

**Status Report  
to PIRSA Fisheries**

**Southern Zone  
Rock Lobster (*Jasus edwardsii*)  
Fishery Status Report 2004/05**

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## 1 EXECUTIVE SUMMARY

- In 2004 (i.e. the 2004/05 season), the TACC in the SZRLF was 1,900 tonnes. The total reported commercial catch from logbook data was 1896.56 tonnes. A total of 1,051,520 potlifts were required to catch the TACC, which was an increase of 0.9% from 2003 (1,042,233 potlifts). In 2004, catch was highest in December (391 tonnes) and lowest in May (16.6 tonnes).
- The number of recreational pot registrations in 2004 for the SZRLF and NZRLF combined was 5,656. The number of individual pots in use was 9,827.
- In 2004, 59% of the commercial catch was taken in 31-60 m depth range with 98% of the catch taken in depths of <90 m.
- The annual CPUE in 2004 was 1.80 kg/potlift, a marginal decrease from 1.81 kg/potlift in 2003. During 2004, CPUE was highest at depths >90 m, reaching ~3.5 kg/potlift in December, January and March. CPUE ranged between 0.84 and 2.35 kg/potlift in shallower depth ranges of 0-30 and 31-60 m throughout the season.
- Mean weight decreased marginally from 0.85 kg in 2003 to 0.84 kg in 2004. Mean weight in 2004 was lowest in November (0.78 kg) and highest in May (1.02 kg).
- In 2004, the pre-recruit index (PRI) decreased marginally from 1.33 undersized/potlift in 2003 to 1.31 undersized/potlift. The PRI ranged between 1.19 and 1.45 undersized/potlift from October to February of the 2004 season. Thereafter, it decreased to 0.57 undersized/potlift in May.
- Biomass, as determined by the qR model, has been increasing since 1996 in the SZRLF peaking at 6,856 tonnes in 2002. In 2004, it decreased marginally to 6,530 tonnes.
- Egg production, as determined by the qR model has been increasing since 1996 in the SZRLF, peaking at 1,531 billion eggs in 2003. In 2004, it decreased marginally to 1,500 billion.
- Exploitation rate in the SZRLF has been declining since 1997 but increased slightly in 2003 from 25.75% to 28.84% in line with a quota increase from 1770 to 1900 tonnes. Model outputs for the 2004 season indicate that exploitation rate is currently at 28.80%.
- In 2004, all of the performance indicators in the SZRLF were within, or positively outside, the reference points as defined in the Fishery Management Plan. As a result, the outlook for the fishery remains positive.

## 2 FISHERY STATISTICS

### 2.1 Catch, effort and CPUE

#### 2.1.1 Interannual patterns

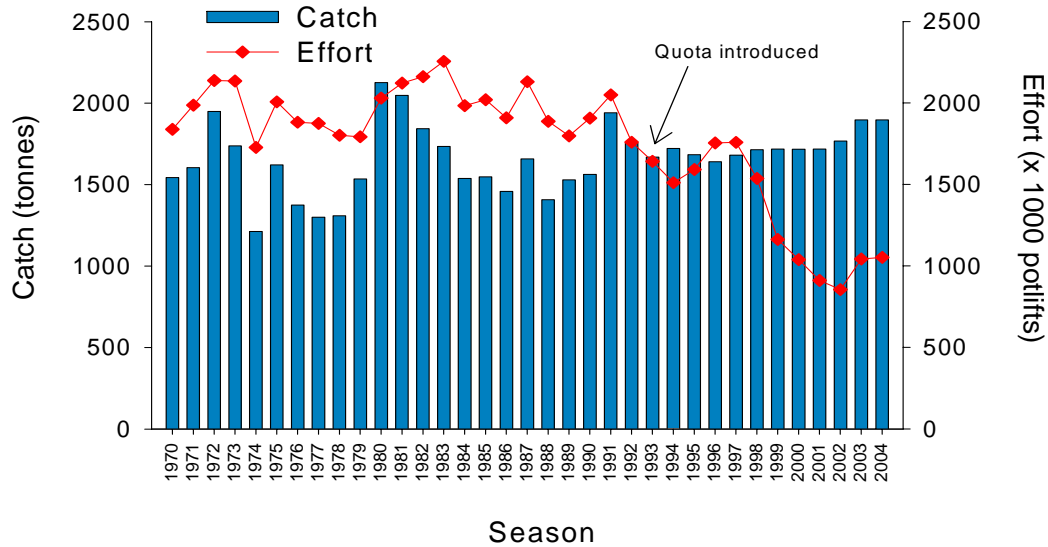


Figure 1. Inter-annual trends in catch and effort in the SZRLF from 1970 to 2004.

In 2004, the TACC in the SZRLF was 1,900 tonnes (Figure 1). The total reported commercial catch from logbook data was 1896.56 tonnes. Effort in 2004 was 1,051,520 potlifts, which was an increase of 0.9% from 2003 (1,042,233 potlifts).

#### 2.1.2 Within season trends

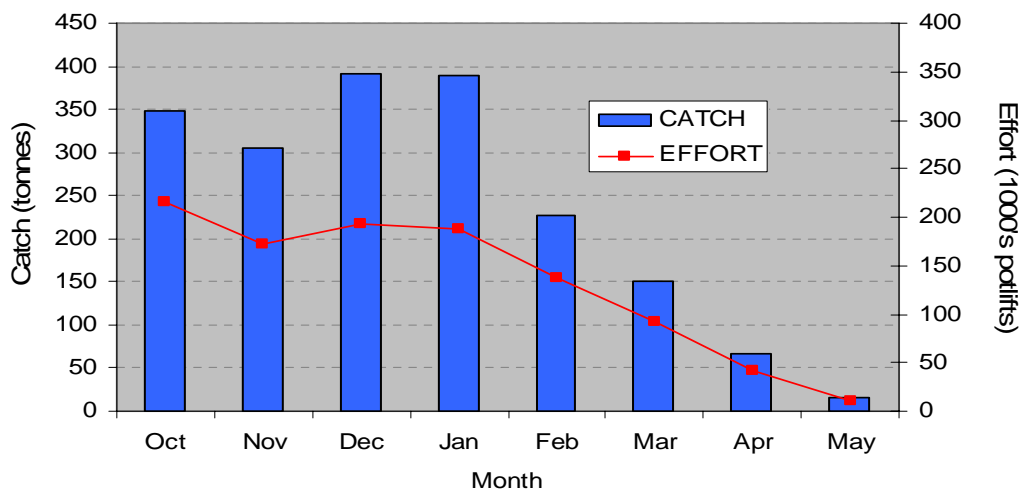


Figure 2. Within season trends in catch and effort in the SZRLF for the 2004 season.

In 2004, the highest catches were taken in the first four months of the season from October to January (Figure 2). Catches from February to April ranged between 227 and 67 tonnes, with 16.6 tonnes landed in May. The trend in effort reflected catch levels by month.

### 2.1.3 Patterns across MFAs

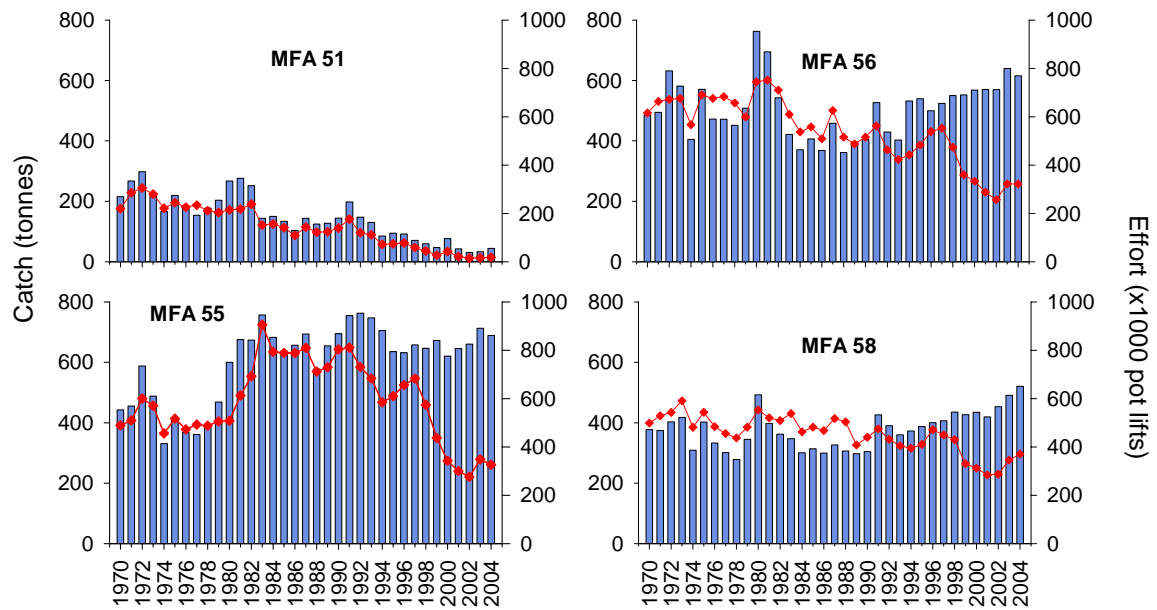


Figure 3. Inter-annual trends in catch and effort in the main Marine Fishing Areas (MFAs) of the SZRLF for the fishing seasons between 1970 and 2004.

In the 2004 season, 98.5% of the total catch was taken in MFAs 51, 55, 56 and 58 (Figure 3). Catches marginally decreased in MFAs 55 and 56 and increased in MFAs 51 and 58. A similar trend was reflected in effort across MFAs (Refer to Figure 20 for location of MFAs).

### 2.1.4 Catch by depth

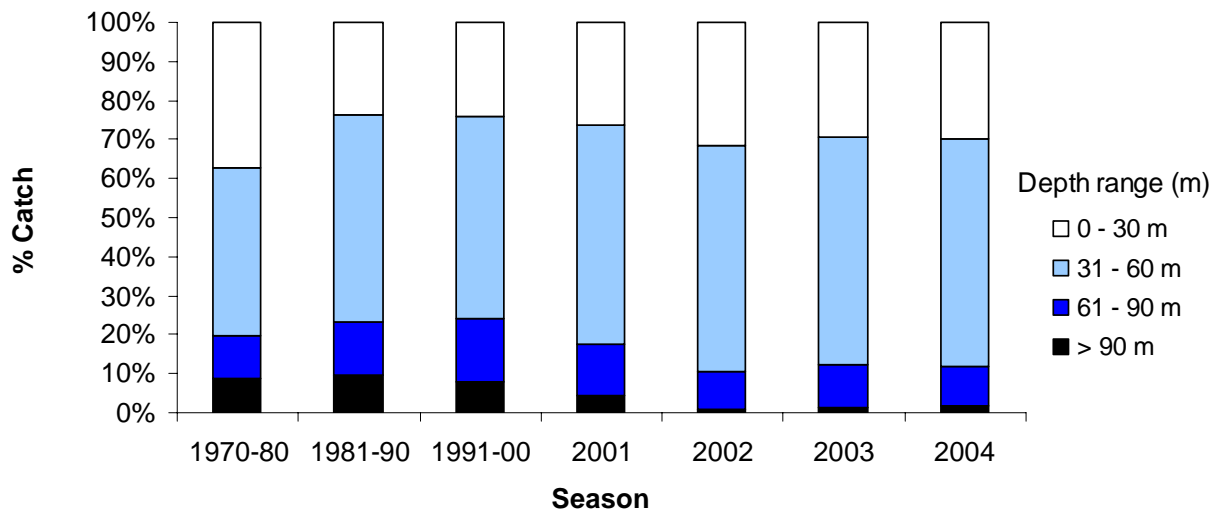


Figure 4. Percentage of catch taken from four depth ranges in the SZRLF during the 1970s, 1980s, 1990s and 2001, 2002, 2003 and 2004 fishing seasons.

In the 2004 season, 59% of the catch was taken in 31-60 m depth range with 98% of the catch taken in depths of <90 m (Figure 4).

### 2.1.5 Annual CPUE

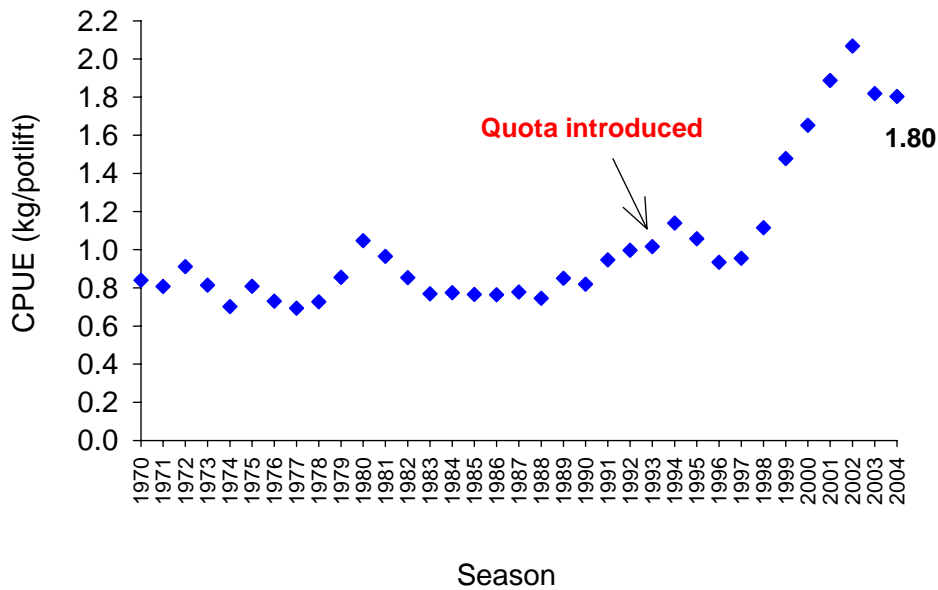


Figure 5 Inter-annual trends in CPUE in the SZRLF between 1970 and 2004.

The CPUE in the SZRLF increased substantially between 1996 (0.92 kg/potlift) and 2002 (2.1 kg/potlift) (Figure 5). CPUE in 2004 was 1.80 kg/potlift. Note that this estimate does not take into account discard rates due to highgrading.

### 2.1.6 CPUE by depth

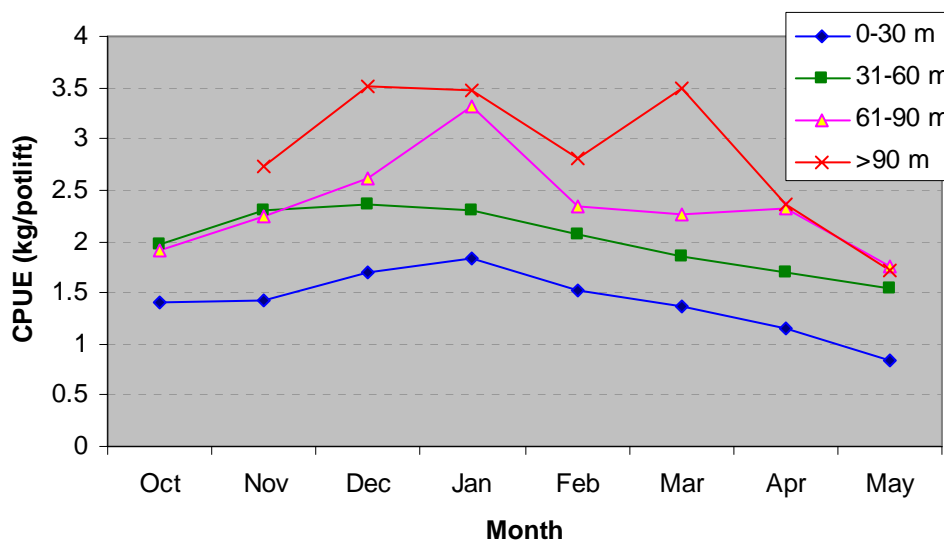


Figure 6 Within season trends in CPUE by depth in the SZRLF during the 2004/05 season.

During 2004, CPUE was highest at depths >90 m, reaching ~3.5 kg/potlift in December, January and March (Figure 6). CPUE ranged between 0.84 and 2.35 kg/potlift in shallower depth ranges of 0-30 and 31-60 m throughout the season. CPUE was highest in December/January for the shallower depth ranges.

## 2.2 Annual mean weight

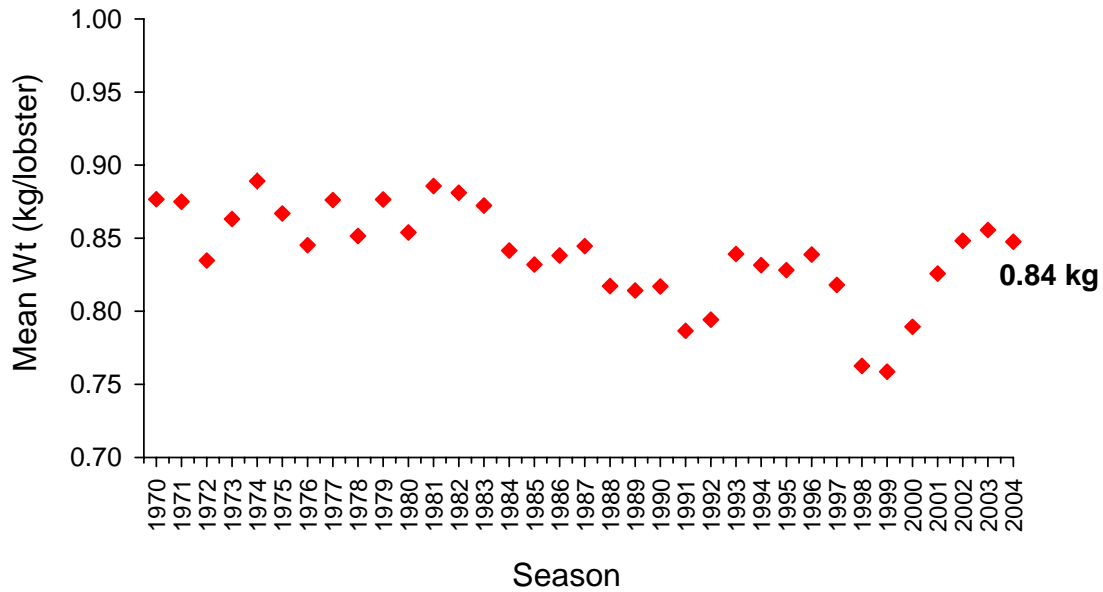


Figure 7 Inter-annual trends in mean lobster weight in the SZRLF from 1970 to 2004. Mean lobster weight has been increasing in the SZRLF since 1999 (Figure 7). Mean weight decreased marginally from 0.85 kg in 2003 to 0.84 kg in 2004.

### 2.2.1 Monthly mean weight

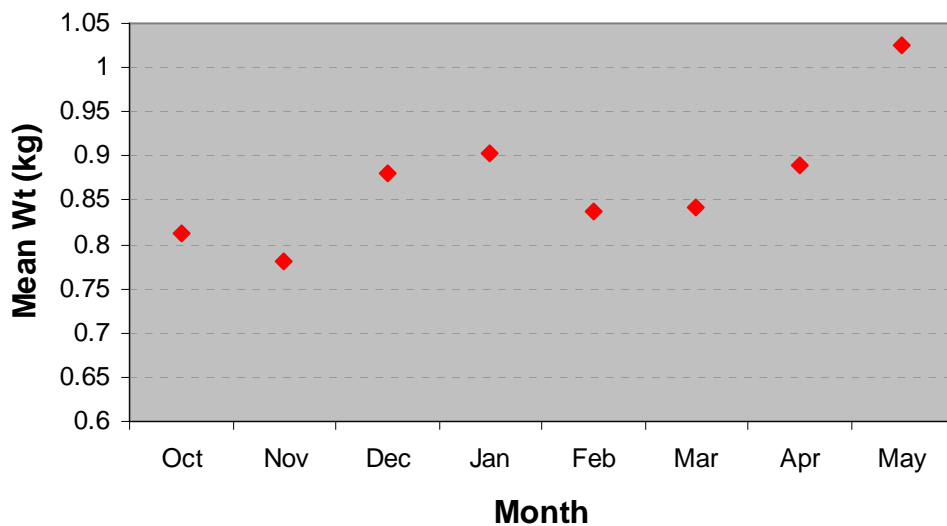


Figure 8 Within season trends in mean monthly weight in the SZRLF for season 2004. Mean weight in 2004 was lowest in November (0.78 kg) and highest in May (1.02 kg) (Figure 8).



### 2.3 Annual Pre-recruit Index

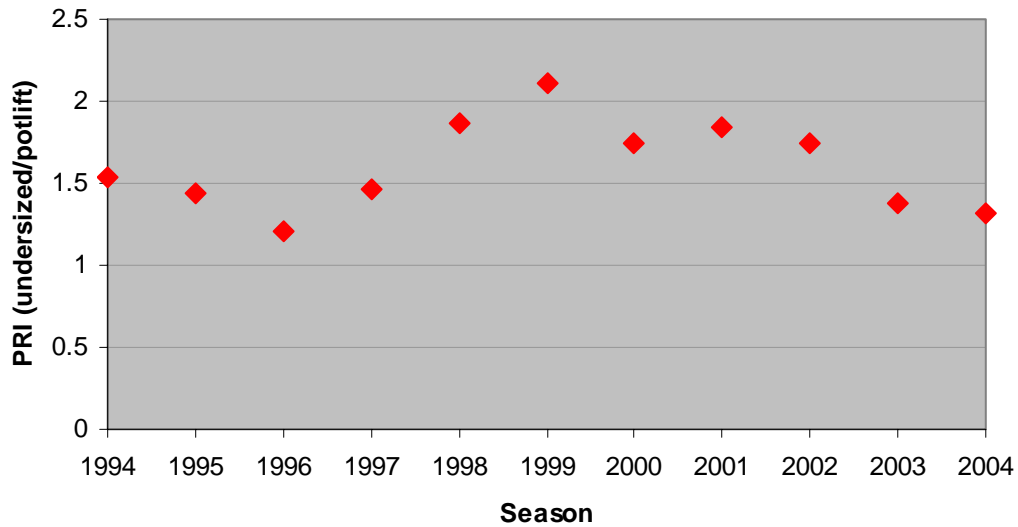


Figure 9 Inter-annual trends in pre-recruit index (PRI) in the SZRLF from 1994 to 2004.

The pre-recruit index (PRI) has ranged between 1.74 and 1.84 undersized/potlift over the 2000 to 2002 season period (Figure 9). The PRI decreased marginally from 1.33 undersized/potlift in 2003 to 1.31 undersized/potlift in 2004.

#### 2.3.1 Within season trends in Pre-recruit Index

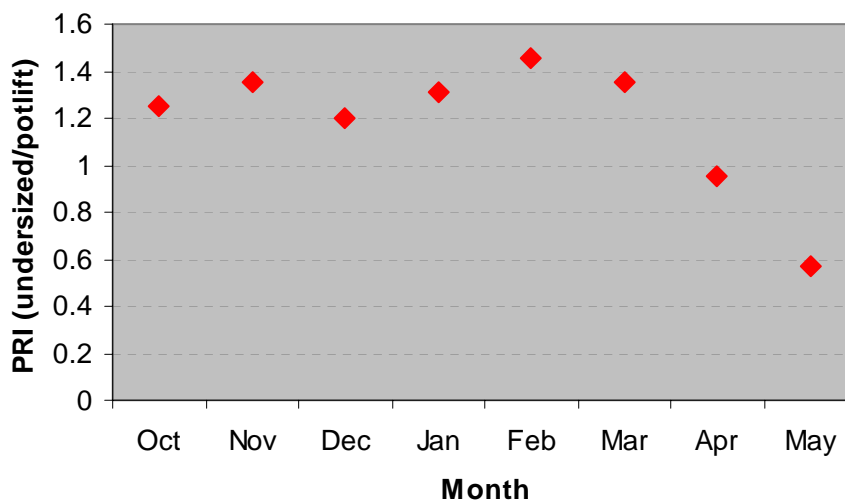


Figure 10 Within season trends in pre-recruit index (PRI) in the SZRLF for the 2004 season.

The PRI ranged between 1.19 and 1.45 undersized/potlift from October to February of the 2004 season. Thereafter, it decreased to 0.57 undersized/potlift in May.

## 2.4 Sex Ratios

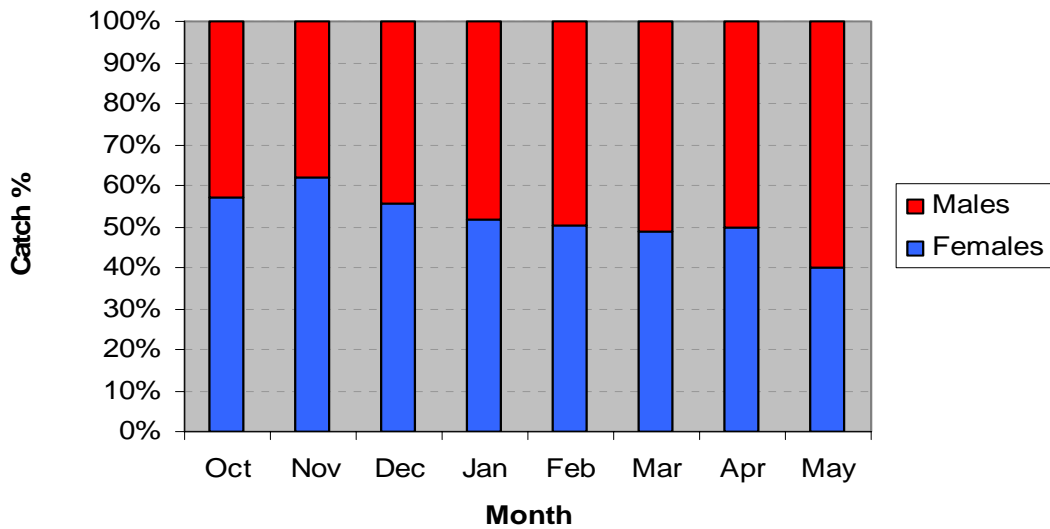


Figure 11 Within season trends in sex ratios in the SZRLF 2004 season.

The proportion of females in the catch was lowest in May (40%) and highest in November (62%).

### 2.4.1 Reproductive condition of females

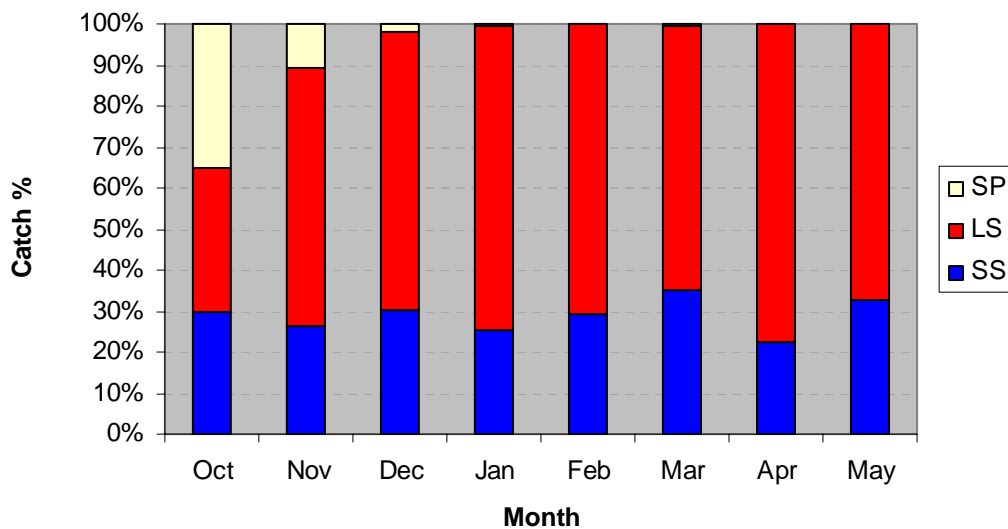


Figure 12 Within season trends in reproductive condition of females during the SZRLF 2004 season. SP = Spawning; LS = Long Setae (sexually mature); SS = Short Setae (sexually immature).

In total, 35% of the female catch in October was represented by spawning females with a steady decline in proportion to 2% in December. No spawning females were observed from March to May where sexually mature individuals represented approximately 64-78% of the catch.

## 2.5 Length Frequency

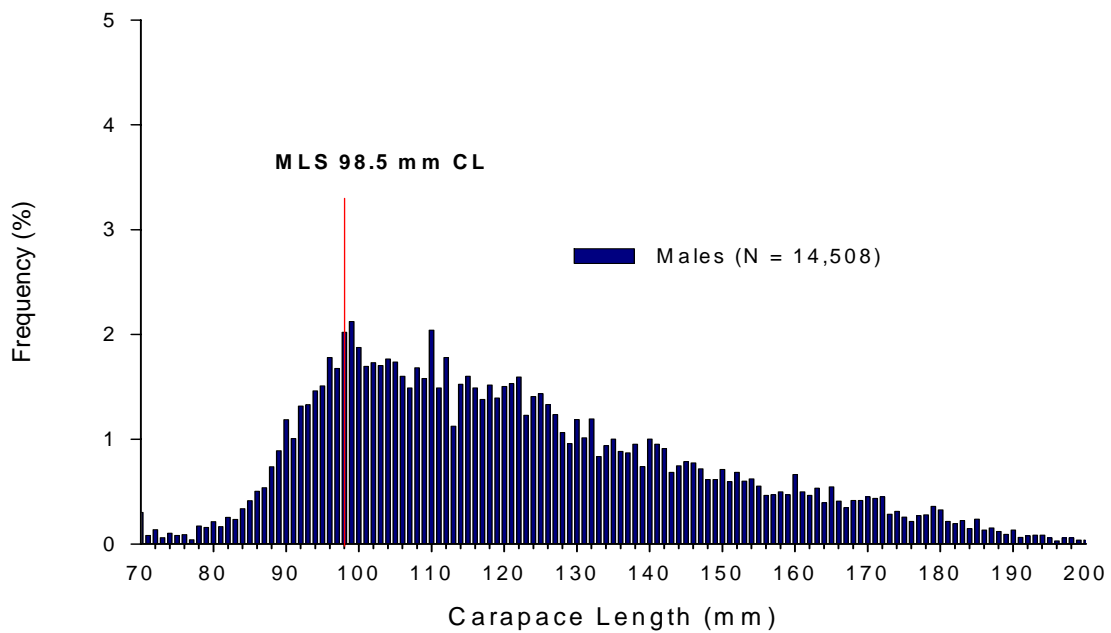


Figure 13 Length frequency distributions of male lobsters in the SZRLF during the 2004 season as recorded from the voluntary catch sampling program. MLS = Minimum Legal Size.

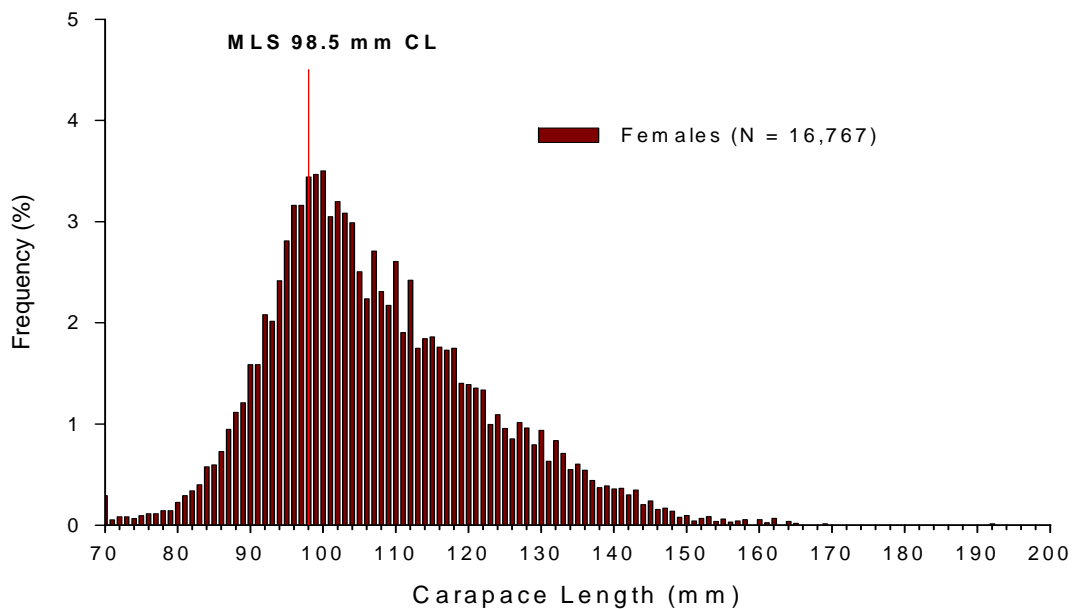


Figure 14 Length frequency distributions of female lobsters in the SZRLF during the 2004 season as recorded from the voluntary catch sampling program. MLS = Minimum Legal Size.

In 2004, the proportion of measured male lobsters larger than the Minimum Legal Size (MLS) of 98.5 mm CL was 81%. For females, the proportion was 70% (Figures 13 and 14).

### 3 qR MODEL OUTPUTS

#### 3.1 qR Biomass

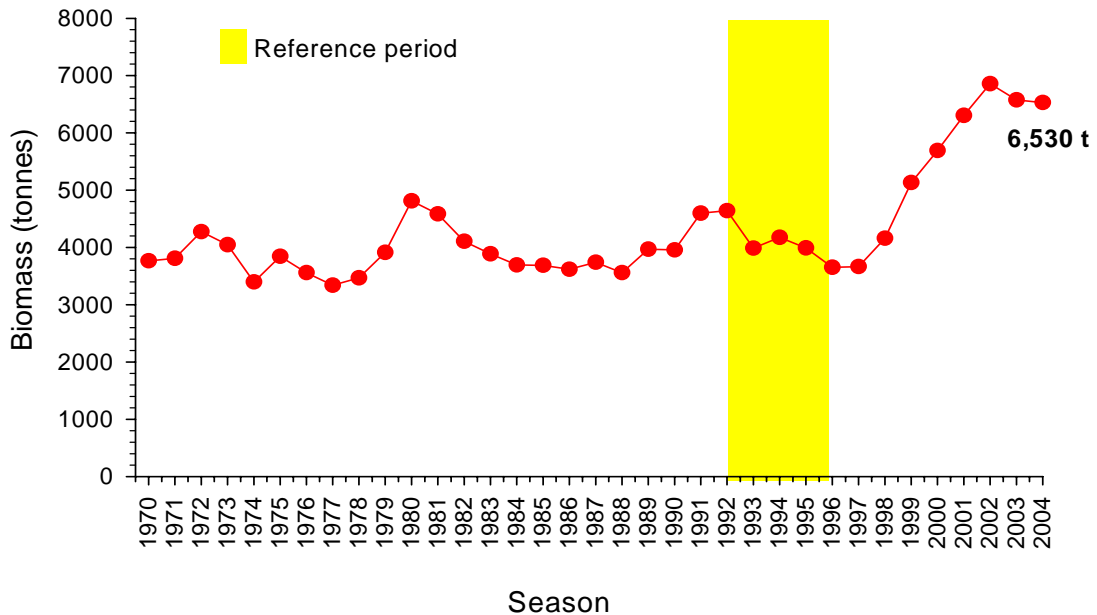


Figure 15 Estimates of exploitable biomass obtained from the 2004 qR model.

Biomass, as determined by the qR model, has been increasing since 1996 in the SZRLF peaking at 6,856 tonnes in 2002 (Figure 15). In 2004, it decreased slightly to 6,530 tonnes. The full stock assessment report will include outputs from the integrated stock assessment model.

#### 3.2 qR Egg production

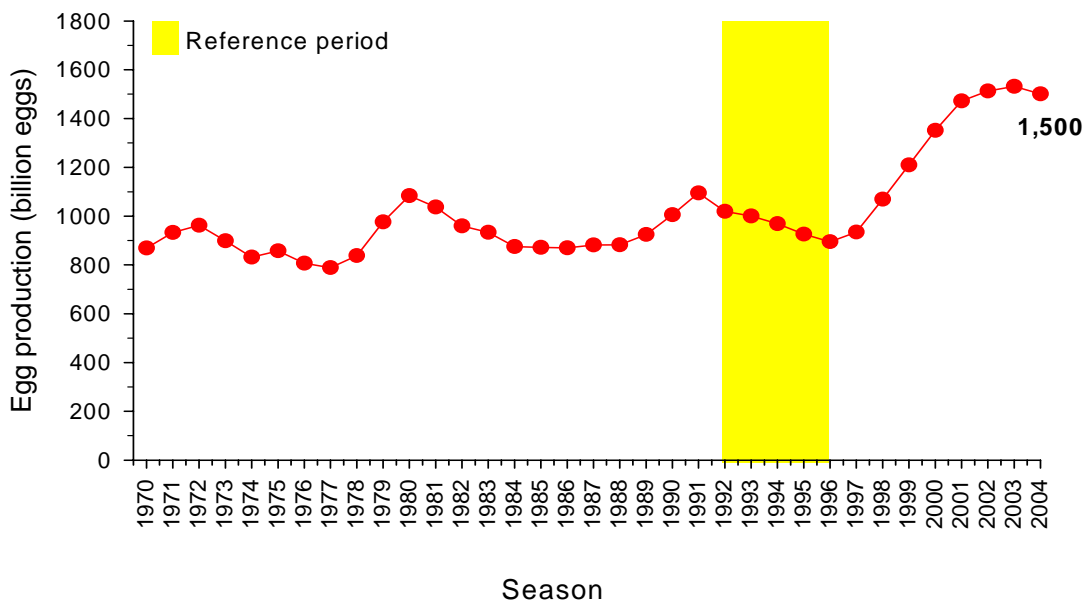


Figure 16 Estimates of egg production obtained from the 2004 qR model.

Egg production in the SZRLF has been increasing since 1996, peaking at 1,531 billion eggs in 2003. (Figure 16). In 2004, it decreased marginally to 1,500 billion.

### 3.3 Percent of virgin egg production

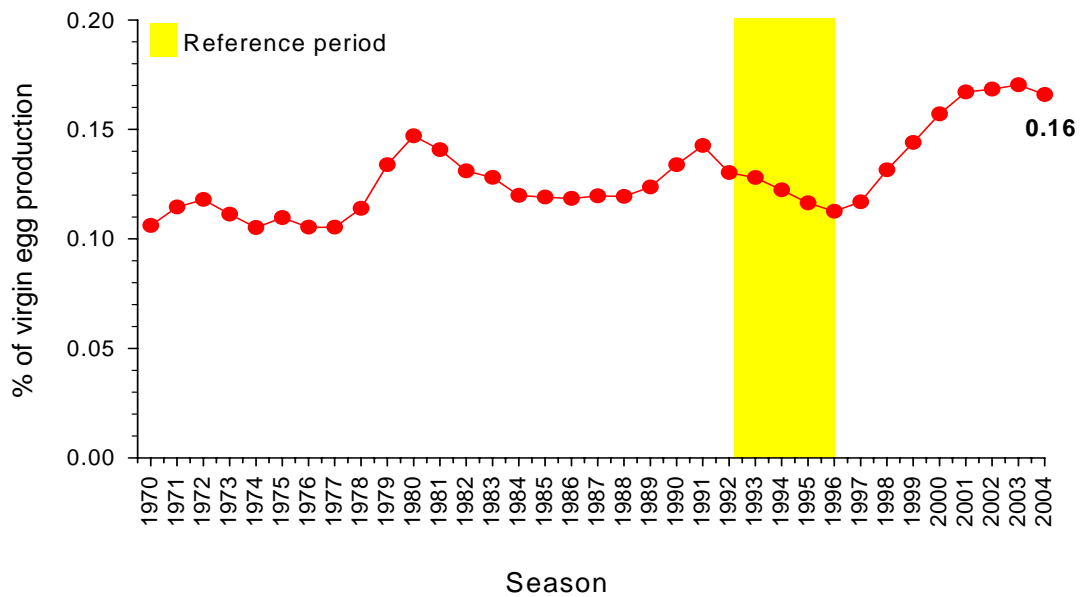


Figure 17 Estimates of % of virgin egg production as obtained from the 2004 qR model.

Model outputs for the 2004 season suggest that current egg production equates to 16% of virgin (Figure 17).

### 3.4 Exploitation Rate

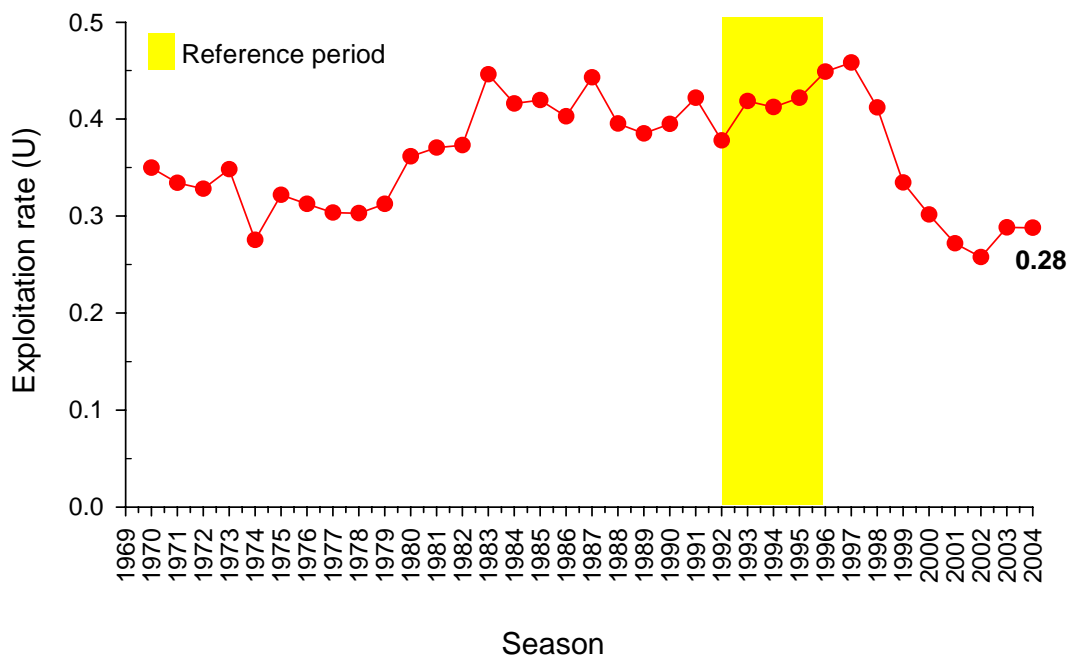


Figure 18 Estimates of exploitation as obtained from the 2004 qR model.

Exploitation rate in the SZRLF has been declining since 1997 but increased slightly in 2003 (Fig. 18). Model outputs for the 2004 season indicate that exploitation rate is currently at 28%.

## 4 BIOLOGICAL PERFORMANCE INDICATORS

<b>INDICATOR</b>	<b>2004/05</b>	<b>Lower</b>	<b>Upper</b>
Exploitation Rate (qR)	0.2880	0.3780	0.4490
Egg Production (billions; qR)	1,500	895	1,019
Pre-recruit index	1.31	1.19	1.59
Catch rate (kg/potlift)	1.81	0.93	1.13
Biomass	6,530	3,651	4,639
Mean size (kg)	0.84	0.78	0.83

Table 1 Biological performance indicators for the SZRLF and current status levels for the 2004 season.

The historical data from 1992 through 1996 have been used to define the range of the biological performance indicators. In the 2004 season, all of the performance indicators in the SZRLF were within, or positively outside, the reference points as defined in the Fishery Management Plan.

## 5 SUMMARY

Based on the performance indicators for the fishery from the 2004 season, the outlook for the SZRLF remains positive. A more detailed analysis of the status of the SZRLF will be presented in the SZRLF Stock Assessment Report due for completion in May 2006.

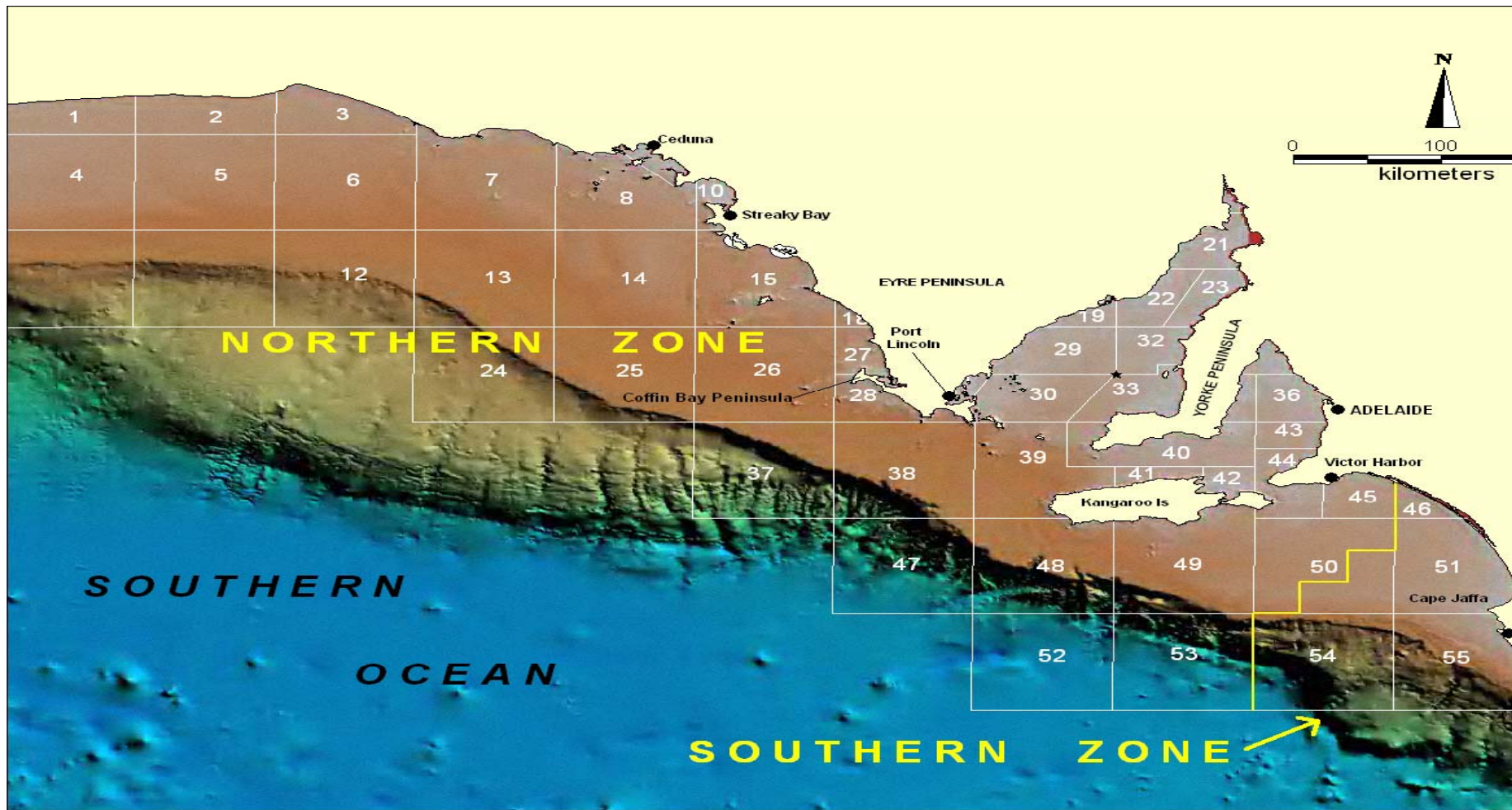


Figure 19 Northern and Southern Zones and Marine Fishing Areas in the South Australian Rock Lobster Fishery.