully exploited

**Breeding stock levels:** Adequate

*Black bream*: A preliminary eggs-per-recruit model was developed for the black bream stock in the Wellstead Estuary using biological data for the Wellstead Estuary 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 lower than the legal minimum length, it is believed that breeding stock levels are adequate. As with the west coast stocks of black bream, this estuarine species exhibits different growth rates in different south coast estuaries. In all cases the size at maturity is lower than the legal minimum length, affording protection to the breeding stock.

*Cobbler*: The breeding stock for cobbler in the Wilson Inlet stock is contained within the estuary. The legal minimum length for the capture of cobbler is 430 mm total length. Research by Laurenson et al. (1993b) on cobbler in Wilson Inlet demonstrated a length at maturity of approximately 425 mm, which corresponds to an age of 3+ to 4+ years. In this estuary, the breeding size and the legal minimum length are very similar. This important species is afforded some additional protection by a closed fishing area in Wilson Inlet. Cobbler exhibit different growth rates in different south coast estuaries, however the size at maturity is generally less than the legal minimum length of 430 mm, thus affording some protection to the breeding stock.

*King George whiting*: Catches of King George whiting from Wilson Inlet result from ocean spawning and subsequent settling of juveniles into estuarine nursery habitats. There is little commercial fishing pressure for this species outside of Wilson Inlet, suggesting that the breeding stock is adequate for this species.

## NON-RETAINED SPECIES

**Bycatch species impact:** Low

The selective fishing methods employing specific mesh sizes historically have not taken significant quantities of bycatch species. However, over recent years, fishing operations targeting finfish have been compromised by the presence of increasing quantities of blue swimmer crabs.

**Protected species interaction:** Negligible

No protected species are threatened by these fisheries, however sea lions do impact negatively on fishing operations on a very limited basis.

## ECOSYSTEM EFFECTS

**Food chain effects:** Low

Recruitment-driven variations in abundance, independent of fishing in these estuarine systems, suggest that significant food chain effects due to fishing are highly unlikely.

**Habitat effects:** Low

The operation of the nets used is unlikely to have any significant impact on the benthic habitats in these estuaries.

## SOCIAL EFFECTS

The SCEF involved an average of around 35 fishers during the 2002 fishing season, as well as generating additional regional employment. Most importantly, the catches from this fishery also provide fresh local fish to regional centres.

## ECONOMIC EFFECTS

**Estimated annual value (to fishers) for year (2002):**  
\$914,000

## FISHERY GOVERNANCE

**Acceptable catch range:** 200–500 tonnes

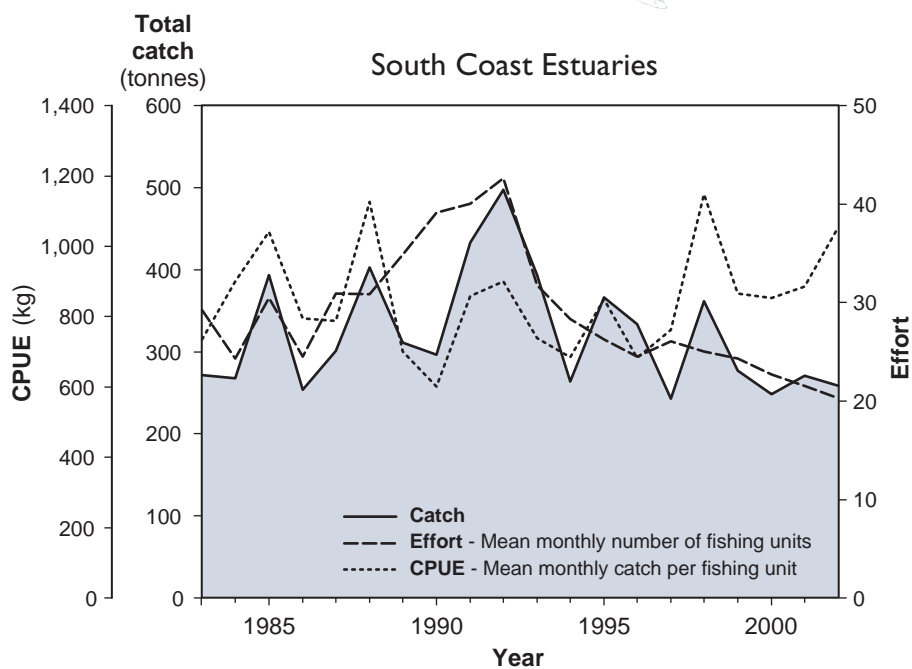
The acceptable catch range under current management arrangements is 200–500 t (rounded to the nearest 50 t) and the catch of 260 t in 2002 was within this acceptable range.

The acceptable catch range was derived by a double exponential smoothed forecasting of the past annual catches through to 1998 and the variation of observations around the predictions. The confidence intervals are set at 80%. Future annual catch values which fall outside of this range will be investigated. Where consecutive values occur outside of the range, changed management arrangements may need to be considered. Given the continuing trend for reduced effort in this fishery, mostly due to FAS funded buy-backs, the acceptable catch range may need to be recalculated.

## EXTERNAL FACTORS

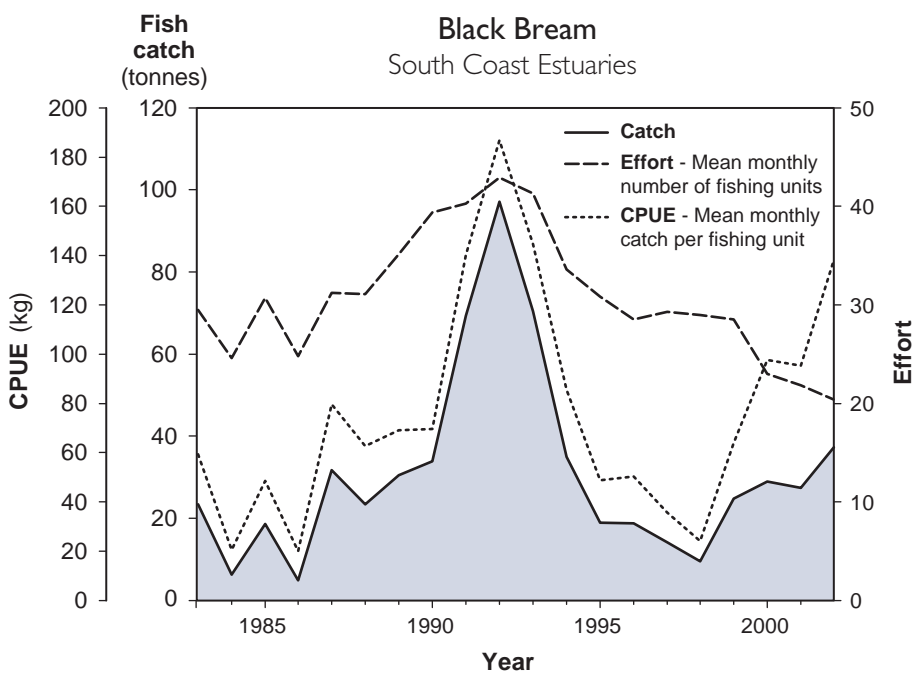
Variation in fish abundance in these south coast estuarine stocks is largely driven by environmental influences on recruitment. In the SCEF this is further complicated by the natural closure of some estuaries and the need for human intervention to breach estuarine bars, mostly for a range of

reasons related to estuarine amenity coupled with ecosystem 'health'. These factors, which are outside the control of the Department of Fisheries, often have a dominant influence on the reported commercial catch and effort from year to year.



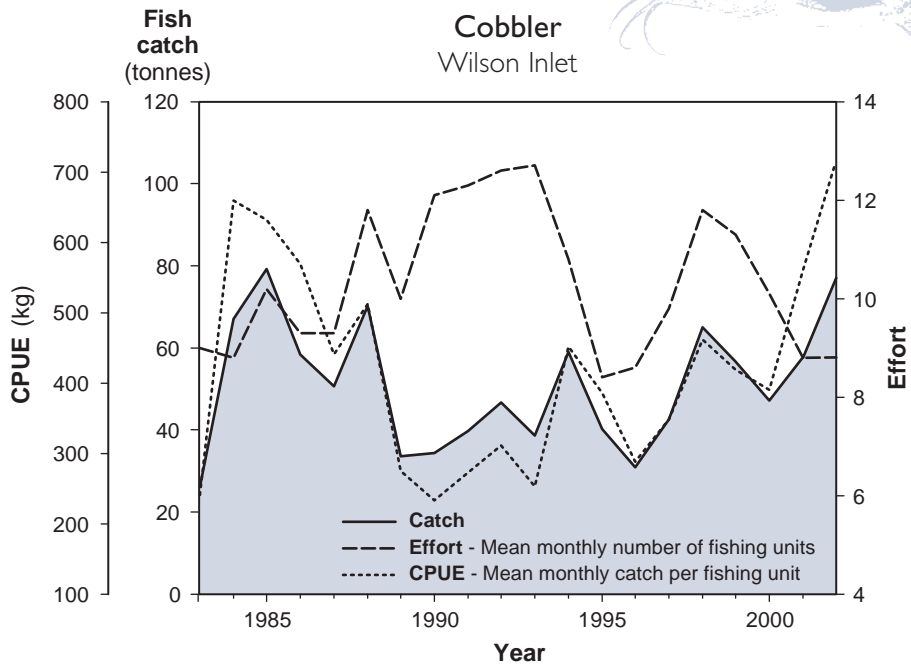
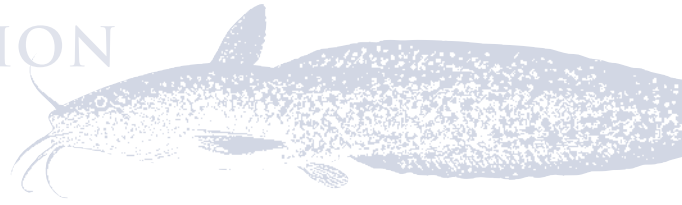
**SOUTH COAST ESTUARINE FIGURE 1**

The annual catch, effort and catch per unit effort (CPUE) for the South Coast Estuarine Fishery over the period 1983–2002. Note that prior to 1993, the south coast estuarine catch figures included King George Sound, which was not part of the SCEF. From 1993, when a separate fishing block was created for Princess Royal Harbour, the catch figures include Princess Royal Harbour but not King George Sound.



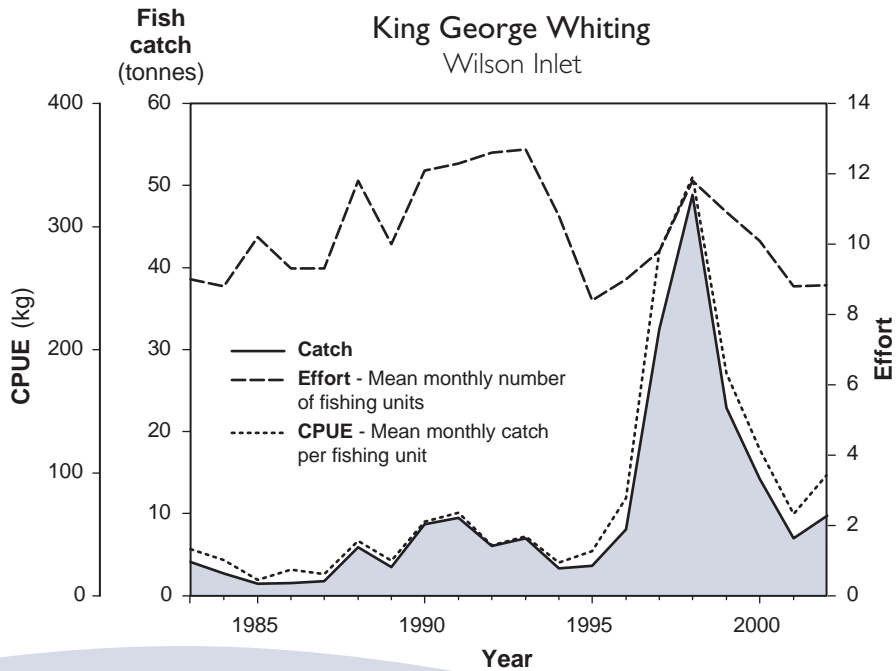
**SOUTH COAST ESTUARINE FIGURE 2**

The annual catch, effort and catch per unit effort (CPUE) for the black bream (*Acanthopagrus butcheri*) fishery in south coast estuaries over the period 1983–2002.



### SOUTH COAST ESTUARINE FIGURE 3

The annual catch, effort and catch per unit effort (CPUE) for the cobler (*Cnidogobius macrocephalus*) fishery of Wilson Inlet over the period 1983–2002.



### SOUTH COAST ESTUARINE FIGURE 4

The annual catch, effort and catch per unit effort (CPUE) for the King George whiting (*Sillaginodes punctata*) fishery of Wilson Inlet over the period 1983–2002.