

## Western Australian Salmon Managed Fishery

### MANAGEMENT OVERVIEW

Western Australian salmon (*Arripis truttaceus*) are taken primarily during their annual east-to-west migration between February and April each year, by fishing teams using a beach seine net from small boats. Salmon may also be taken outside this period, particularly on the south coast.

There are two managed salmon fisheries:

- The South Coast Salmon Managed Fishery permits authorisation holders to operate from specifically assigned beaches between Shoal Cape and Cape Beaufort.
- The South West Coast Salmon Managed Fishery operates north of Cape Beaufort, comprising specific beaches that are shared by the authorisation holders through priority of netting rules.

In February 1999, amendments to both management plans were implemented to permit the practice of penning (holding) salmon for up to 12 hours whilst awaiting or arranging loading and transport. No other amendments were made.

One South Coast Salmon Managed Fishery authority was surrendered under a Voluntary Fisheries Adjustment Scheme in late 1998.

Management issues and Ministerial advice relating to the fisheries are discussed at meetings of the Australian Salmon and Herring Industry Advisory Committee.

### COMPLIANCE AND COMMUNITY EDUCATION OVERVIEW

The South Coast and South West Coast Salmon Managed Fisheries are monitored by staff located at Bunbury, Busselton, Augusta and Albany.

Compliance monitoring in this shoreline haul net fishery mainly involves beach inspections for block nets and/or the penning of fish, and compliance with Designated Fishing Zone boundaries and commercial fishing licences.

Compliance has remained high in both fisheries. Some instances of recreational/commercial conflict within designated zones were reported from the south coast, and where possible were addressed through consultation and mediation. Generally, however, conflict between commercial and recreational fishermen is minimal, and relations seem to be improving with more education, with each user group understanding and accepting the other's rights and desires.

### RESEARCH OVERVIEW

The main information used to monitor this important commercial and recreational stock is from industry CAESS data and historical biological research.

Current research activities for the salmon stock include assessing the impact of the Leeuwin Current on salmon movement, investigations into the origin of recruits, and development of a simulation model for the fishery.

These research data have been used to compile the following status report.

### Fishery Status Report

**Main Features**

**Stock assessment complete:**  
Yes

**Exploitation status:**  
Fully exploited

**Breeding stock levels:**  
Adequate

**Previous catch projections for year 1998:**  
1,700-5,000 tonnes

**Catch current season (1998):**  
2,801 tonnes

**Estimated annual value (to fishers) for year 1998:**  
\$1,330,000

**Catch projection next year (1999):**  
1,800-4,900 tonnes

**Recreational component (1998):**  
*Although the recreational catch is not part of this managed fishery, some catch and effort data are available. There is no information for 1998; however, a recreational fishing survey of shore anglers was conducted during 1994 and 1995. Data for the range of catches of Australian salmon over those two years are presented below.*

|                  |   |
|------------------|---|
| West coast       | 8-16% of combined recreational/commercial catch |
| South coast      | 4-6% of combined recreational/commercial catch  |
| South-east coast | 100% of combined recreational/commercial catch  |

### Boundaries and Access

Each of 19 licensed south coast teams has access to a nominated beach in this sector, the boundaries of which are 'Western Australian waters below high water mark from Cape Beaufort to the waters up to the eastern boundary of the State on the south coast of Western Australia'. A further 12 licensees collectively have access to beaches in the west coast sector, the



boundaries of which are 'Western Australian waters from the eastern boundary of the State on the north coast of Western Australia to Cape Beaufort on the south-west coast of Western Australia'. Three licensees have access to the west coast sector north of the Busselton jetty.

## Annual Production

### Main fishing method

Beach seine.

### Landings

Between March and May 1998, the south coast catch of salmon was 1,568 tonnes (CAESS data). There were 595 tonnes caught in the 'back run' between June and December. The January and February catch was 78 tonnes, which would have been part of the back run from the previous year. The south-west and west coast catch for 1998 totalled 560 tonnes (CAESS data). For these two areas almost all of the catch was taken between March and May.

The highest proportion of the 1998 south coast catch (1,190 tonnes; 53.1%) was taken from the central region (south coast area II), from east of Albany to Cape Riche. A total of 676 tonnes (30.2% of overall catch) was taken in the western sector of the fishery (south coast area III). This area covers from west of Albany to Windy Harbour. Fewer fish (374 tonnes; 16.7%) were taken from the eastern sector of the fishery (south coast area I), from Cape Riche to Point Charles east of Bremer Bay. The whole State catch for the year, of 2,801 tonnes, was about 200 tonnes more than the previous year (Salmon Figure 1).

### Fishing effort

There are 19 south coast and 15 west coast fishing teams.

### Catch rate

The average catch per fishing team was 82 tonnes for 1998.

## Stock Assessment

The preliminary yield-per-recruit and egg-per-recruit analyses indicate that, while many smaller salmon are being caught by the fishery, the fishing effort has not impacted on the number of eggs available. Research to date has shown that environmental factors exert a dominant influence on year-class strength and subsequent recruitment to the Western Australian commercial fishery. However, this annual level of recruitment is a function of the relative size of contributions from Western Australian and South Australian nursery areas to the overall recruited year classes. Hence there is a need for some index of the relative contribution of South Australian and Western Australian recruitment to the Western Australian commercial catch. More complex yield-per-recruit or egg-per-recruit analyses are needed to account for this variability in recruitment before an accurate

determination of the status of the stock can be completed.

## Breeding Stock Levels

Current commercial catches indicate the breeding stock is still at an acceptable level. However, egg-per-recruit analysis indicates that the current exploitation level on the western Australian salmon population is high, owing to the nature of the fishery. Any further increase in the catch from either commercial or recreational fishers, or significant reduction in recruitment due to unusual environmental effects, could take the stock below the critical biological reference point. This result is consistent with that from the yield-per-recruit analysis.

## Catch Projection for Year 1999

The predicted catch for 1999 is between 1,800 and 4,900 tonnes. This projection is derived by double exponential smoothed forecasting of the past annual catches and the variation of observations around the predictions. The confidence intervals have been set at 80%

## Product Value for Year 1998

The landed value of the catch is approximately \$1,330,000 from the managed fishery. The south coast catch in 1998 was received by five processors: Albany Bait Producers, Princess Royal Seafoods, Allerton's Bait Supply, Bremer Bay Fish Processors and Albany Fish Supplies.

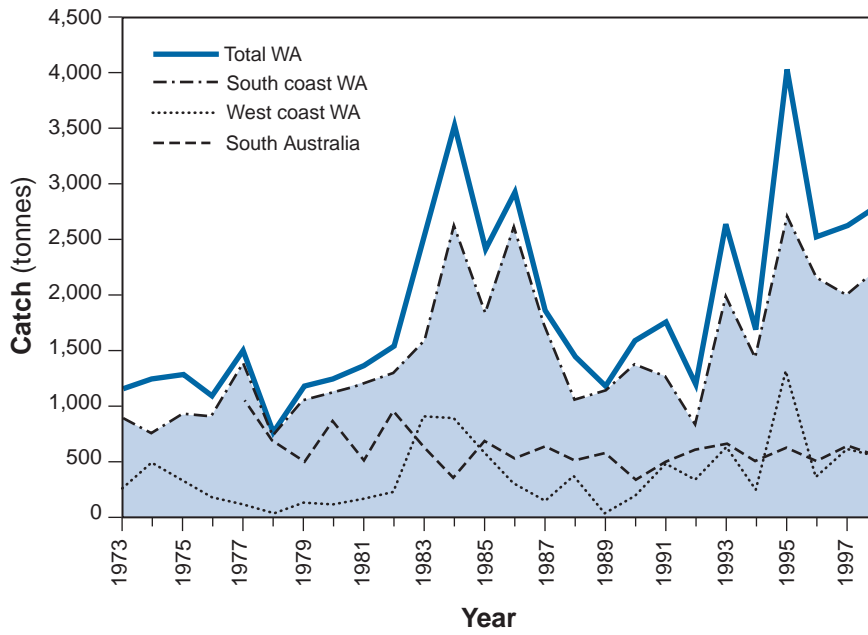
## General Comments

In order to begin resolving stock assessment difficulties, preliminary sampling was undertaken in Western Australian nursery areas in late 1994 with a view to developing a recruitment index for Western Australian fish comparable to the existing South Australian recruitment index. Research on partitioning the catch into South Australian and Western Australian recruits, and the development of an index of stock abundance, are also proceeding.

Another aspect of research currently being pursued is monitoring the influence of the Leeuwin Current on the abundance and dispersal of 0+ recruits along the Western Australia south coast and into South Australia, and the abundance and timing of subsequent commercial catches of Australian salmon. Previous research by Lenanton et al. (1991) has shown a positive relationship between the annual recruitment of 0+ Australian salmon and sea level (indicator of Leeuwin Current strength) during the 1980s. It has been difficult to predict the later influence of the Leeuwin Current on the Western Australian commercial fishery because of 'the complicated size-dependent recruitment process and the variable annual rates of

fishing and natural mortality during the relatively long period of four or more years leading up to the recruitment into the fishery'.<sup>1</sup>

1. Lenanton, R.C., L.Joll, J. Penn and K. Jones. 1991. The influence of the Leeuwin Current on coastal fisheries of Western Australia. *Journal of the Royal Society of Western Australia*, 74: 101-114.



**Salmon Figure 1** Australian salmon catches for South Australia and Western Australia for the period 1973 to 1998. Catches prior to 1977 for South Australia are unavailable.

