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The western rock lobster fishery 2001/2002 to 2002/2003

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Government of Western Australia

Fish for the future

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Fisheries Research in Western Australia
The Fisheries Research Division of the Department of Fisheries is based at the Western Australian Marine Research Laboratories, PO Box 20, North Beach (Perth), Western Australia, 6920. The Marine Research Laboratories serve as the centre for fisheries research in the State of Western Australia.

Research programs conducted by the Fisheries Research Division and laboratories investigate basic fish biology, stock identity and levels, population dynamics, environmental factors, and other factors related to commercial fisheries, recreational fisheries and aquaculture. The Fisheries Research Division also maintains the State data base of catch and effort fisheries statistics.

The primary function of the Fisheries Research Division is to provide scientific advice to government in the formulation of management policies for developing and sustaining Western Australian fisheries.

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The western rock lobster fishery 2001/2002 to 2002/2003

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Abstract

Season 2001/2002 produced 8,983 tonnes, a far cry from last season's catch of 11,300 t. The sharp decline in catch was most likely the result of unfavourable environmental conditions throughout much of the season. The catches by the three zones were 1,651 tonnes in zone A, 2,800 tonnes in zone B and 4,532 tonnes in zone C. The sharp decline in total catch on the previous season was also reflected in declining catches in the three zones. Nominal effort also declined slightly from 10.487 million pot lifts in 2000/2001 to 10.367 million pot lifts in 2001/2002. Following the very low catch of 2001/2002, the 2002/2003 season catch increased by 2,432 tonnes (21.3%) to 11,415 tonnes, with nominal effort falling slightly to 10.215 million pot lifts.

Three major regulations were introduced for the 2001/2002 season. Firstly, the process of "unitizing" the managed fishery licence was necessary to provide a scheme of entitlements consistent with the Fish Resources Management Act 1994. Secondly, due to a BSE ('mad cow' disease) scare in Japan the use of any bovine material, animal skin or hide, or anything to which any mammal skin or hide is attached was prohibited as bait to ensure our Asian markets were protected. Thirdly, an adaptive management process saw the lifting of the prohibition on landing oversize, non-setose female lobsters for a single season during 2001/2002. This demonstrated some management flexibility and provided some additional catch in a forecast low catch season but with a predicted minimal impact on the very high level of egg production.

The economic outlook for 2001/2002 was bleak and despite terrorist activities and a very late start to the season, a record beach price average of $33.75 per kg was achieved. This in large part was due to a low catch and favourable exchange rates. Competition from Mexican live product was increasing and made a significant impact in 2002/2003. As a consequence, the production of high levels of tails and whole boiled resulted, but nevertheless, good prices were achieved.

Leasing of pots gained momentum and a "price war" between processors led to very high beach prices up to $36 per kg but the Australian dollar turned quickly against the US dollar and the beach price plummeted to $10-12 per kg mid way through the season. Although an average beach price of $24.45 was achieved, anecdotal evidence suggest that virtually all processors recorded a loss for the seaon.

The egg production in the southern region remained high and stable but in the northern fishery it continued to decline which resulted in an industry call for an options paper to examine ways of reducing fishing effort.

1.0 Introduction

The fishery for the western rock lobster, *Panulirus cygnus*, is the most important single species fishery in Australia and an important source of export income for Western Australia. During the two seasons covered by this report (2001/2002 and 2002/2003), Western Australia produced annual rock lobster catches of 8,983 and 11,415 tonnes. The fishery is governed by a complex management system designed to limit the exploitation rate to an acceptable level and to enforce regulations such as a legal minimum size and full protection for breeding female lobsters (Bowen 1971, Hancock 1981, Bowen and Hancock 1989, Phillips and Brown 1989). Thus, it is important to monitor the state of the fishery constantly, both to ensure that the fishing effort remains within acceptable limits and that the regulations are adequately performing their function of maintaining sustainable catches and an adequate level of egg production. Inherent in this ongoing monitoring, is careful examination of changes in fishing practice and gear modifications, because these innovations can lead to increases in efficiency which may not be detectable through the usual calculations of fishing effort and therefore affect the real level of fishing effort (Brown, Caputi and Barker 1995), but which may cause declines in egg production.

This paper is the twentieth in a series of reviews of the rock lobster seasons which discuss fishing practice, catches, fishing effort, mean size and various other factors which affect the rate of exploitation of the stock. This knowledge provides a good understanding of the status of the fishery and is documented herein to ensure historical data for the fishery are readily available. Each review follows a standardised format to allow season to season comparisons and examination of long term trends. This particular report covers the two seasons 2001/2002 and 2002/2003. It includes, as an appendix, the Commercial Fisheries Production Bulletins issued for these two seasons.

2.0 Methods

Catch and effort data were extracted from figures obtained from fishermen's monthly returns, recorded on a 1° x 1° block basis (Fig 1a) supplied from the Department of Fisheries catch and effort statistical system (CAESS) and from voluntary rock lobster research log books. Catch composition and mean size information was gathered from measurements made by the Department of Fisheries research staff aboard commercial vessels fishing from Dongara, Jurien, Lancelin, Abrolhos, Fremantle and Kalbarri. Information on trends in fishing practice was gathered principally from interviews with fishermen at various ports as well as from comments made in research log books.

The percentage of rock lobster fishers who submitted rock lobster research records voluntarily during 2001/2002 and 2002/2003 was as follows:

Season	Percentage
2001/2002	35.4
2002/2003	40.5

3.0 Results

3.1 Catch and effort data

The fishing season extends from 15 November to 30 June following and may be subdivided into three distinct components:

(i) the "whites" fishery (George 1958) begins in late November, as pale-coloured newly-moulted rock lobsters migrate offshore from the shallow reef areas to the deeper water breeding areas, and finishes arbitrarily on 31 December;

(ii) the "coastal reds" fishery begins on 1 January and ends on 30 June; and

(iii) the Abrolhos Islands fishery, which is restricted to the period 15 March to 30 June.

In fishing seasons prior to 1977/78, both the coastal and the Abrolhos Islands fisheries ended on 14 August. These seasons were shortened by six weeks in 1977/78 as a conservation measure (Hancock 1981). During the period covered by this report, the "whites" run commenced (defined as when the initial large increases in catches of "whites" occurs) in the Fremantle, Jurien and Geraldton areas approximately at the following times:

Season	Fremantle	Jurien	Geraldton
2001/2002	4 December	6 December	2 December
2002/2003	8 December	7 December	7 December

Total catches (kg) and nominal fishing effort (number of pot lifts), recorded by fishermen in their monthly returns, were as follows:

Catch and effort	2001/2002	2002/2003
"Whites" catch (15 Nov-31 Dec)	1,837,289	2,691,017
"Whites" effort (15 Nov-31 Dec)	2,291,689	2,365,703
"Coastal reds" catch (1 Jan-30 June)	5,494,699	6,998,369
"Coastal reds" effort (1 Jan-30 June)	6,860,927	6,683,297
Abrolhos catch (15 March-30 June)	1,651,288	1,725,995
Abrolhos effort (15 March-30 June)	1,214,250	1,166,487
Total catch	**8,983,276**	**11,415,381**
Total effort	**10,366,866**	**10,215,487**

	2001/2002	2002/2003
B Zone Catch	2,799,527	3,241,648
B Zone Effort	3,785,932	3,659,324
C Zone Catch	4,532,461	6,447,738
C Zone Effort	5,366,684	5,389,676

Abrolhos catch (A Zone) figures are derived from statistical blocks 27131, 28130, 28131, 28141, 29131, 29141 and 97011 to 97015 (Figures 1a-c).

Catch figures are corrected to match the independent processor's monthly production figures, to account for any unreported catches or missing records in the monthly returns. However, since season 1992/93 (Chubb and Barker 1998) the difference between the two figures varied by less than 0.2% and therefore is considered negligible.

Not included in the above production figures are the estimated annual recreational catches listed below:

Season	Annual recreational catch (kg)[1]	Percentage of commercial catch
2001/2002	545,000	6.1%
2002/2003	890,000	7.8%

Figure 2 shows comparative commercial total catch (excluding the recreational component), nominal fishing effort (*i.e.* the number of pot lifts [pulls] not adjusted for efficiency increases) and catch per pot lift data from 1944/45 to 2002/2003. Fishing effort is calculated from the average number of pots and number of days fished recorded by fishermen in their monthly returns. In the annual reports prior to 1977/78 fishing effort was calculated as effective fishing effort by the method of Gulland (1969). Catch and effort data from various statistical blocks (Figures 1a and b), are shown in Tables 1 and 2 with catches expressed by weight in kilograms and fishing effort as number of pot lifts. Tables 3 and 4 show catch per pot lift data for the same statistical blocks. The total levels of fishing effort recorded for each of the 2001/2002 and 2002/2003 seasons were as follows:

Season	Total fishing effort	Variation on previous season
2001/2002	10,366,866	1.1% down
2002/2003	10,215,487	1.5% down

3.2 Exports and grade categories

This section is based on data provided by all processing establishments from Fremantle to Geraldton. Over the years, the export of rock lobster products has changed from predominantly frozen raw tails to a mixture of live, frozen whole cooked, frozen whole raw and tails. Thus to compare the grade composition of the catch over the years, all product lines have been changed to the equivalent in numbers of cartons of tails (11.34 kg) in each grade. The following table represents each season's total production for all grades with all product lines expressed as percentages of the total equivalent number of cartons of tails by grade.

[1] The recreational catches given in previous reports in this series, up to and including the 1994/95 season, were adjusted by a factor which estimated the illegal take of rock lobsters. This practice has been discontinued and the recreational catch is given here only as the estimated catch as actually reported by recreational fishers through research surveys. Thus, in the 1994/95 season report, the recreational catch was reported as 526 tonnes. Without the correction factor it was 308 tonnes. For more information see Melville-Smith, R. and Anderton, S.M. (2000) Western rock lobster mail surveys of licenced recreational fishers 1986/87 – 1998/99. *Fisheries WA Fisheries Research Report No. 122.*

Percentage of each grade packed

Grades		A % (140-179g)	B % (180-239g)	C % (240-279g)	D % (280-359g)	E % (360-479g)	F % (480-599g)	G % (600-667g)	H % (>668g)
Area	**Season**								
South (Augusta to Wedge Is)	2001/2002	42.4	25.0	10.9	9.1	5.6	4.0	2.2	0.8
	2002/2003	41.0	33.7	11.2	7.5	3.4	1.9	1.1	0.2
Central (Green Islets to Green Head)	2001/2002	38.0	31.7	16.1	5.6	1.7	3.0	1.7	2.3
	2002/2003	44.0	36.7	11.4	3.5	1.1	1.8	0.8	0.9
North* (Leeman to Denham)	2001/2002	44.9	35.2	9.9	5.0	2.6	1.9	0.4	0.0
	2002/2003	45.2	36.9	9.3	5.2	2.3	0.8	0.3	0.0
Total	2001/2002	43.1	30.9	11.0	6.7	3.7	2.8	1.3	0.6
	2002/2003	43.2	35.4	10.4	6.1	2.7	1.4	0.7	0.2

*__Note:__ North includes the Abrolhos Islands.

3.3 Mean size

Samples of rock lobsters were measured aboard commercial vessels (from Fremantle, Lancelin, Jurien, Dongara, Kalbarri and the Abrolhos Islands) in four depth categories. The sample included all commercial size rock lobsters, plus some undersize which would have been reduced in number due to the escape gap (54 mm) selection (Bowen 1963; Brown and Caputi 1986), breeding females and females above the maximum size limit. Mean carapace lengths of males and females taken throughout the fishing season from the various depth categories at all sites, are compared in Tables 5 and 6. This shows that larger lobsters are caught in deeper waters at all locations and Fremantle has larger lobsters than other locations. The omissions in the tables are due either to fishermen not fishing the area in question or to some circumstance which prevented the data from being collected (vessel breakdown, etc.).

3.4 Number of boats and pots

The number of boats licensed to fish for rock lobster in the various zones is controlled. Provided certain conditions are met, boat/licence owners are able to transfer their pot entitlement between fishing zones A and B (off season). The zones are defined as follows:

- Zone A - see Figures 1b and c;
- Zone B - coastal fishery from 21°44' S to 30° S excluding the A zone;
- Zone C - the waters between 30° south latitude and 34°24' south latitude excluding all the waters on the south coast east of 115°8' east longitude;
- Big Bank - see Figure 1c.

The number of boats licensed in the various zones was as follows:

Zone	Total number of licensed boats 2001/2002 (as at 17/4/2002)	Boats actually fishing (2001/2002)	% Difference on previous season (total licences)	2002/2003 (as at 18/12/2002)	Boats actually fishing (2002/2003)	% Difference on previous season (total licences)
A	148	142	0.0	152	145	+2.7
B	151	144	0.0	148	137	-2.0
C	301	284	+2.0	301	281	0.0
Total	600	570*	+1.0	601	563**	+0.2

*570 vessels actually fishing, 30 licences with one pot on licence.

**563 vessels actually fishing, 38 licences with one pot on licence.

Listed below are the numbers of licensed pots by the various zones for the seasons 2001/2002 to 2002/2003:

Zone	Number of licensed pots 2001/2002 (as at 17/4/2002)	2002/2003 (as at 18/12/2002)
A	16,682	17,463
B	16,864	16,083
C	35,737	35,736
Total	69,283	69,282

Note: Under the current management arrangements only 82% of these pots were allowed to be fished.

3.5 Forecast of recruitment

The settlement of puerulus on collectors of artificial seaweed along the coast is monitored monthly on the full moon.

Annual indices of puerulus settlement to predict future recruitment were based on the mean of the number of puerulus settling per collector at Abrolhos, Seven Mile Beach and Alkimos (Caputi et al. 1995). To ensure comparisons with historical data presented in this series of reports, the total catch and average puerulus settlement from the Jurien and Seven Mile Beach sites are given in Figure 3.

Research indicates that puerulus settlement three years prior to a season provides a significant proportion of new recruits late in the reds catch for that season, while the puerulus settling four years prior to the season of catch provides the whites catch (Caputi, et al. 1995).

2001/2002

Puerulus settlements in 1997/98 (68), and 1998/99 (47) produced a below average commercial catch of 9.0 million kg in 2001/2002.

2002/2003

Puerulus settlements in 1998/99 (47) and 1999/2000 (122) produced a high commercial catch of 11.4 million kg in 2002/2003.

3.6 Introduction of new legislation

Note: While these reports detail the legislative changes applicable to the Western Rock Lobster Fishery, it has been past policy to include legislative changes related to all rock lobster fisheries in Western Australia for information. This policy is continued herein.

2001/2002

Big Bank

From 22 January 2002, to correct a previous error, Schedule 4 of the West Coast Rock Lobster Management Plan 1993 was amended by deleting "112°37' E" and substituting "113°37' E".

From 12 October 2001 Schedule 4 of the West Coast Rock Lobster Management Plan 1993, was amended to exclude from the Big Bank area, a portion of the coastal strip east of 112°45' E longitude and between 21°44' S and 25°30' S latitude . The principal Plan was amended by deleting Schedule 4 and substituting the following –

> "All of the waters of the Indian Ocean bounded by a line commencing at the intersection of 27°30' S latitude and 112°37' E longitude; thence in a north westerly direction to the intersection of 25°30' S latitude and 112°45' E longitude, thence north along 112°45' E longitude to its intersection with 21°44' S latitude; thence due west along 21°44' S latitude to its intersection with the boundary of the Australian Fishing Zone, thence generally in a south easterly direction along that boundary to its intersection with 27°30' S latitude; thence east along 27°30' S latitude to the starting point."

From 12 October 2001, the West Coast Rock Lobster Management Plan 1993, was amended to change the existing "pot entitlement" to "units of entitlement". The many changes are administrative in nature, complex and as such the entire West Coast Rock Lobster Fishery Management Plan Amendment (No. 2) 2001 (Facts Sheet) is included in 9.0 Appendices at the rear of this report.

From 10 August 2002, Clause 13A of the West Coast Rock Lobster Management Plan 1993 was amended to change the licensing date from 31 August to 30 September.

From 14 November 2001, Regulation 31A was inserted, whereby:

Certain bait not to be used, or carried on a boat to fish for rock lobsters -

a) any bovine matter;
b) any animal skin or hide; or
c) anything to which any mammal skin or hide is attracted.

From 21 September 2001 the Cottesloe Fish Habitat Protection Area was established and at the same time commercial fishing for rock lobsters was banned in the area of the FHPA.

Schedule 1

All those waters bounded by-

a) the high water mark,
b) a line drawn 800 metres westward from the high water mark (being a prolongation of the centre of Grant Street, Cottesloe where Grant Street meets with Marine Parade, Cottesloe),

c) a line drawn 800 metres westward from a point on the high water mark west of a point fifty metres north of the northern-most part of the Leighton Railway Overpass where it meets Curtin Avenue, Cottesloe, and

d) a line linking the westernmost points of the lines described in (b) and (c).

From 14 November 2001, Regulation 10 was amended to allow the taking of oversize non-setone female rock lobsters during the period 15 November 2001 to 14 November 2002.

2002/2003

As from 4 February 2003, Prohibition on Fishing (Lancelin Island Lagoon), Order No. 11 of 2002 was amended to redefine the area as follows-

> "All the waters of the Indian Ocean bounded by a line commencing at the intersection of 31°00.323' south latitude and 115°18.862' east longitude (northern most point of Lancelin Island); thence west along the parallel to the intersection of 31°00.323' south latitude and 115°18.695' east longitude; thence south along the meridian to the intersection of 31°00.539' south latitude and 115°18.695' east longitude; thence east by south along the geodesic to the intersection of 31°00.573' south latitude and 115°18.895' east longitude (high water mark on Lancelin Island); thence generally westerly and northerly along the high water mark on the western shore of Lancelin Island to the commencement point."

As from 18 February 2003, pursuant to Clause 14B of the West Coast Rock Lobster Management Plan 1993, the fishing capacity of the various zones was redefined as follows-

a) the capacity of zones A and B of the West Coast Rock Lobster Managed Fishery is reduced from 27,509 pots to 27,508 pots; and

b) the capacity of zone C of the West Coast Rock Lobster Managed Fishery is reduced from 29304 pots to 29303 pots.

As from 29 November 2002, Rock Lobster Pot Specifications (Revocation) Order No. 9 of 2002 revoked three orders under Section 43 of the Act. These orders related to the use of rock lobster pots to fish for rock lobsters, both commercially and recreationally.

As from 29 November 2002, Regulation 31A was repealed and replaced by the following-

31A. Certain bait not to be used, or carried on a boat, to fish for rock lobster.

1) A person must not fish for rock lobster using as a bait-
   a) any bovine material other than gelatine or tallow;
   b) any skin or hide;
   c) anything to which any mammal skin or hide is attached; or
   d) any lobster material.

2) The master of a boat used or intended to be used to fish for rock lobster must not cause or permit to be carried on the boat –
   a) any bovine material other than gelatine or tallow;
   b) any skin or hide;
   c) anything to which any mammal skin or hide is attached; or
   d) any lobster material,

   for use as bait.

3) Sub regulations (1) (b) and 2 (b) do not apply to the skin of any fish other than rock lobster.

4) It is a defence in proceedings for an offence against sub regulation (2) that the bovine material or skin or hide -

   a) was food intended for human consumption; or

   b) was human clothing intended to be used as human clothing.

After Regulation 56 the following regulation is inserted

56A. Prohibition on fishing with hooks attached to rock lobster pot, float lines, moorings, anchors etc.

A person must not fish using a fish hook attached to -

a) a rock lobster pot;

b) a float line or float line attached to a rock lobster pot;

c) a boat mooring or mooring line; or

d) a boat anchor or anchor line.

After Schedule 13 Clause 3(3) the following sub clauses are inserted –

4) A beehive rock lobster pot that is constructed using stick or cane or both stick and cane, unless approved by the Executive Director, is not to exceed, when measured externally –

   a) 975 millimetres in diameter; and

   b) 470 millimetres in height.

During the 2001/2002 and 2002/2003 rock lobster seasons the following scale of licence fees and charges were introduced:

Rock lobster (managed fisheries)	**2001/2002**	**2002/2003**
West Coast	$138.00 per unit	$131.00 per unit
Windy Harbour/Augusta	$40.80 per pot	$40.80 per pot
Esperance	$43.00 per pot	$43.00 per pot
Rock lobster pot licence (for areas outside the existing managed rock lobster fisheries)	$55.00	$65.00
Fishing boat licence	$55.00	$65.00
Carrier boat licence	$55.00	$65.00
Professional fisherman's licence	$55.00	$65.00
Recreational fishing licence (rock lobster)	$25.00	$30.00
Processor's licences (land based establishments)		
Rock lobster or prawns only	$555.00	$645.00
Rock lobster and prawns only	$1,110.00	$1,290.00
Rock lobster, prawns and wetfish	$1,380.00	$1,600.00
Rock lobster or prawns and wetfish only	$825.00	$960.00
Wetfish only	$270.00	$315.00
Seagoing processing establishment	$270.00	$315.00
Transfer of processor's licence	$350.00	$410.00
Removal of processor's licence	$350.00	$410.00

3.7 Effects of New Legislation

In the 2001/2002 and 2002/2003 seasons a number of regulations were altered for administrative purposes or to declare Fish Habitat Protection Areas. However, three significant regulations were gazetted.

The first related to the process of "unitization" where pot entitlements became units of entitlement. The reason for unitization is that the Fish Resources Management Act 1994 includes references to units of entitlement in a managed fishery. The fishery Management Plan was amended to provide a scheme of entitlement consistent with the provisions of the Act. As a practical result, financial institutions recognized a unit share of the fishery held on a licence as providing greater certainty of that share than simply the number of pots being held. Unitization will occur across all managed fisheries in Western Australia.

The second regulation introduced for the 2001/2002 and subsequent seasons was the prohibition on the use of any bovine material, any animal skin or hide, or anything to which any mammal skin or hide is attached. Cow hide was commonly used as a holding bait. Nevertheless, restaurateurs in Asia frequently complained to exporters that unsightly hair in the intestine was a problem when the lobsters were cut in half. Whilst some fishers voluntarily stopped using hide, a practice the processors tried to promote, it was not until the Bovine Spongiform Encephalopathy (BSE or "mad cow" disease) scare in Japan in 2001 and the perceived effect the use of cow hide would have on a major market, that the use of bovine material and other baits having hide or hair were banned. The regulations was redefined in 2002 following a number of issues raised through experience with the new regulation in its first season of implementation. The regulation did not affect catch rates although some fishers moved towards the use of fish skins (eg orange roughy), kangaroo flesh and bone and mutton necks as substitute holding baits.

A third significant rule change allowed the taking of oversize non-setose female rock lobsters during the 2001/2002 season. This adaptive management action was implemented to demonstrate some flexibility in the management arrangements and, at a time of very high egg production, provide some additional catch in a forecast poorer catch season (2001/2002). The effect of the rule change was estimated by research staff to have a negative impact on egg production of less that 1%. In reality, very small quantities of oversize females were landed; 13 tonnes, 42 tonnes and 36 tonnes in A, B and C zones respectively. The regulation was reinstated for the 2002/2003 and subsequent seasons.

A fourth, but less significant, rule change related to the use of slightly oversize pots by some fishers. This necessitated a change in the regulation to define external rather than internal maximum dimensions of pots to ensure ease of enforcement of the rule.

3.8 Innovations to boats and gear (including costs)

Data supplied by the Department of Planning and Infrastructure showed that during the years 2001 to 2003 the following number of new boats were constructed each fiscal year (1 July to 30 June).

Year	Area	Construction material			Size range (m)	Average size (m)	% Change (No.) on previous season
		Wood	Fibre-glass	Aluminium			
2001/2002	North 30° south	-	3	6	7.60-18.30	14.83	
	South 30° south	-	8	7	15.85-18.99	17.96	
	Total	-	11	13			14.3 down
2002/2003	North 30° south	-	1	7	12.45-19.00	16.00	
	South 30° south	-	4	8	16.10-19.20	18.00	
	Total	-	5	15			16.7 down

Listed below are the approximate costs of new aluminium or fibre-glass vessels (approximate size 16 to 18 metres) designed specifically for rock lobster fishing. Also listed are the approximate costs of navigational and fish finding equipment; GPS, auto-pilot, radio, radar, colour and black and white echo-sounders, etc., which must be added onto the basic vessel costs. The cost of a new vessel varied greatly, depending on design, type and number of motors, and the type and amount of equipment installed. The prices were supplied by a major builder of vessels for the rock lobster industry:

Season	Cost of vessel ($)	Approx. average size	Cost of navigational & fish finding equipment ($)
2001/2002	550,000-600,000	17-18 metres	50,000
2002/2003	500,000	16-20 metres	50,000

The approximate price paid by fishermen for boat fuel (distillate) during the two seasons is listed below. The price paid by fishermen varied greatly, depending on location (cartage) and distributor. The prices were provided by a major distributor in the northern sector of the fishery. Fishermen are entitled to claim a diesel fuel rebate which also is listed and has not been deducted from the basic fuel price:

Season	Fuel price range (¢/litre)	Approx. average price (¢/litre)	Fuel rebate (¢/litre)
2001/2002	73.64-81.52	77.69	38.14
2002/2003	84.56-91.13	84.75	38.14

Note: Fuel price range and average price does not include GST.

Data from research log books showed the following usage of the various types of rock lobster pots by fishermen north and south of 30° S:

Season	Area	TYPE OF POT		
		Stick & Cane Beehive	Batten	Steel Beehive
2001/2002	North 30° south	-	100%	-
	South 30° south	6%	99%	-
2002/2003	North 30° south	-	100%	-
	South 30° south	2%	98%	-

Note: Total percentage greater than 100% is due to boats using a combination of pot types.

In zone B and to a lesser extent in zone C it has been common practice for some fishers to have two sets of batten pots, one set constructed with pine battens and the other constructed of either jarrah or karri battens. The pine batten pots are used during the "whites" run and the jarrah/karri pots during the "reds" phase of the fishery. The added bonus is that the pine batten pots are spelled (dried out), hence adding greater life to the actual battens, which are subject to damage by borers.

	PRICE OF POTS ($)			
	2001/2002		2002/2003	
	North 30° S	South 30° S	North 30° S	South 30° S
Batten[1]				
Steel Bottom	140.00	135.00	143.00-147.00	138.00
Wood Bottom	137.00	130.00	142.00	132.00
Steel Framed Batten[2]				
Steel Bottom	155.00	-	155.00	-
Stick and Cane Beehive[3]	-	93.00	-	93.00

1. Batten pots are constructed either with a steel or wooden bottom and come complete with two built-in bait baskets, plastic or wood finger neck, escape gaps, ballast and an anode (in steel bottom pots).
2. Steel framed batten pots are constructed with a removable top and side panels comprised of pine, karri or jarrah battens, depending on personal preference.
3. The price quoted for stick and cane beehive pots does not include ballast or a skid board. Skid boards were approximately $4.00 to $5.00 per pot.

The above prices were supplied by selected pot manufacturers, however, pot prices vary between manufacturers.

Listed below are the prices charged by a major distributor of commercial fishing gear in the southern sector of the fishery for 11 mm pot rope and 200 mm pot floats. Once again prices varied depending on the distributor and in the case of rope, the country of origin.

Season	Pot rope ($) (220 m coil)	Country of origin	Pot float ($) (each)
2001/2002	81.50	Thailand	2.85
2002/2003	75.60-90.75	Indonesia	2.85

3.9 Bait

Fishermen were able to choose from a wide range of both local and imported fish baits. During the 2001/2002 and 2002/2003 seasons the following baits were the most commonly used. Their popularity is indicated by a scale of 1-10, with 1 being the most popular.

Common names	2001/2002		2002/2003	
	North 30° S	South 30° S	North 30° S	South 30° S
Imported mackerel (*Scomber* spp.)	1	1	1	1
Australian salmon (*Arripis truttaceus*) and New Zealand Kahawai (*Arripis trutta*)	3	3	2	3
North Sea herring (*Clupea harengus*)	2	4	3	5
Orange roughy heads (*Hoplostethus atlanticus*)	4	2	4	2
Australian herring (*Arripis georgianus*)	6	-	5	-
Tuna heads (*Thunnus* spp.)	9	9	6	8
Hoki heads (*Macruronus novaezelandiae*)	7	5	7	7
Kangaroo (*Macropus* spp.)	5	-	8	-
Sardinella (*Sardinella aurita*)	8	-	9	-
Scaly mackerel (*Sardinella lemura*)	10	7	10	6
Pilchards (*Sardinops neopilchardus*)	-	6	-	4
Mullet (*Mugil cephalus*)	-	8	-	9

Listed below are the retail prices paid by fishermen both north and south of 30° S for a variety of rock lobster baits. Prices quoted here are from selected processing establishments and do vary between suppliers:

Type of Bait	2001/2002 Retail price ($)		2002/2003 Retail price ($)	
	North 30° S	South 30° S	North 30° S	South 30° S
Australian salmon per kg	0.85-1.15	1.30	1.20	1.30
New Zealand salmon per kg	1.15	1.40	1.30	1.40
Australian herring per kg	1.20	1.20	1.35	-
Yelloweye mullet per kg	-	-	1.20	-
Scaly mackerel per kg	1.00	1.05	-	1.20
Imported mackerel per kg	1.05-1.35	0.90-1.35	1.05-1.40	1.15-1.45
Tuna heads per kg	1.05	1.10	1.00	1.00
Kangaroo per kg	1.05	0.95	1.00	1.00
Pilchards per kg	-	1.10	-	1.20
North Sea herring per kg	1.35	1.25	1.25	1.25
Orange roughy per kg	1.05	1.00	1.05	1.10
Hoki per kg	0.95	0.95	0.95	0.70
Sardinella per kg	1.10	-	-	-

3.10 Distribution of fishing

The distribution of fishing, indicated by catch and effort records in fishermen's returns, is shown in Tables 1 and 2. The pattern of fishing does not vary greatly from season to season and is dependent on the density of rock lobsters in the various depths. Throughout a season, the usual pattern is concentrated fishing in the shallows during November and early December; followed by a move to deeper water fishing during the latter part of December and early January as the "whites" migration is followed; then back to the shallows, with some fishing in the middle grounds, during February, March and April; and finally fishing in mixed depths (mainly shallower), depending on weather and density of rock lobsters, throughout the remainder of the season.

During the period covered by this report, vessels fished for rock lobsters in the extreme northern and southern areas of the fishery, viz. in the area around South Passage in Shark Bay in the north and Augusta in the south. Although small in quantity most of the rock lobsters caught in the Augusta area (statistical blocks 3414, 3415, 3416 and 3517) were outside the West Coast Rock Lobster Managed Fishery concession area.

Prior to the 1986/87 season, a small number of vessels fished for rock lobsters in deep water north-west of Kalbarri in an area known as Big Bank (Figure 1c). From 1986/87 through to 2002/2003 up to 119 vessels fished in the above area during January and February of each season, taking quantities of migratory rock lobsters in very deep water (70 to 100 fathoms) (Chubb, et al., 1994). Regulations controlling the timing of the commencement of fishing there have been in force since 1991.

3.11 Average number of days worked per boat per month

Listed below are the average total number of days worked per boat each month for both north and south of 30° S latitude and a total for the combined areas:

Month	North* 30° S		South 30° S		Total	
	2001/2002	2002/2003	2001/2002	2002/2003	2001/2002	2002/2003
November	13.3	12.8	10.1	11.5	11.7	12.2
December	28.8	29.4	28.9	29.5	28.8	29.4
January	16.0	17.2	21.9	24.6	19.0	20.9
February	24.5	23.3	26.3	26.7	25.4	25.0
March	24.8	25.4	29.0	30.4	26.9	27.9
April	28.6	28.2	25.7	24.8	27.2	26.5
May	26.4	24.4	22.2	20.5	24.3	22.4
June	20.7	17.0	18.3	15.0	19.5	16.0

*Note: North includes the Abrolhos Islands.

3.12 Price of rock lobsters (per kg)

The prices gained by exporters for the sale of rock lobsters are governed by a complex set of factors, e.g. demand, size of lobster, product type, exchange rate, etc. Thus this section deals only with the average price paid to fishermen (the "beach price") selling their catch directly to licensed rock lobster processors.

2001/2002

The average price paid for the whole season was in both the northern and southern areas approximately $33.75 per kg. Using the average price per kg, the ex-vessel value of the landed catch was approximately $303 million.

2002/2003

In both the northern and southern sectors of the fishery the price that fishermen received for their catches was approximately $24.45 per kg. The ex-vessel value of the landed catch was approximately $279 million.

3.13 Marketing

Each season, depending on market demand, rock lobsters were processed into various product types; frozen tails, frozen whole cooked (boiled), frozen whole raw and live. The processed rock lobsters, with the exception of a small quantity destined for the local market, were exported chiefly to Japan, Taiwan, USA and Hong Kong/China with a very small quantity marketed in France. Whole cooked, whole raw and live were marketed in Japan and Taiwan, live in Hong Kong/China, whilst the frozen tails were exported to the USA.

Average wholesale New York price and grades (oz) for Australian rock lobster tails. Information obtained monthly from Infofish Trade News Monthly:

	$US per Kg	
Grade (oz)	**2001/2002**	**2002/2003**
5-6	-	51.68
6-7	47.89	41.05
6-8	-	52.78
7-8	47.30	40.15
8-10	46.75	52.51
8-12	-	45.39
10-12	-	52.38
12-14	47.52	-

Listed below are the percentages of each product type for the seasons 2001/2002 to 2002/2003 converted to landed live weight equivalents.

The production figures have been separated into three fishing/processing sectors, Augusta to Wedge Island, Green Islets to Green Head, Leeman to Denham, together with a total for the whole coast. It must be noted however, that due to transportation of some product between centres for processing, the figures are a combination of what was caught and what was processed in each area:

Area	**Season**	**PRODUCT TYPE (%)**			
		Tails	**Cooked**	**Raw**	**Live**
South	2001/2002	25.7	15.5	3.1	55.7
(Augusta to Wedge Island)	2002/2003	35.5	26.0	5.4	33.1
Central	2001/2002	35.3	42.1	8.9	13.7
(Green Islets to Green Head)	2002/2003	30.1	51.1	9.7	9.1
North	2001/2002	24.1	36.0	9.9	30.1
(Leeman to Denham)*	2002/2003	30.0	41.4	8.8	19.8
Total	**2001/2002**	**26.0**	**28.9**	**7.2**	**38.0**
	2002/2003	**32.5**	**35.6**	**7.4**	**24.6**

***Note:** Leeman to Denham includes the Abrolhos Islands.

3.14 Value per pot on pot redistribution
(i.e. market price paid for a licensed pot)

The range of market prices paid for licensed pots both north and south of 30° S latitude were:

2001/2002

Zones A and B from approximately $26,500 to $32,000.
Zone C from approximately $25,000 to $27,000.

2002/2003

Zones A and B approximately $30,000.
Zone C from approximately $30,000 to $37,000.

3.15 Sea water temperatures and salinities

These environmental variables have relevance to the behaviour and catch rates of rock lobsters (Morgan 1974). The average sea water temperatures (°C) and salinities (parts per thousand) together with maximum and minimum sea water temperatures and salinities during the following rock lobster seasons (i.e. 2001/2002 to 2002/2003, 15 November to 30 June) at the Western Australian Marine Research Laboratories (aquarium header tank) were:

Season	Max. temp. (°C)	Week ending	Min. temp. (°C)	Week ending	Avg. temp. (°C) (season)	Max. salinity	Week ending	Min. salinity	Week ending	Avg. salinity (season)
2001/2002	23.1	03/02/2002	17.6	23/06/2002	20.8	36.3	03/03/2002	34.6	09/06/2002	35.4
2002/2003	24.5	24/02/2003	16.6	23/06/2003	21.3	36.7	2, 30/12/2003, 06/01/2003	34.4	16/12/2003	35.4

Bottom temperatures and surface salinities in waters of various depths in the Fremantle, Lancelin, Jurien and Dongara areas were collected as part of the monitoring of rock lobster catches (see section 2.0) and are shown in Tables 7 and 8. Information is available for the Abrolhos Islands from March to June.

3.16 Spawning rock lobsters

Monitoring on board commercial vessels provides a detailed description of the lobsters caught in commercial pots, particularly with respect to the breeding stock and undersize animals that are returned to the sea. The sex ratios between males and females in different depth categories are given in Tables 9 and 10.

Most of the breeding females are found in the 20-50 fathom (37-92 m) range with no variation in the size of first breeding observed from one depth category to another. Hence the data for December, January and February from all depths may be pooled to indicate the size frequency of breeding (i.e. “berried” and/or mated) females (Figures 4a and b). The mean sizes of breeding females from monitoring data collected during the period 2001/2002 to 2002/2003 were as follows:

Season	CARAPACE LENGTH (mm)				
	Fremantle	Lancelin	Jurien	Dongara	Kalbarri
2001/2002	106.2	102.3	83.0	90.0	79.4
2002/2003	104.0	104.4	86.4	89.8	81.0

By comparison the mean sizes at first breeding (*i.e.* the smallest carapace length at which 50% are "berried" and/or mated) were found to be:

Season	CARAPACE LENGTH (mm)				
	Fremantle	Lancelin	Jurien	Dongara	Kalbarri
2001/2002	95.2	95.1	87.1	85.5	87.7
2002/2003	93.7	91.9	88.2	86.3	83.3

4.0 Discussion

Although a below average catch was forecast for 2001/2002, the whites catch was the worst in almost 30 years, being over 40% less than the average of the previous 10 seasons. Very calm, clear sea conditions were created by extremely rare meteorological conditions sustaining continuous offshore winds and an absence of swell for the first month of the season. This coupled with suspected colder, bottom water temperatures, which probably delayed the whites moult and extended it over a longer period, produced conditions that were not conducive for the whites migration. Consequently, little was caught. Once meteorological conditions returned to normal, catches improved and a good reds catch lifted the total landings of lobsters to around 9,000 tonnes. The low catch was good for the markets.

The outlook for economic conditions in Japan was bleak and competition from Mexican live lobsters landed in Taiwan at very cheap prices were negative impacts for WA exporters. Nevertheless, the overall performance of the markets was extremely good, even the September 11 terrorist attack on the World Trade Centre had little impact on the US tail market. Market demand coupled with a very favourable exchange rate between the US and Australian dollars, produced a record beach price in 2001/2002 averaging around $33.75 per kg and ensured the ex-vessel value of the catch remained high at about $304 million. The low catch also contributed to low inventories of frozen product held in Asia at the commencement of the 2002/2003 season. With a "normal" start and an average catch predicted, the prospect of a good season was evident. However, as season 2002/2003 unfolded, the level of live lobster production in the whites dropped dramatically as Mexican live lobsters again made substantial inroads into the Taiwanese market in particular, being sold at US $3 per kg less than WA asking prices. This led to much higher than normal frozen tail and whole cooked production.

With the Japanese economy still weak and a continuing cultural shift resulting in less spending on traditional weddings, the push into Europe, in an expansion of market opportunities, continued. The Marine Stewardship Council certification as the world's first fishery certified as ecologically sustainable was used as a tool to promote western rock lobster in attempt to gain quota in the European Union and reduce tariffs to competitive levels. Australian frozen lobster was allocated a 1,500 tonne EU quota at appropriate tariff

levels in mid October 2003 after 5 years of representation on behalf of the WA lobster industry. The WA Agent General in London, Mr. Robert Fisher AM, played a significant role in this achievement.

One significant negative aspect of the 2002/2003 season was the "price war" fought between processors where extremely high beach prices of up to $36 per kg were paid to fishers for their product. With the Australian dollar firming against the US dollar mid way during the season, the beach price plummeted to $10-12 per kg. While the overall average beach price for the season was $24.45 leading to an estimated value of the landed catch of about $280 million, anecdotal information suggested that virtually all processors recorded a loss for the season.

The number of vessels operating in the fishery continued to decline in both seasons covered by this report. However, 6 new licences were created in C zone in 2001/2002 and 1 new licence was created in A zone in 2002/2003 bringing to 601 the total number of licences (active and retired) in the fishery in 2002/2003. Leasing of pots had become an integral part of the fishery and with the provision for the retiring of licences, a number of fishers apparently opted not to fish but gain an income through the leasing process. Pots were leased for variable prices between $1,200 and $2,300 each depending upon who owned the pots and the zone of the fishery. Many processors had entered the lease market to ensure a continuous supply of product. A total of 570 and 563 vessels fished in 2001/2002 and 2002/2003 respectively, compared to the 584 boats fishing in 2000/2001. Consequently the average pots fished per boat increased from 94.8 in 2000/2001 to 99 in 2002/2003 in A zone, 93.7 to 96.9 in B zone and from 100.9 to 104.4 in C zone.

The trend in new vessels being constructed eased in 2001/2002 and 2002/2003 with 24 and 20 new boats constructed respectively. Whilst approximately even numbers were built north and south in 2001/2002, 15 of the 20 were built for C zone in 2003/2004. In part this may have been due to the forecast very good catches from 2002/2003 to 2004/2005 and probably had some impetus in the increased level of fishing in Cape Naturaliste-Cape Leeuwin region which, prior to 2000/2001, was fished by only a few fishers. In both 2001/2002 and 2002/2003 approximately 40 vessels fished the area for part of the season, their activities and behaviour conflicting with sections of the resident population. A voluntary code of conduct has been developed for the 2003/2004 season to ensure commercial rock lobster fishers operate with consideration of local concerns about the fleet.

Gear prices were variable but prices for new pots were a little higher in the north and lower in the south in the two seasons covered in this report. Generally rope and bait was more expensive but fuel prices declined compared to 2000/2001.

The good-will value of A and B zone pots on the open market was approximately the same in both 2001/2002 and 2002/2003 at an average of around $30,000. Whilst C zone pots traded at the lower end of the northern range of values in 2001/2002, their value jumped to $30,000-37,000 in 2002/2003. This probably, in part, was a result of the forecast very high C zone catches in seasons 2002/2003, 2003/2004 and 2004/2005 and the willingness to invest in the future. It also may have been due to the demand to purchase pots for leasing.

The breeding stock indices remained high in C zone with many fishers indicating an abundance of breeding female rock lobsters, however, the B zone egg production has declined from its peak in 1999/2000 but has remained stable over the two seasons covered

by this report at almost 90% above the low value of 1992/93. An analysis of exploitation rates has shown that exploitation in B zone has increased since 1993/94 when the management package was introduced, and A and B zone fishers themselves have called for a discussion paper outlining options for reducing effort. This will be produced in early 2004.

Recreational catches continued to increase as population size in WA, particularly the Perth metropolitan area, increased. These catches were 6.1% and 7.8% of the commercial catch respectively in 2001/2002 and 2002/2003. In the former season, it is likely that the abnormal conditions for the whites migration probably meant more lobsters were available to the recreational fishers who operate in the shallow inshore waters. High numbers of licences contributed to the greater proportion in the latter season. Of interest in 2002/2003 was the outstanding contribution of the commercial fishery to the voluntary research logbook program where 40.5% of the fleet returned logbook data.

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7.0 Tables

Table 1. Catch (in kg weight) and fishing effort (in pot lifts) for the 2001/2002 rock lobster season in various statistical blocks.

		DATE								
BLOCK		**200111**	**200112**	**200201**	**200202**	**200203**	**200204**	**200205**	**200206**	**TOTAL**
24130	Catch	-	-	-	1,214	-	-	-	-	1,214
24130	Effort	-	-	-	2,140	-	-	-	-	2,140
25120	Catch	-	-	-	-	-	-	1,800	-	1,800
25120	Effort	-	-	-	-	-	-	1,300	-	1,300
26131	Catch	-	-	-	822	-	2,000	1,800	1,623	6,245
26131	Effort	-	-	-	1,074	-	1,000	1,300	1,342	4,716
27132	Catch	2,590	8,774	11,832	62,595	37,409	65,422	46,823	9,267	244,712
27132	Effort	4,248	8,158	18,600	94,072	31,873	44,083	39,354	13,381	253,769
27140	Catch	5,449	25,029	18,271	14,129	39,019	30,484	12,504	7,485	152,370
27140	Effort	12,507	26,632	32,059	28,107	33,997	26,203	17,402	14,663	191,570
28132	Catch	-	-	-	-	-	1,387	-	-	1,387
28132	Effort	-	-	-	-	-	864	-	-	864
28142	Catch	34,500	203,941	47,783	85,194	112,091	72,303	67,746	55,319	678,877
28142	Effort	105,345	202,185	118,765	204,471	111,985	76,038	83,813	87,845	990,447
29132	Catch	301	3,698	5,515	2,043	6,292	5,151	-	-	23,000
29132	Effort	651	2,871	6,593	4,303	5,202	3,321	-	-	22,941
29142	Catch	79,059	541,361	125,420	135,330	284,910	249,510	168,819	105,513	1,689,922
29142	Effort	238,973	550,363	261,069	330,541	280,720	232,824	216,971	206,724	2,318,185
30140	Catch	7,633	213,445	116,209	61,547	144,175	135,213	81,589	49,042	808,853
30140	Effort	46,684	185,127	103,230	111,153	149,653	129,313	103,292	89,577	918,029
30150	Catch	5,208	87,597	61,739	28,005	70,999	74,691	31,464	20,930	380,633
30150	Effort	29,009	81,131	57,870	52,599	80,270	78,900	44,958	39,802	464,539
31140	Catch	688	14,849	16,899	5,101	7,630	4,750	5,453	3,688	59,058
31140	Effort	4,628	12,935	13,607	10,829	9,489	5,961	8,829	6,091	72,369
31150	Catch	37,505	414,684	371,639	230,902	390,794	361,774	238,717	144,869	2,190,884
31150	Effort	179,160	425,947	327,792	414,055	447,816	374,502	311,692	257,746	2,738,710
32140	Catch	-	2,900	2,214	1,203	4,245	5,897	3,347	3,649	23,455
32140	Effort	-	2,366	1,512	2,352	4,882	5,847	4,662	6,321	27,942
32150	Catch	3,619	134,784	132,037	56,578	110,925	117,008	125,078	81,247	761,276
32150	Effort	23,577	130,591	114,885	112,482	130,971	110,740	122,944	99,284	845,474
33140	Catch	-	-	12,883	28,175	8,616	18,847	14,662	5,334	88,517
33140	Effort	-	-	11,100	29,868	9,424	15,606	9,948	4,883	80,829
33150	Catch	170	8,402	7,869	11,764	5,796	19,669	41,002	28,052	122,724
33150	Effort	2,507	10,771	6,790	17,340	5,980	16,990	31,559	27,388	119,325
34141	Catch	-	-	977	12,400	14,183	18,182	14,786	7,786	68,314
34141	Effort	-	-	840	14,958	12,141	10,678	10,345	7,759	56,721
34142	Catch	-	-	-	-	-	-	-	1,002	1,002
34142	Effort	-	-	-	-	-	-	-	1,540	1,540
34151	Catch	205	-	-	2,425	-	2,752	5,964	-	11,346
34151	Effort	1,160	-	-	2,492	-	2,840	4,278	-	10,770
34152	Catch	93	805	1,761	2,676	3,204	4,183	3,355	322	16,399
34152	Effort	1,080	3,083	3,449	4,809	5,175	5,940	5,400	1,500	30,436
97011	Catch	-	-	-	-	72,202	60,154	55,573	5,338	193,267
97011	Effort	-	-	-	-	24,772	34,632	34,941	8,474	102,819
97012	Catch	-	-	-	-	246,663	191,659	127,565	51,952	617,839
97012	Effort	-	-	-	-	82,860	141,426	136,694	101,300	462,280
97013	Catch	-	-	-	-	168,962	138,020	59,236	28,982	395,200
97013	Effort	-	-	-	-	58,365	104,067	83,409	59,887	305,728
97014	Catch	-	-	-	-	102,987	121,982	79,503	24,771	329,243
97014	Effort	-	-	-	-	44,213	82,480	82,739	48,255	257,687
97015	Catch	-	-	-	-	27,103	56,488	27,269	4,879	115,739
97015	Effort	-	-	-	-	12,175	38,561	25,454	9,546	85,736
TOTAL	Catch	177,020	1,660,269	933,048	742,103	1,858,205	1,757,526	1,214,055	641,050	8,983,276
	Effort	649,529	1,642,160	1,078,161	1,437,645	1,541,963	1,542,816	1,381,284	1,093,308	10,366,866

Table 2. Catch (in kg weight) and fishing effort (in pot lifts) for the 2002/2003 rock lobster season in various statistical blocks.

		DATE								
BLOCK		**200211**	**200212**	**200301**	**200302**	**200303**	**200304**	**200305**	**200306**	**TOTAL**
26131	Catch	-	-	-	225	-	2,487	1,216	-	3,928
26131	Effort	-	-	-	822	-	1,440	1,660	-	3,922
27132	Catch	1,614	3,935	6,144	28,922	12,013	35,878	17,533	4,833	110,872
27132	Effort	2,421	3,994	9,064	54,574	10,794	21,789	18,015	7,530	128,181
27140	Catch	6,461	38,485	24,560	17,112	37,505	36,653	18,645	7,571	186,992
27140	Effort	11,991	31,221	40,585	30,957	34,420	25,542	22,447	17,051	214,214
28132	Catch	-	-	-	-	468	-	-	-	468
28132	Effort	-	-	-	-	1,573	-	-	-	1,573
28142	Catch	32,509	297,889	71,668	100,689	184,283	115,389	76,231	49,822	928,480
28142	Effort	104,540	218,479	137,849	210,335	145,040	88,697	84,405	79,050	1,068,395
29132	Catch	-	-	3,392	-	-	-	-	-	3,392
29132	Effort	-	-	3,170	-	-	-	-	-	3,170
29142	Catch	75,787	681,705	179,131	173,689	342,592	304,970	167,557	82,085	2,007,516
29142	Effort	230,219	554,353	277,943	326,376	277,399	225,329	196,814	151,436	2,239,869
30140	Catch	10,755	237,788	127,401	62,197	163,948	166,478	72,999	31,603	873,169
30140	Effort	42,182	132,351	96,443	92,288	127,005	111,069	75,075	47,834	724,247
30150	Catch	9,663	157,772	76,983	44,047	128,524	114,673	36,124	21,328	589,114
30150	Effort	35,518	88,783	63,972	59,438	93,552	81,316	38,146	32,547	493,272
31140	Catch	2,003	23,365	20,063	7,161	8,262	3,077	1,983	963	66,877
31140	Effort	4,324	13,340	13,742	8,844	6,426	3,092	3,134	1,936	54,838
31150	Catch	90,573	719,903	445,677	384,783	678,078	496,524	300,522	173,720	3,289,780
31150	Effort	212,558	472,158	376,901	412,284	489,701	355,862	295,789	235,809	2,851,062
32140	Catch	-	-	-	1,215	2,489	3,238	2,766	1,321	11,029
32140	Effort	-	-	-	1,153	3,150	3,194	3,111	2,840	13,448
32150	Catch	20,621	274,203	142,682	118,780	200,428	164,777	140,246	75,092	1,136,829
32150	Effort	41,783	154,574	124,274	127,199	142,157	113,099	113,751	85,309	902,146
33140	Catch	831	-	33,036	30,914	8,848	54,545	62,688	11,317	202,179
33140	Effort	2,173	-	25,103	33,220	6,385	27,852	37,098	10,698	142,529
33150	Catch	-	1,970	9,531	14,046	6,859	19,185	24,459	12,120	88,170
33150	Effort	-	1,815	8,630	17,503	5,898	10,687	15,254	9,181	68,968
34141	Catch	-	-	12,451	22,584	23,766	42,967	30,156	3,980	135,904
34141	Effort	-	-	9,192	20,635	15,470	20,535	15,912	4,157	85,901
34142	Catch	57	-	-	-	-	-	-	-	57
34142	Effort	1,088	-	-	-	-	-	-	-	1,088
34151	Catch	-	-	-	11,182	-	1,825	9,445	4,093	26,545
34151	Effort	-	-	-	9,800	-	960	3,792	2,448	17,000
34152	Catch	261	2,867	5,105	3,487	4,201	5,035	5,420	1,709	28,085
34152	Effort	1,800	4,038	5,370	4,560	5,214	4,785	5,236	4,174	35,177
97011	Catch	-	-	-	-	66,495	52,476	36,770	6,970	162,711
97011	Effort	-	-	-	-	20,153	31,791	27,319	8,083	87,346
97012	Catch	-	-	-	-	279,635	223,505	133,441	49,941	686,522
97012	Effort	-	-	-	-	94,708	154,736	143,044	85,106	477,594
97013	Catch	-	-	-	-	170,449	146,928	69,164	28,511	415,052
97013	Effort	-	-	-	-	62,898	102,449	86,506	50,847	302,700
97014	Catch	-	-	-	-	104,218	142,319	70,345	16,494	333,376
97014	Effort	-	-	-	-	38,489	88,682	67,426	27,655	222,252
97015	Catch	-	-	-	-	41,226	57,875	24,525	4,708	128,334
97015	Effort	-	-	-	-	15,887	34,342	19,932	6,434	76,595
TOTAL	**Catch**	251,135	2,439,882	1,157,824	1,021,033	2,464,287	2,190,804	1,302,235	588,181	11,415,381
	Effort	690,597	1,675,106	1,192,238	1,409,988	1,596,319	1,507,248	1,273,866	870,125	10,215,487

Table 3. Catch (kg) per unit of fishing effort (i.e. kilograms of rock lobster per pot lift) data for the 2001/2002 season in various statistical blocks (see figures 1a, b).

	DATE								
BLOCK	**200111**	**200112**	**200201**	**200202**	**200203**	**200204**	**200205**	**200206**	**Total**
24130	-	-	-	0.567	-	-	-	-	0.567
25120	-	-	-	-	-	-	1.385	-	1.385
26131	-	-	-	0.765	-	2.000	1.385	1.209	1.324
27132	0.610	1.076	0.636	0.665	1.174	1.484	1.190	0.693	0.964
27140	0.436	0.940	0.570	0.503	1.148	1.163	0.719	0.510	0.795
28132	-	-	-	-	-	1.605	-	-	1.605
28142	0.328	1.009	0.402	0.417	1.000	0.951	0.808	0.630	0.685
29132	0.462	1.288	0.837	0.475	1.210	1.551	-	-	1.003
29142	0.331	0.984	0.480	0.409	1.015	1.072	0.778	0.510	0.729
30140	0.164	1.153	1.126	0.554	0.963	1.046	0.790	0.547	0.881
30150	0.180	1.080	1.067	0.532	0.885	0.947	0.700	0.526	0.819
31140	0.149	1.148	1.242	0.471	0.804	0.797	0.618	0.605	0.816
31150	0.209	0.974	1.134	0.558	0.873	0.966	0.766	0.562	0.800
32140	-	1.226	1.464	0.511	0.870	1.009	0.718	0.577	0.839
32150	0.154	1.032	1.149	0.503	0.847	1.057	1.017	0.818	0.900
33140	-	-	1.161	0.943	0.914	1.208	1.474	1.092	1.095
33150	0.068	0.780	1.159	0.678	0.969	1.158	1.299	1.024	1.028
34141	-	-	1.163	0.829	1.168	1.703	1.429	1.003	1.204
34142	-	-	-	-	-	-	-	0.651	0.651
34151	0.177	-	-	0.973	-	0.969	1.394	-	1.053
34152	0.086	0.261	0.511	0.556	0.619	0.704	0.621	0.215	0.539
97011	-	-	-	-	2.915	1.737	1.590	0.630	1.880
97012	-	-	-	-	2.977	1.355	0.933	0.513	1.337
97013	-	-	-	-	2.895	1.326	0.710	0.484	1.293
97014	-	-	-	-	2.329	1.479	0.961	0.513	1.278
97015	-	-	-	-	2.226	1.465	1.071	0.511	1.350
TOTAL	0.273	1.011	0.865	0.516	1.205	1.139	0.879	0.586	0.867

Total catch = 8,983,276 kg
Total effort = 10,366,866 pot lifts

Table 4. Catch (kg) per unit of fishing effort (i.e. kilograms of rock lobster per pot lift) data for the 2002/2003 season in various statistical blocks (see figures 1a, b).

	DATE								
BLOCK	**200211**	**200212**	**200301**	**200302**	**200303**	**200304**	**200305**	**200306**	**TOTAL**
26131				0.274		1.727	0.733		1.002
27132	0.667	0.985	0.678	0.530	1.113	1.647	0.973	0.642	0.865
27140	0.539	1.233	0.605	0.553	1.090	1.435	0.831	0.444	0.873
28132					0.298				0.298
28142	0.311	1.363	0.520	0.479	1.271	1.301	0.903	0.630	0.869
29132			1.070						1.070
29142	0.329	1.230	0.644	0.532	1.235	1.353	0.851	0.542	0.896
30140	0.255	1.797	1.321	0.674	1.291	1.499	0.972	0.661	1.206
30150	0.272	1.777	1.203	0.741	1.374	1.410	0.947	0.655	1.194
31140	0.463	1.752	1.460	0.810	1.286	0.995	0.633	0.497	1.220
31150	0.426	1.525	1.182	0.933	1.385	1.395	1.016	0.737	1.154
32140				1.054	0.790	1.014	0.889	0.465	0.820
32150	0.494	1.774	1.148	0.934	1.410	1.457	1.233	0.880	1.260
33140	0.382		1.316	0.931	1.386	1.958	1.690	1.058	1.419
33150		1.085	1.104	0.803	1.163	1.795	1.603	1.320	1.278
34141			1.355	1.094	1.536	2.092	1.895	0.957	1.582
34142	0.052								0.052
34151				1.141		1.901	2.491	1.672	1.561
34152	0.145	0.710	0.951	0.765	0.806	1.052	1.035	0.409	0.798
97011					3.300	1.651	1.346	0.862	1.863
97012					2.953	1.444	0.933	0.587	1.437
97013					2.710	1.434	0.800	0.561	1.371
97014					2.708	1.605	1.043	0.596	1.500
97015					2.595	1.685	1.230	0.732	1.675
TOTAL	0.364	1.457	0.971	0.724	1.544	1.454	1.022	0.676	1.117

Total catch = 11,415,381 kg
Total effort = 10,215,487 pot lifts

Table 5. Mean carapace lengths (mm) of male and female rock lobsters in various depth categories at Fremantle, Lancelin, Jurien, Dongara, Kalbarri and Abrolhos Islands throughout the 2001/2002 fishing season.

		0-10 Fathoms		10-20 Fathoms		20-30 Fathoms		30+ Fathoms	
Location	**Month**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Kalbarri	Nov	77	76	76	76	-	-	-	-
	Dec	78	77	77	77	79	78	-	-
	Jan	76	76	79	77	-	-	-	-
	Mar	75	74	79	78	83	81	-	-
	Apr	77	76	78	77	81	81	82	80
	May	76	75	81	77	101	99	-	-
	Jun	-	-	80	77	-	-	-	-
Abrolhos	Mar	81	79	81	77	83	80	80	79
	Apr	75	75	-	-	81	78	87	84
	Jun	-	-	-	-	77	76	81	78
Dongara	Nov	76	75	-	-	-	-	-	-
	Dec	78	75	79	76	82	80	85	80
	Jan	69	71	-	-	88	87	-	-
	Feb	75	72	76	73	81	84	-	-
	Mar	78	76	78	76	84	82	86	82
	Apr	78	76	78	76	84	80	87	80
	May	74	72	79	77	87	85	-	-
Jurien Bay	Nov	76	76	76	76	-	-	-	-
	Dec	78	75	80	77	78	75	78	77
	Jan	73	73	78	77	78	76	76	73
	Feb	73	71	73	73	81	81	-	-
	Mar	74	73	79	76	83	82	-	-
	Apr	82	79	-	-	81	80	84	82
	May	78	74	76	75	84	83	-	-
Lancelin	Nov	77	75	-	-	-	-	-	-
	Dec	77	75	-	-	84	83	83	81
	Jan	75	74	85	88	94	94	90	81
	Feb	75	73	82	82	84	82	-	-
	Mar	75	73	79	80	86	84	-	-
	Apr	76	74	82	82	82	84	-	-
	Jun	74	73	-	-	87	78	-	-
Fremantle	Nov	77	76	-	-	-	-	-	-
	Dec	80	79	-	-	88	83	81	81
	Jan	-	-	84	88	98	99	93	86
	Feb	75	72	-	-	88	94	-	-
	Mar	80	77	-	-	90	97	109	122
	Apr	85	80	81	80	85	89	-	-
	May	77	76	74	73	92	81	-	-
	Jun	77	75	-	-	80	76	-	-

Table 6. Mean carapace lengths (mm) of male and female rock lobsters in various depth categories at Fremantle, Lancelin, Jurien, Dongara, Kalbarri and Abrolhos Islands throughout the 2002/2003 fishing season.

		0-10 Fathoms		10-20 Fathoms		20-30 Fathoms		30+ Fathoms	
Location	**Month**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Kalbarri	Nov	77	77	76	76	-	-	-	-
	Dec	78	78	79	79	-	-	-	-
	Jan	79	78	79	80	79	80	-	-
	Feb	76	76	76	76	-	-	-	-
	Mar	77	75	76	76	93	89	-	-
	Apr	77	76	78	77	95	89	-	-
	May	78	76	80	78	104	89	-	-
	Jun	-	-	80	77	87	82	-	-
Abrolhos	Mar	81	77	83	77	83	78	82	79
	Apr	76	76	79	76	79	77	83	79
	May	79	75	-	-	79	76	-	-
	Jun	81	75	79	77	78	75	-	-
Dongara	Nov	76	74	-	-	-	-	-	-
	Dec	78	77	77	76	78	76	79	79
	Jan	76	74	75	74	84	86	77	75
	Feb	75	74	77	76	86	84	83	79
	Mar	77	75	79	77	81	80	-	-
	Apr	77	75	79	77	85	81	82	80
	May	76	74	79	76	88	84	-	-
	Jun	77	75	85	80	91	81	-	-
Jurien Bay	Nov	75	73	77	74	-	-	-	-
	Dec	76	75	77	75	79	76	79	76
	Jan	74	73	78	76	80	79	77	74
	Feb	75	72	76	74	76	76	83	78
	Mar	74	73	77	75	82	78	85	81
	Apr	75	73	77	75	82	79	82	79
	May	76	74	77	75	84	81	83	80
	Jun	76	73	81	76	85	78	-	-
Lancelin	Nov	76	75	-	-	-	-	-	-
	Dec	77	75	77	76	95	88	-	-
	Jan	73	73	80	88	84	82	88	80
	Feb	75	74	-	-	85	95	-	-
	Mar	81	80	83	84	96	98	85	84
	Apr	75	74	77	80	84	84	86	81
	May	76	73	79	76	85	81	-	-
	Jun	77	74	81	76	-	-	-	-
Fremantle	Nov	79	76	-	-	-	-	-	-
	Dec	80	78	84	83	-	-	87	84
	Jan	77	75	78	79	88	91	83	80
	Feb	77	75	78	91	81	91	-	-
	Mar	79	76	81	82	84	95	-	-
	Apr	77	75	76	76	83	87	-	-
	May	78	75	-	-	92	85	-	-
	Jun	80	76	79	77	93	81	-	-

Table 7. Bottom temperature (°C) and surface salinity (in parts per thousand) in various depth categories in waters out from Fremantle, Lancelin, Jurien and Dongara throughout the 2001/2002 fishing season, and from the Abrolhos Islands in March to June.

	Depth	November		December		January		February		March		April		May		June	
Location	(fathoms)	Temp	Sal	Temp	Sal	Temp	Sal	Temp	Sal	Temp	Sal	Temp	Sal	Temp	Sal	Temp	Sal
Kalbarri	0-10	-	-	-	-	-	-	-	-	-	36.20	-	34.00	-	34.00	-	-
	10-20	-	-	-	-	-	-	-	-	-	36.30	-	34.00	-	34.00	-	34.90
	20-30	-	-	-	-	-	-	-	-	-	35.95	-	34.00	-	34.00	-	-
	30+	-	-	-	-	-	-	-	-	-	-	-	34.50	-	-	-	-
Abrolhos	0-10	-	-	-	-	-	-	-	-	-	35.60	-	34.30	-	-	-	-
	10-20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	20-30	-	-	-	-	-	-	-	-	-	35.70	-	34.10	-	-	-	35.10
	30+	-	-	-	-	-	-	-	-	-	-	-	34.20	-	-	-	35.10
Dongara	0-10	-	35.77	-	-	22.50	-	22.90	36.10	23.60	36.30	22.30	36.00	21.00	34.10	-	-
	10-20	-	-	21.10	35.80	-	-	-	-	-	-	-	-	21.30	34.00	-	-
	20-30	-	-	20.90	35.40	21.50	35.80	22.10	36.30	-	-	23.30	35.50	21.70	34.00	-	-
	30+	-	-	20.90	35.50	-	-	-	-	-	-	-	-	-	-	-	-
Jurien Bay	0-10	-	35.80	21.20	35.80	23.60	36.30	23.00	36.80	-	-	21.10	35.90	21.70	34.10	-	-
	10-20	-	36.00	-	-	-	-	22.50	36.10	-	-	-	-	21.90	34.10	-	-
	20-30	-	-	20.30	35.50	20.30	35.60	20.50	35.80	-	35.60	21.50	35.70	22.70	34.10	-	-
	30+	-	-	21.00	35.50	20.80	35.60	-	-	-	-	21.70	35.60	-	-	-	-
Lancelin	0-10	21.30	35.50	21.20	35.90	23.00	36.30	21.40	36.40	-	-	21.60	35.70	-	-	-	35.10
	10-20	-	-	-	-	21.80	36.20	22.30	36.10	22.30	35.40	22.00	35.60	-	-	-	-
	20-30	-	-	-	-	21.20	35.80	21.10	35.80	23.60	35.50	22.80	35.60	-	-	20.20	-
	30+	-	-	-	-	21.30	35.70	-	-	-	-	-	-	-	-	-	-
Fremantle	0-10	19.75	35.55	19.80	36.10	-	-	21.90	36.30	22.00	36.50	21.90	35.60	20.50	34.90	18.30	35.10
	10-20	-	-	-	-	20.90	35.90	-	-	-	-	21.90	35.60	20.50	34.40	-	-
	20-30	-	-	-	-	-	35.90	21.80	35.80	21.20	35.90	21.80	35.70	20.80	-	-	35.30
	30+	-	-	-	-	20.20	36.00	-	-	-	-	-	-	-	-	-	-

Temperatures were taken using a protected reversing thermometer and surface water samples were taken and later analysed to determine salinity.

Table 8. Bottom temperature (°C) and surface salinity (in parts per thousand) in various depth categories in waters out from Fremantle, Lancelin, Jurien and Dongara throughout the 2002/2003 fishing season, and from the Abrolhos Islands in March to June.

	Depth	November		December		January		February		March		April		May		June	
Location	(fathoms)	Temp	Sal	Temp	Sal	Temp	Sal	Temp	Sal	Temp	Sal	Temp	Sal	Temp	Sal	Temp	Sal
Kalbarri	0-10	-	36.75	-	36.75	-	36.35	-	36.10	-	-	-	35.00	-	34.70	-	-
	10-20	-	36.40	-	36.60	-	36.60	-	36.20	-	-	-	34.60	-	34.45	-	36.55
	20-30	-	-	-	-	-	36.27	-	-	-	-	-	-	-	35.10	-	36.10
Abrolhos	0-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36.80
	10-20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36.10
	20-30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36.60
	30+	-	-	-	-	-	-	-	-	-	-	-	34.60	-	-	-	-
Dongara	0-10	20.80	-	21.40	36.80	-	36.50	24.50	36.10	24.20	35.70	22.60	35.50	20.50	35.00	-	-
	10-20	-	-	20.40	36.40	-	-	22.65	36.20	24.10	36.00	23.40	35.70	22.10	-	20.70	-
	20-30	-	-	21.30	36.60	-	36.50	-	-	23.90	35.40	22.60	35.50	22.80	34.60	-	-
	30+	-	-	20.90	36.50	-	36.30	22.50	-	-	-	-	-	-	-	-	-
Jurien Bay	0-10	20.90	-	21.20	36.80	22.50	-	23.10	-	24.90	-	22.00	35.10	19.80	35.00	-	-
	10-20	-	-	20.20	-	-	-	22.20	-	23.50	-	-	-	21.70	34.50	-	-
	20-30	-	-	19.80	36.60	-	-	22.00	-	23.40	35.70	22.50	35.50	22.20	34.50	-	-
	30+	-	-	21.60	36.00	21.60	36.50	22.00	-	22.50	34.90	-	-	22.40	34.70	-	-
Lancelin	0-10	20.00	36.10	20.20	36.00	23.40	36.10	22.85	35.75	-	-	22.10	-	-	-	19.50	34.90
	10-20	-	-	20.20	36.00	22.00	35.70	-	-	23.00	35.70	23.40	36.50	21.50	35.20	20.50	35.00
	20-30	-	-	20.50	36.50	21.60	-	22.20	36.10	23.50	35.40	22.10	36.40	22.60	35.10	-	-
	30+	-	-	-	-	21.80	35.60	-	-	25.00	35.30	22.40	36.40	-	-	-	-
Fremantle	0-10	20.20	-	20.00	-	21.80	-	21.80	-	22.40	35.70	22.50	36.90	20.40	35.20	19.20	35.00
	10-20	-	-	-	35.60	20.40	36.00	20.80	-	23.80	35.40	22.50	36.70	-	-	19.80	34.90
	20-30	-	-	-	-	20.20	36.80	20.50	-	22.80	36.20	22.40	36.70	22.00	35.20	19.20	34.90
	30+	-	-	-	-	22.10	36.90	-	-	-	-	-	-	-	-	-	-

Temperatures were taken using a protected reversing thermometer and surface water samples were taken and later analysed to determine salinity.

Table 9. 2001/2002 sex ratio by location, depth category and month. Figures are the percentage of female rock lobster in the total sampled catch.

Location	Depth (fathoms)	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Kalbarri	0-10	53	55	43	-	55	55	56	-
	10-20	63	58	63	-	54	60	55	47
	20-30	-	54	-	-	56	56	45	-
	30+	-	-	-	-	-	53	-	-
Abrolhos	0-10	-	-	-	-	50	55	-	-
	10-20	-	-	-	-	43	-	-	-
	20-30	-	-	-	-	54	59	-	53
	30+	-	-	-	-	52	59	-	49
Dongara	0-10	57	62	57	56	61	67	54	-
	10-20	-	59	-	58	61	59	64	-
	20-30	-	73	79	77	61	68	72	-
	30+	-	60	-	-	76	71	-	-
Jurien Bay	0-10	45	49	54	47	49	56	50	-
	10-20	50	61	52	51	60	-	59	-
	20-30	-	58	57	62	65	64	68	-
	30+	-	74	71	-	-	69	-	-
Lancelin	0-10	58	57	50	55	60	55	-	58
	10-20	-	-	73	60	62	57	-	-
	20-30	-	60	75	63	61	58	-	52
	30+	-	72	73	-	-	-	-	-
Fremantle	0-10	59	66	-	56	61	51	53	53
	10-20	-	-	63	-	-	63	60	-
	20-30	-	61	80	68	70	67	49	58
	30+	-	59	56	-	50	-	-	-

Table 10. 2002/2003 sex ratio by location, depth category and month. Figures are the percentage of female rock lobsters in the total sampled catch.

Location	Depth (Fathoms)	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Kalbarri	0-10	54	65	66	60	53	55	55	-
	10-20	58	54	68	54	44	63	54	55
	20-30	-	-	69	-	69	73	56	65
Abrolhos	0-10	-	-	-	-	51	72	56	50
	10-20	-	-	-	-	44	58	-	47
	20-30	-	-	-	-	41	71	70	39
	30+	-	-	-	-	56	63	-	-
Dongara	0-10	57	51	49	46	48	71	61	59
	10-20	-	61	59	53	64	62	62	54
	20-30	-	54	72	62	55	64	70	56
	30+	-	64	72	67	-	66	-	-
Jurien Bay	0-10	53	51	41	43	55	49	50	40
	10-20	51	54	43	45	61	57	52	46
	20-30	-	57	51	53	51	60	55	42
	30+	-	58	74	55	54	58	59	-
Lancelin	0-10	48	56	48	52	63	53	60	53
	10-20	-	60	60	-	67	51	53	45
	20-30	-	73	62	77	72	68	65	-
	30+	-	-	74	-	70	52	-	-
Fremantle	0-10	57	56	52	48	52	52	58	55
	10-20	-	59	51	68	56	54	-	58
	20-30	-	-	63	69	67	59	67	38
	30+	-	68	74	-	-	-	-	-

8.0 Figures

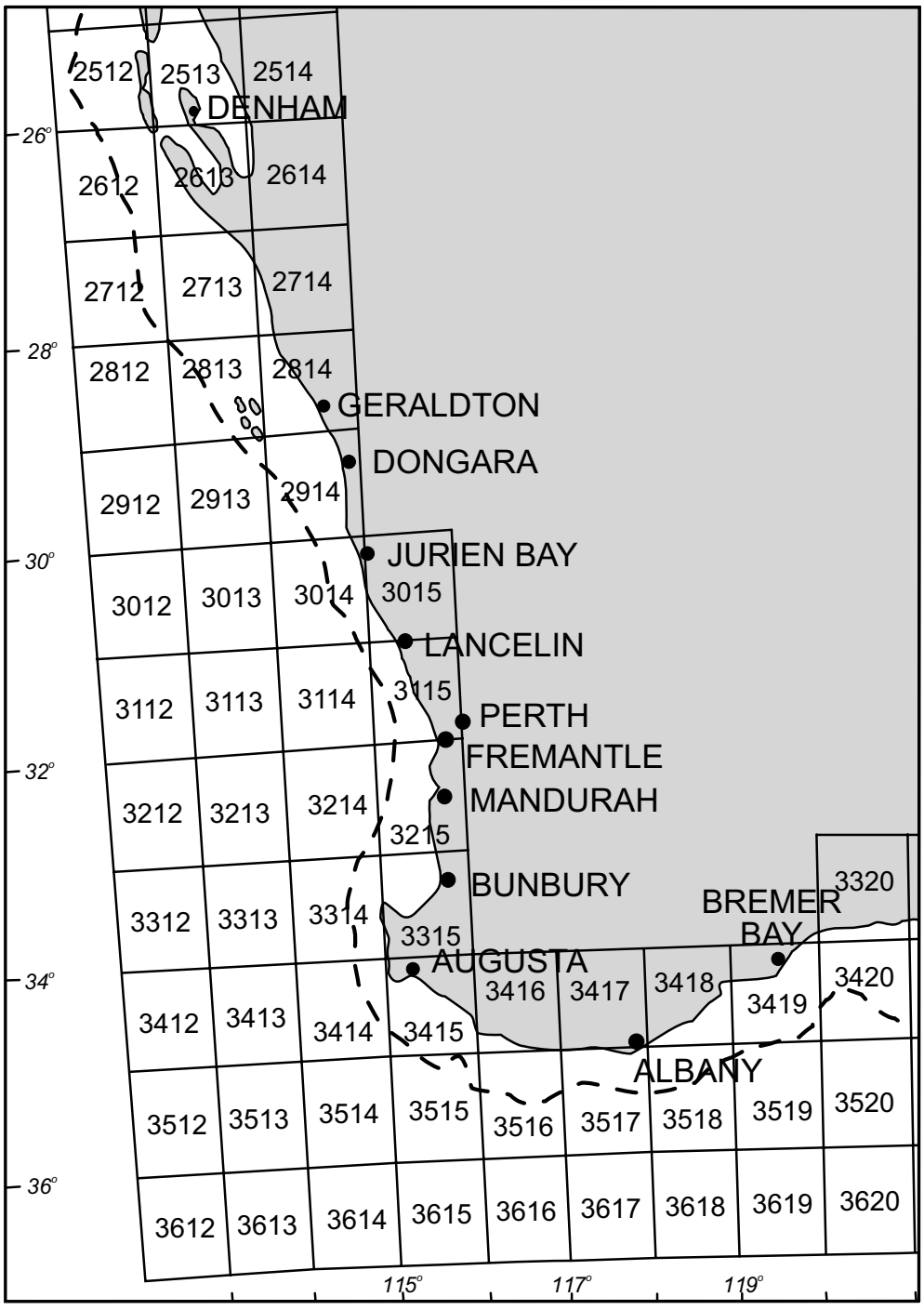


Figure 1a. Rock lobster fishing areas.

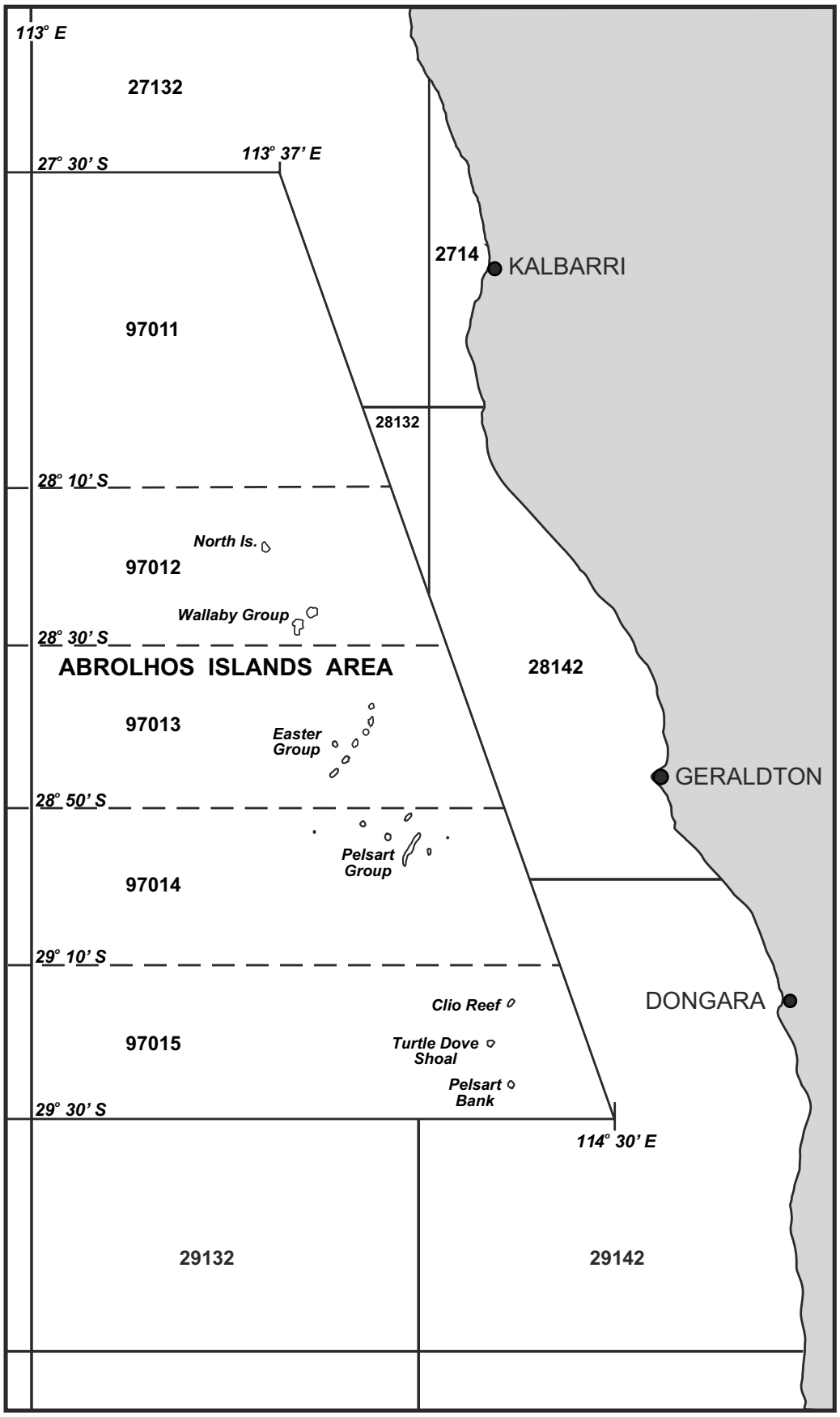


Figure 1b. Rock lobster fishing areas. (The new series of Abrolhos Island statistical blocks were introduced at the commencement of the 1989/90 season).

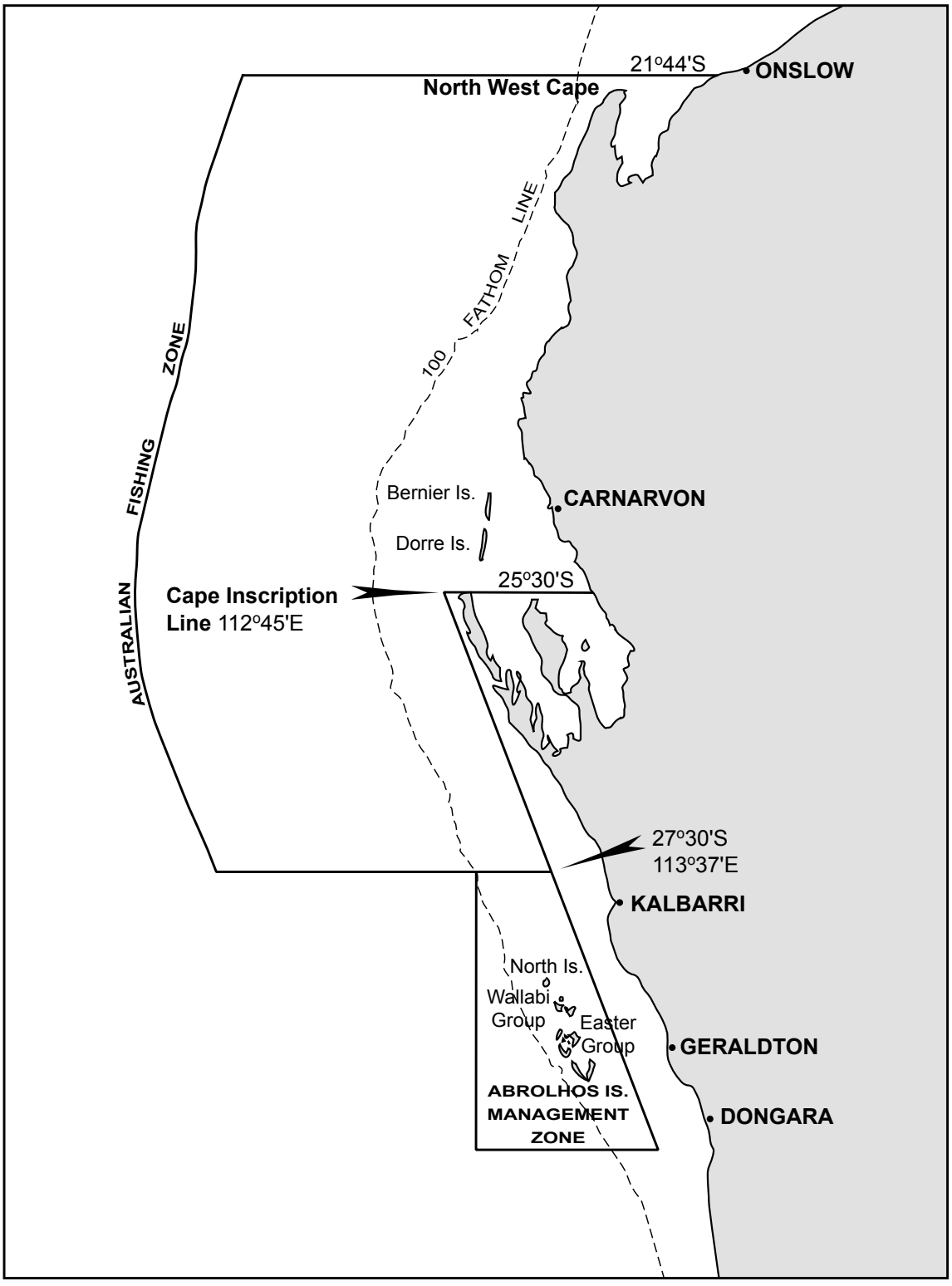


Figure 1c. Big Bank fishing area (adapted from Chubb et al. 1994).

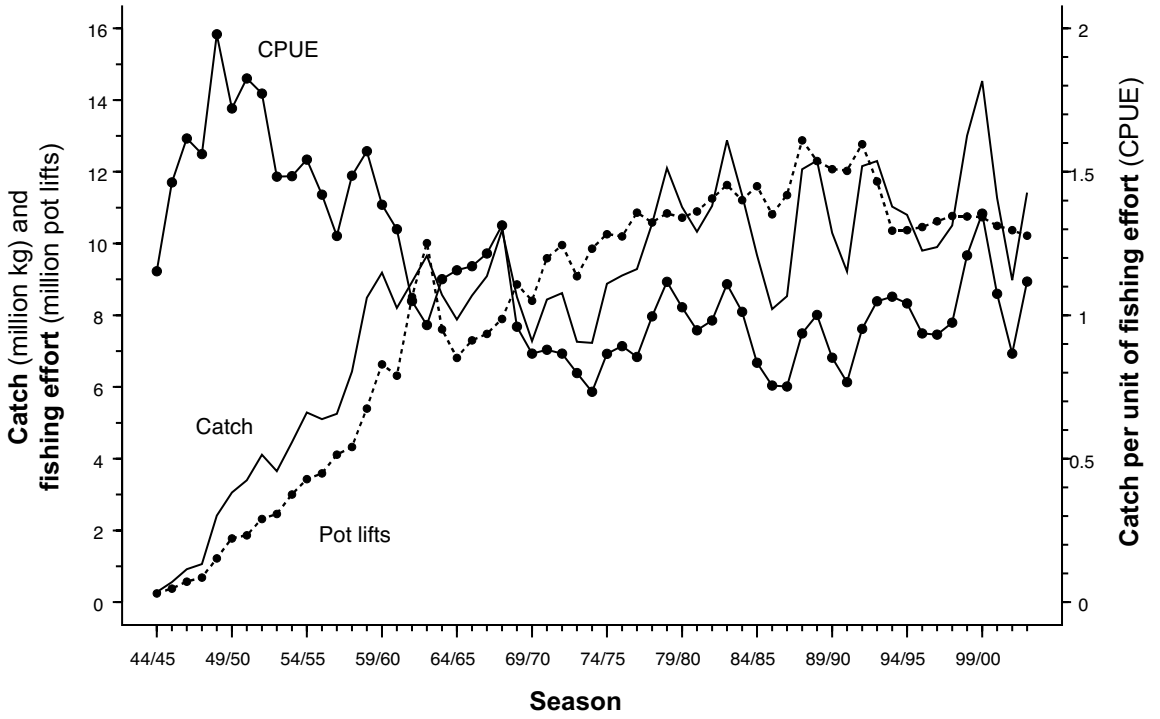


Figure 2. Rock lobster catch (kg), fishing effort (pot lifts) and catch per unit of fishing effort (kg/pot lift) data.

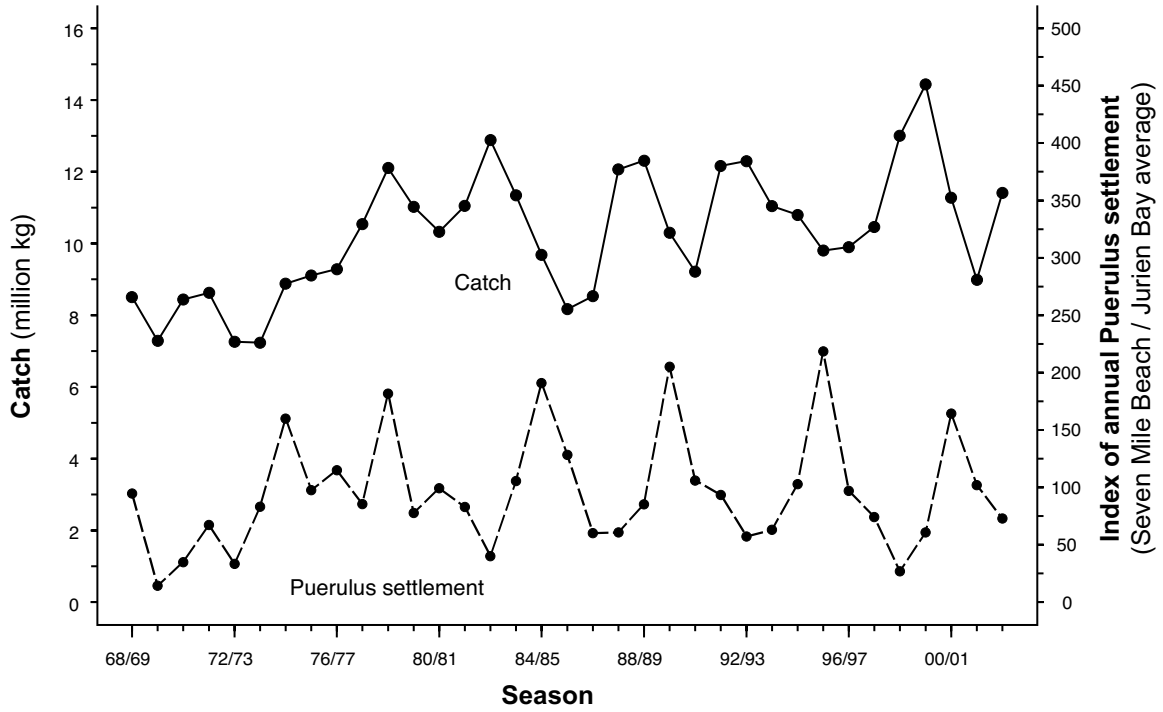


Figure 3. Rock lobster catch and index of annual puerulus settlement (puerulus take three to four years to grow to legal size).

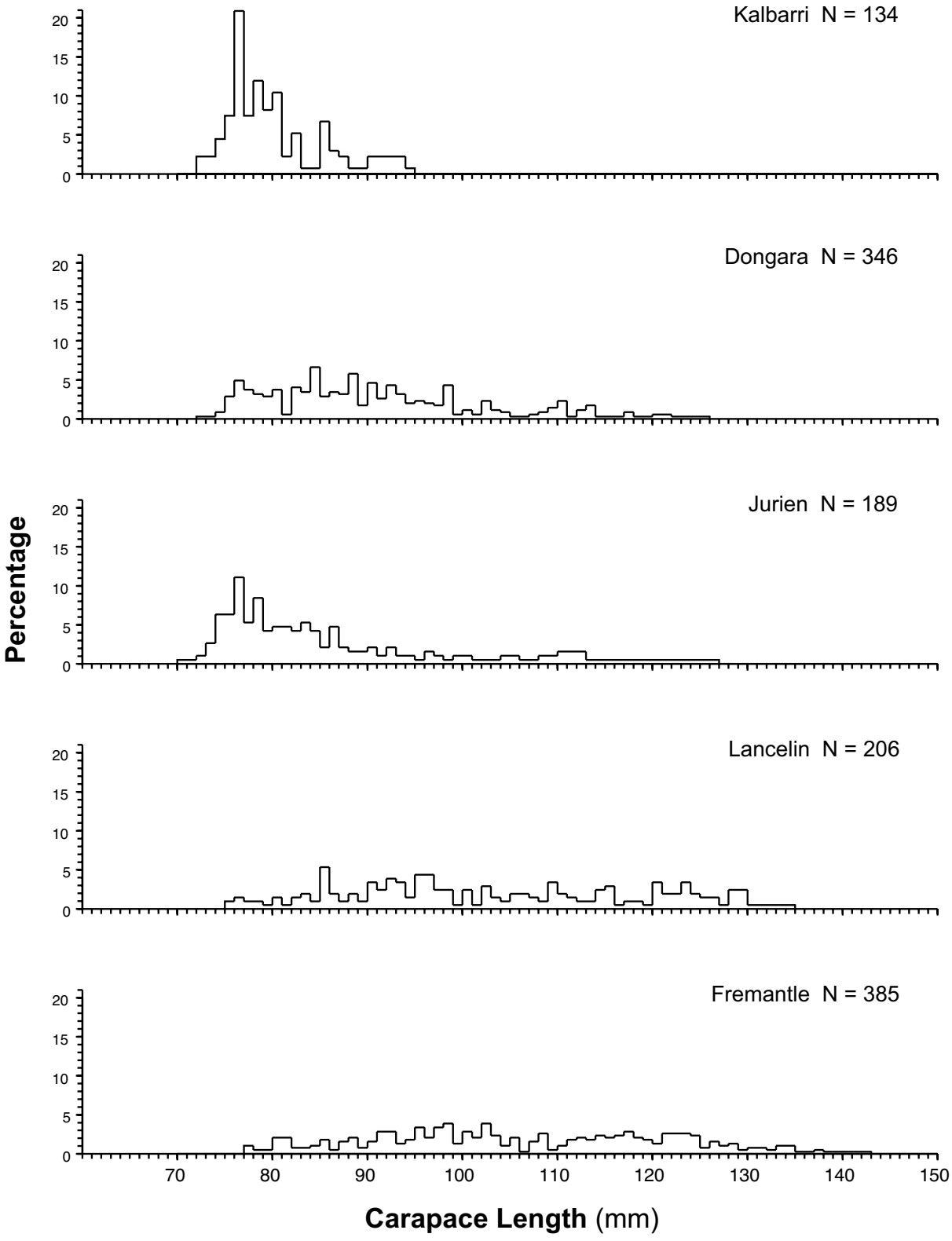


Figure 4a. Length frequency of breeding female rock lobsters (berried and/or mated) taken from December 2001 to February 2002.

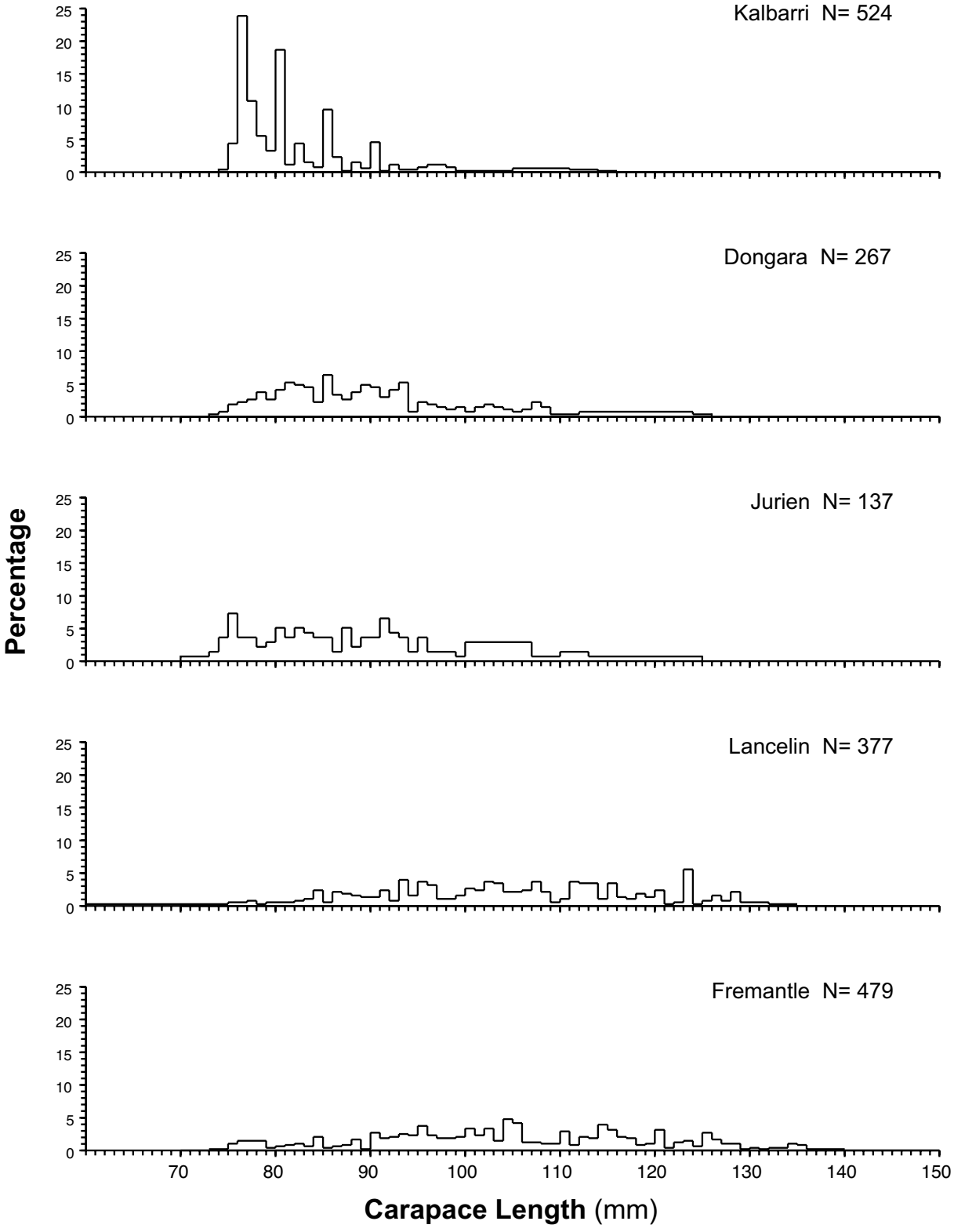


Figure 4b. Length frequency of breeding female rock lobsters (berried and/or mated) taken from December 2002 to February 2003.

9.0 Appendices

FACTS SHEET

FISHERIES
WESTERN AUSTRALIA

"LICENCE CREATION" AND "RETIREMENT" INITIATIVE FOR THE WEST COAST ROCK LOBSTER FISHERY MANAGEMENT PLAN

Prerequisites for "Licence Creation"

Applicants for a new Managed Fishery Licence (MFL) will need to apply for an MFL, nominating the zone required. They will also have to supply the following:

- Valid applications to transfer at least the minimum number of pots on to the new MFL. (These pots should be exclusively from one zone in the fishery and that zone must also be the zone nominated in their MFL application).
- Evidence that they hold, in the applicant's name, a valid Fishing Boat Licence (FBL) to which the MFL will be associated, **or** a valid application to transfer an FBL into the applicant's name. (Note: Only one West Coast Rock Lobster MFL can be associated with any one FBL).
- Full application fees for all applications.

New Managed Fishery Licences (MFLs)

Before a new MFL is issued, licensing officers will:

- Seek a report from Regional Services Prosecution Section confirming that:

a) the applicant is considered "fit and proper" to hold a West Coast Rock Lobster MFL, **or**

b) the application is not likely to be deliberately or incidentally associated with confounding existing or proposed prosecution action by Fisheries WA, **or**

c) the application is not likely to be deliberately or incidentally associated with avoiding or reducing the impact of the "black marks provisions" of *Section 224* of the *Fish Resources Management Act 1994*.

- Ensure all related fees have been paid.
- Ensure the applicant has supplied the appropriate application forms to transfer 63 or more pots exclusively from one zone of the fishery on to the licence.
- Ensure the Executive Director of Fisheries WA, or an officer delegated with authority by the ED, has approved the application and the issue of the new MFL.
- Ensure, as relevant, all those who have registered an interest on the Agency's licensing system are advised of proposed transfers.
- Complete all transfers and variations associated with an MFL application.

DISCLAIMER:
This leaflet is for guidance only. Copies of the relevant legislation can be obtained from Fisheries WA offices or from the Fisheries WA web site: http://www.wa.gov.au/westfish

Fish for the future

FACTS SHEET (cont'd)

Prerequisites for "Licence Retirement"

To sit on an inactive FBL and MFL package with one or more pot entitlements, fishers will need to submit:

- A valid transfer application that will reduce their pot entitlement to less than 63 but not less than 1. (Note: Applicants need to be aware that the impact of reducing the total pot entitlement on an MFL to less than 63 is that the associated FBL will become "of no effect" and cannot be used for fishing.)
- Evidence that two or more FBLs are held if applicants intend using their rock lobster boat in another fishery, **or** valid applications to vary licences so there will be both a valid FBL pending against the West Coast Rock Lobster MFL and a valid FBL to use the rock lobster boat in another fishery (including wet-lining).
- Valid applications to transfer pots
- Full fees for all the above applications.

For more information contact:
Ross Gould, Fisheries WA,
3rd Floor SGIO Atrium,
168-170 St George's Terrace, Perth, WA, 6000.
Ph: 9482 7333 Fax: 9482 7389
Web site: *http://www.wa.gov.au/westfish*

Application to "Retire" an MFL

Before approval is given to allow the pot entitlement to be reduced below 63 and the associated FBL and MFL to become inactive, licensing officers will:

- Seek a report from Regional Services Prosecution Section confirming that:

a) The applicant is considered "fit and proper" to hold a West Coast Rock Lobster MFL, **or**
b) the application is not likely to be deliberately or incidentally associated with confounding existing or proposed prosecution action by Fisheries WA, **or**
c) the application is not likely to be deliberately or incidentally associated with avoiding or reducing the impact of the "black marks provisions" or *Section 224* of the *Fish Resources Management Act 1994*.

- Ensure all related fees have been paid.
- Ensure the Executive Director of Fisheries WA, or an officer delegated by the ED, has approved the application and the issue of the new MFL.
- Ensure all those who have registered an interest on the Agency's licensing system are advised of both proposed transfers and applications to make the associated FBL and MFL inactive.
- Complete all transfers and variations associated with MFL application.
- Check that the letter of approval emphasises that initial and ongoing approval is subject to the completion of monthly "nil" catch returns against the MFL, and that an inactive or pending FBL is held against the MFL.
- Undertake any other action they consider necessary for the purposes of meeting the objects of the *Fish Resources Management Act 1994*.

8 September 2000

Fish for the future

Bulletin No 25 20 February 2002

Department of Fisheries

Commercial Fisheries Production Bulletin

Fish for the future

WESTERN ROCK LOBSTER FISHERY

2001/2002 SEASON

THE COASTAL FISHERY

The western rock lobster fishery had its worst whites in almost 30 years. A total of 570 boats started season 2001/02 and landed a whites catch of 2,693 tonnes. Not since 1973/74 has the catch been so low. In that season, in a total catch of 7,234 tonnes, the whites contribution was 2,596 tonnes.

The 2,693 tonnes was 47.2% below last season's catch over the same period and 40.4% less than the average over the past 10 seasons (Table 1). To the end of January 2002, the landings in B zone were down by 33.2% compared to last season while in C zone, the Jurien and Fremantle regions recorded declines of 41.5% and 58.1% respectively (Table 1).

Table 1. ***Preliminary rock lobster production figures. Note: Geraldton = A zone plus B zones catches. Slight variations in totals are due to rounding total kg to t in each region.***

Production (t) to end of January 2002

Fremantle	Jurien	Geraldton	Total
1087	497	1108	2693

Production (t) to end of January 2001

Fremantle	Jurien	Geraldton	Total
2594	850	1660	5104

Difference (t) and percentage difference

Fremantle	Jurien	Geraldton	Total
-1507	-353	-551	-2411
58.1% down	41.5% down	33.2% down	47.2% down

10 yr. cumulative average to end of January 2001	=	***4519 t***
Production to end of January 2002	=	***2693 t***
Difference	=	***-1826 t***
% Difference	=	***40.4% down***

While the declines over last season are substantial, it should be noted that below average puerulus settlements three to four years ago led to reduced forecast whites catches of 1,400 tonnes for B zone and between 2,050 (using all C zone puerulus sites) and 2,650 tonnes (using only the Alkimos site) for C zone during 2001/02. This compares to the actual landings of 1,108 tonnes and 1,585 tonnes in B and C zones respectively.

A glance at the monthly landings shows clearly that while the January catch was about average, the November and December catches were unusually poor (Figure 1). So what was the problem?

The puerulus settlements leading to this season's catch were low indicating reduced densities on the grounds, but were there actually fewer lobsters than predicted? The monitoring data from the catches on board commercial vessels in 2000/01 showed that the juvenile lobsters were present and nothing has happened in the meantime that would have caused a mass mortality of those animals. So if the lobsters were there, albeit in reduced densities, then this season's very poor whites catch had to have been a result of environmental conditions.

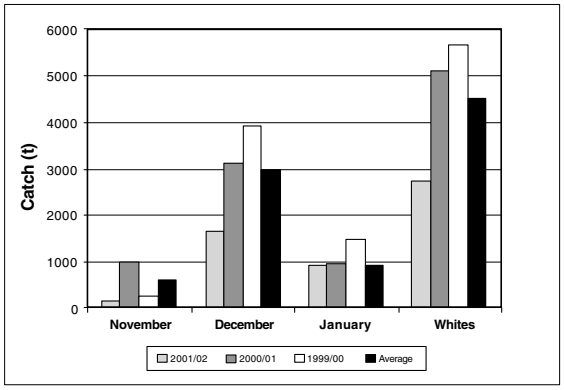


Figure 1. ***The November, December, January and total whites catches for seasons 1999/00 to 2001/02 compared to the average for the seasons 1992/93 to 2000/01.***

The two full moons in December have been suggested as having an impact on catches. However, the moons were at the beginning and end of the month with the dark phase right through the middle of December when the lobsters should have been migrating. Certainly lobsters have a lunar cycle of activity. Nevertheless, analyses would suggest that in past seasons, the timing of full moons has had little impact on the timing of the whites run.

It is the other important components of lobster catchability, swell and temperature, that seem to provide the clues about the reasons for the poor catches.

There have been varying reports about water temperature from a number of sources, with some fishers saying the water is cooler

This Bulletin is produced by the Research Division of the Western Australian Department of Fisheries

this season and others saying it is no different. An analysis of the available data shows that surface temperatures along our west coast vary from north to south, from the shore to the shelf edge and may vary substantially from surface to bottom.

Most of our data are surface temperatures and the variations this season are within the range seen previously when whites migrated as normal. However, it is the bottom temperatures that affect the lobsters and anecdotal and other information would suggest cooler water on the bottom in some areas, which may have impacted lobster behaviour. Again these temperatures are well within the range seen in previous seasons when lobster migration was unaffected.

Persistent strong and cold southerly winds blew during spring, providing energy for the Capes Current. This is a cool, wind driven current confined to the inner shelf which sets north (opposite to the Leeuwin Current) from October to March. This current may have spilled cooler water along the shallow water lobster habitat. Spot bottom temperatures from commercial monitoring data do not show abnormally low temperatures, but probably there were cooler bottom temperatures at least in October and November, when lobsters are moulting or preparing to moult.

Exceptionally calm, clear water was the result of a very strong and stable high-pressure system that sat to the south of Western Australia during the first month of the season. According to the Bureau of Meteorology (BOM), this intense system deflected the mid-latitude westerlies well to the south of their normal position and fronts passed harmlessly at very high latitudes. Consequently, the combination of continuous offshore winds and lack of swell persisted until mid December when this system dissipated and normal spring-summer conditions returned. The BOM mentioned that the presence of such as system was extremely rare.

Nevertheless, during this time the ocean was exceptionally calm with incredible water clarity, which permitted high light levels to penetrate the water column and caused algae to grow quickly on pine pots. During this time there was no mixing of the water column and no stirring of the bottom sediments and, for the most part, the lobsters did not move. Perhaps, given the water clarity and high light levels, it was too dangerous (from a predation point of view) for lobsters to move, or perhaps swell is a directional cue needed by the lobsters to determine in which direction they should migrate. When normal conditions returned, catches improved.

The best hypothesis, but not the only one, for the poor catches in November and December, is that cooler bottom water temperatures in October and November delayed and extended the whites moult over late November and most of December. Certainly the evidence supports a protracted moult. Under normal circumstances, the majority of whites would have moulted and been ready to migrate at the normal time. This season's lower densities and protracted moult meant the availability of whites to actually move would have been spread throughout December; a "trickle" rather than a "flood". The very calm and clear conditions, for whatever the reason, then prevented many lobsters from migrating. Many fishers commented that this season is the hardest season they have ever experienced. They had to work extremely hard with very precise pot setting for their catches. Most of the fleet were on two-day pulls in December.

On the rare occasions when fleeting moderate swells were experienced, catches improved. Generally speaking deepwater fishing was poor, but, there were a few good deep water catches, mainly on multiple day pulls during the latter part of December and throughout January. Fishers also reported large numbers of undersized in deep water.

Most boats moved in from deep water during late January, but, a few remained there mainly working on multiple day pulls. Many northern boats were bringing gear ashore during January as is their normal practice. The Dongara area was the "shining star" of the anchorages north of the 30th parallel. Kalbarri again had a very poor whites.

Not surprisingly, the fleet was particularly mobile right throughout the fishery. Fishers tried everywhere and, when available, opportunistically targeted areas of high catches. In C zone, a larger than usual number of boats moved south in January to the Cape Leewuin – Cape Naturalitse region in an attempt find better catches, following their very poor catches further north.

While many of the lobsters did not move, and at the time of writing Big Bank has been disappointing, they will be available during the reds, providing catching conditions are good. The surviving whites will moult and, although their catchability will be reduced relative to the whites period when they are migrating, they will be larger and later heavier. This probably will not make up for the loss of catch in the whites but it will be a bonus. Given the whites catch of 2,700 tonnes and a reds forecast catch of 6,000 tonnes, the total catch could be in the vicinity of 8,700 tonnes. The additional catch from surviving whites is not possible to determine. The only negative impact on a reasonable reds catch would be poor catching conditions (calm and clear) that were a feature of the reds fishery during last season.

PUERULUS SETTLEMENT

Puerulus settlement so far this season has been patchy, with above average numbers of pueruli at South Passage (Shark Bay), Lancelin and Alkimos. Below average settlement has been recorded for all other sites. However, there are three months of collection to complete the settlement season (May to April), which will improve numbers at the Abrolhos but generally only slightly at the coastal sites. It is likely that the Abrolhos, Jurien and Dongara will be close to average by the end of April but Port Gregory and the southern sites of Warnbro and Cape Mentelle will remain well below average.

These juvenile lobsters will become available to the fishery in 2004/05 when approximately a 13,000 tonnes total catch is forecast (preliminary figure only).

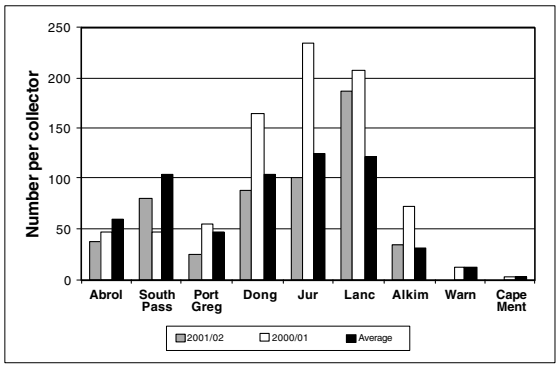


Figure 2. ***Preliminary 2001/02 puerulus settlement data compared to 2000/01 and the average of all available data since 1984/85. Another 3 months of collection will complete this season's data (see text).***

WRLDA MARKETING NEWS*

Overview.
With the unexpected low levels of catch in all fishing areas, some very interesting situations have arisen so far this season. Whilst it is a fairly normal pattern that most markets follow each other, this has not been the case in the China/Hong Kong market for larger sized lobsters. Here, price and demand have exceeded that in both Japan and Taiwan. Much of the recent business activity was related directly to Chinese New Year. Inventories in all destinations are very low, but, despite poor economic forecasts, Chinese new Year will continue to be celebrated in the traditional grand fashion ensuring a market for Western Australian lobsters.

Japan.
The overall economic picture for Japan remains very bleak. Unemployment continues to rise and a further decline in Japan's credit rating is considered a possibility.

Demand for live product is steady but lower than last season, however, prices received have been higher and probably can be attributed to the lack of catch available to send to market. Buyers have shown little interest in frozen (cooked) lobsters. Possibly this is a reflection of the exchange rate (a weak Yen compared to the US dollar) which makes buying very difficult from the Japanese importers' perspective. Inventory of frozen product in Japan is low, but so too is demand, which is not a good sign.

Taiwan.
It is probably fair to say that demand for live lobsters in Taiwan has been very disappointing so far. This well may be due to the huge volume of Mexican live product landed in Taiwan at what we consider to be very low prices. This situation highlights the very competitive and price sensitive nature of exporting lobsters!

Whilst there has been little interest in frozen (cooked) product, again this may be due to the shortage of product on offer.

China/Hong Kong.
The market for live lobsters has been very strong particularly recently in the weeks leading up to Chinese New Year, and it is hoped that this trend will continue until the end of February. There have not been any recorded sales of frozen product into these markets.

United States.
As expected, the volume of tail production is significantly lower than last season, however, the pleasing fact is that prices achieved so far have been better than last year (over the same period). The market is steady and demand leading into Valentine's Day was high.

Europe.
Some Christmas sales were placed into a number of European countries, but, since then demand has been very slow. It is worth noting that, with the exception of the Christmas and Easter festive periods, the northern winter months are not high consumption periods for our lobster.

VOLUNTARY RESEARCH LOG BOOKS

Your Fishery Floats On Good Research
Sincere thanks to all those skippers and deckies who are part of the voluntary research log-book system and have forwarded detailed research data to the Western Australian Marine Research Laboratories at Waterman. Hopefully, all of you who have participated in the log-book programme in the last couple of years will continue to provide data throughout this season.

We realise that keeping the biological data on breeding females is a lot of work, however, it is very important, to continue to record numbers of non-setose females above the maximum size. This will enable research to estimate the real impact of the management change.

We also need to have recorded the accidental capture (entangled or in pots) of species such as seal/sea-lion pups, turtles, cormorants etc, so Fisheries Research can build a data base to assess accurately how the rock lobster fishery is impacting on the ecology of such species. We have mentioned before that this is part of a requirement we now have, through Commonwealth legislation and the Marine Stewardship Council accreditation, to assess the ecological risks involved in rock lobster fishing. We recognise the impact on the so-called icon species is small but we need accurate data to demonstrate to others that this indeed is the case.

Thanks once again for your efforts. The log-book information is data that only you, the fishers, can provide and it is invaluable to those of us required to offer research advice to management.

We are always looking for new entrants to the programme, so, if you wish to find out more about the log-book programme and how it can be of benefit to you and to research, then give Eric Barker a call on 9246 8444.

GROWTH OF LARGE ROCK LOBSTERS

Just a reminder that large lobsters were tagged in the October 2000 breeding stock survey and in February 2001 from RV "Flinders" fishing around Rottnest and west of Garden Island. Lobsters were tagged with **ORANGE** tags (as distinct from the normal yellow ones) which signifies the lobsters also contain **"BIOLOGICAL TAGS"** that will tell us how many times these large lobsters moult in a season. The Rock Lobster Research team is requesting that any fisher catching lobsters with **ORANGE**, ventral tags should **RETURN ALL SUCH LOBSTERS WHOLE TO ROCK LOBSTER RESEARCH AS SOON AS IS PRACTICABLY POSSIBLE**. We need the whole animal so the biological tag can be removed and we need the animal fresh or on ice so the biological tag is not affected by freezing. If you catch one of these lobsters let us know as soon as you can on 9246 8444, we will pay market price for any legal lobsters.

**This information was provided by the Western Rock Lobster Development Association (Inc.),
Suite 6, 41 Walters Drive, Osborne Park WA 6017. Chairman Mr Tony Gibson ph: (08) 9244 2933 fax: (08) 9244 2934.**

**Except where acknowledged, the information in this bulletin has been supplied by the FISHERIES RESEARCH DIVISION
of the DEPARTMENT OF FISHERIES (WA). Contact Dr Chris Chubb or Mr Eric Barker ph: (08) 9246 8444 fax: (08) 9447 3062.**

Bulletin No 26 22 May 2002

Department of Fisheries

Commercial Fisheries Production Bulletin

Fish for the future

WESTERN ROCK LOBSTER FISHERY

2001/2002 SEASON

THE COASTAL FISHERY

The catch from the western rock lobster fishery has gained ground gradually following the worst whites in almost 30 years. At the end of January the total catch was 47.2% behind last season and 40.4% below the average over the past 10 seasons. Better catches in the reds have seen those figures improve to 27.7% below both last season's catch and the 10-year average to the end of April. Landings till the end of April 2002 were 7,028 tonnes compared to the catch of 9,723 tonnes for the same period in 2000/01, which also was approximately the average catch from November to April over the past ten seasons (Table-1).

The improvement in the reds catch has been consistent and across the whole fishery. At the end of January, A and B zone vessel catches were 33.2% behind season 2000/01; now (end of April) the catch is 19.6% lower. Similarly, the Jurien and Fremantle regions respectively caught 41.5% and 58.1% less than 2000/01 to the end of January but to the end of April those regions' catches were 27.8% and 36.4% behind last season (Table-1).

Table 1. ***Preliminary rock lobster production figures. Note: Geraldton = A zone plus B zones catches.***

Production (t) to end of April 2002

Fremantle	Jurien	Geraldton	Total
2561	990	3477	7028

Production (t) to end of April 2001

Fremantle	Jurien	Geraldton	Total
4029	1372	4322	9723

Difference (t) and percentage difference

Fremantle	Jurien	Geraldton	Total
-1468	-382	-845	-2695
36.4% down	27.8% down	19.6% down	27.7% down

10 yr. cumulative average to end of April 2001	=	***9721 t***
Production to end of January 2002	=	***7028 t***
Difference	=	***-2693 t***
% Difference	=	***27.7% down***

The monthly figures for 2001/02 indicate the levels of catch compared to the ten-year averages (Figure-1). Apart from the very poor landings in November and December (see Bulletin No. 25 for details), monthly catches have remained a little below average levels. This is consistent with the prediction of a below average catch for this season based on the poor puerulus settlements in 1997/98 and 1998/99 (Figures 4 & 5).

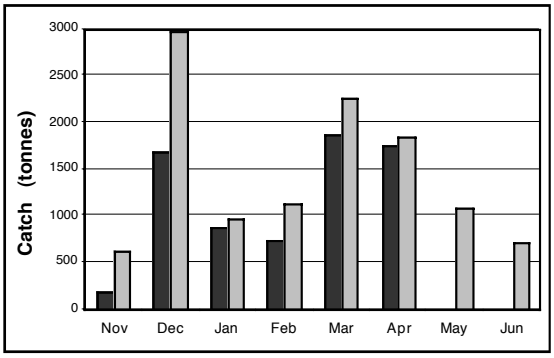


Figure 1. ***The total fishery monthly catches for November to April in season 2001/02 (dark bars) compared to the average monthly catches over the past ten seasons (light bars).***

The gauge change on February 1, as usual, saw the consigning to the processors of unacceptable quantities of lobsters in very poor condition. This suggests the lobsters are a product of being accumulated and held in pots/crates over the last days of January. This practice is highly illegal and detracts from WA's reputation as an exporter of quality product.

Throughout February in both B and C zones the fleet was confined mainly to the shallows with a few vessels in the mid water grounds. The catches generally were not good. However, towards the end of February many boats made the move into the middle grounds and deeper looking for better catches. This situation continued through to the latter part of March when catches improved with the advent of some swell. By mid February much of the fleet that was fishing south in the Cape Naturaliste-Cape Leeuwin region had moved north out of the area. These fishers reported large numbers of breeding females whilst working in the "Capes" area.

Catches through March and April were reasonable, but improved greatly during periods of swell when fronts moved through. The combined coastal catch for these two months was about 12.5% below last season (Figure 1).

During April, both B and C zone fleets were spread from the shallows to deep water, but were focussed mainly in the mid-grounds. In mid April a number of boats moved to Mandurah and, at the time of writing (mid May), are still there with the fleet numbering about 40 vessels. In addition, there are some boats scattered from Bunbury into the Capes region.

This Bulletin is produced by the Research Division of the Western Australian Department of Fisheries

During late April and the first half of May, there have been reports from fishers, mainly in the mid-water grounds in the southern part of C zone, stating that they were catching reasonable numbers of oversize non-setose females. They also reported that moulting in the mid-water grounds occurred throughout April and into May. As usual, only small numbers of over size females have been reported from northern coastal regions. The first half of May saw the passage of some very intense fronts with some welcome large swells.

Whilst the reds season has been reasonable in most areas, Kalbarri again seems to have fared relatively poorly, continuing the trend set in the whites.

One thing most fishers agree upon is that the number of octopus seen in the pots this year seems to be higher than last season which, in turn, was higher than the season before. Certainly, an analysis of the log-book data for last season support the fishers' comments and indicate catch rates of octopus caught in 0-20 fathoms are at high levels throughout the fishery (Figure 2).

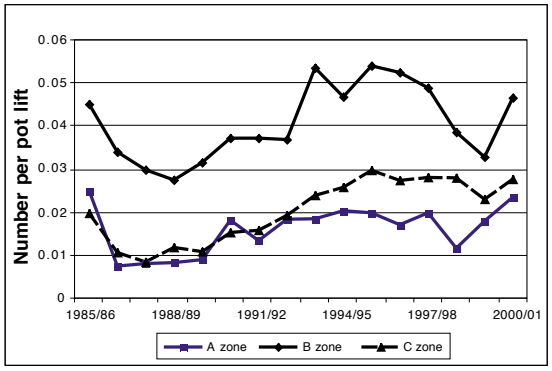


Figure 2. ***The number of octopus per pot lift by zone recorded in the voluntary research log books.***

BIG BANK

The big bank catch this year was very poor. It was the lowest catch recorded for the region with only 50.5 tonnes being taken. This was 58% lower than last year's catch of 119 tonnes. A total of 60 boats nominated to fish in the Big Bank area, a slightly larger number than last season (55) (Figure 3).

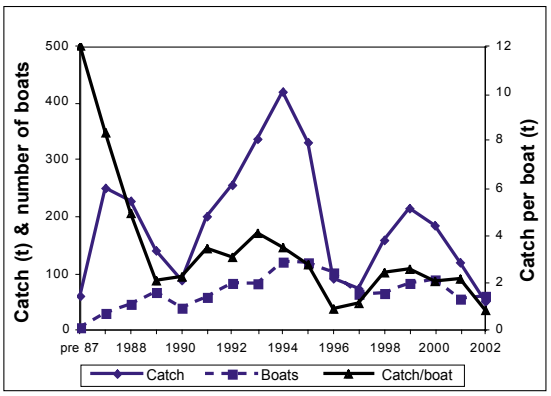


Figure 3. ***The catch (t) (solid blue line), number of boats (broken blue line) and catch (t) per boat (solid black line) for the Big Bank region.***

Of interest is the fact that the catch was taken mainly from the shallow bank area of the fishery and not the deep-water area where large catches of migrating lobsters usually are taken. The "run" did not eventuate this year which is a reflection of the poor whites catch on the coast.

ABROLHOS ISLANDS

The Abrolhos season started off well but with a few ups and downs in catches in the first week. At the end of March the catch was only 1.5% lower than last season. Since then catches have declined so that at the end of April the Abrolhos catch was about 1,150 tonnes, 11.2% below last season over the same period. The catch has not been evenly distributed throughout the island groups. Southern (Pelsaert) Group vessels have not caught particularly well all season. In contrast, North Island catches have been very good, especially in the deeper water to the north of North Island. The larger vessels fishing this area have had good catches over a long period and, at the time of writing, the good catches were continuing. These lobsters probably are those animals that did not migrate into the Big Bank region this year. It is of interest that good catches also have been taken in deep water by B zone boats just north of the northern line of the Abrolhos zone (ie the southern extremity of the Big Bank region). If we assume average catches for the Islands in May and June, we would expect a catch of a little over 1,500 tonnes which is at the lower end of the normal range of catches for the Abrolhos of 1,500 to 1,900 tonnes.

PUERULUS SETTLEMENT

Puerulus settlement along the coast and at the Abrolhos Islands again has been variable. At South Passage (Shark Bay) and the Abrolhos Islands, settlement has been about 15-17% below average. Nevertheless, Shark Bay puerulus numbers improved following a poor level of settlement in 2000/01 while Abrolhos levels have remained low but steady for the past three seasons. Settlement at Seven Mile Beach near Dongara declined from the previous season but was at average levels in 2001/02 (Figure 4).

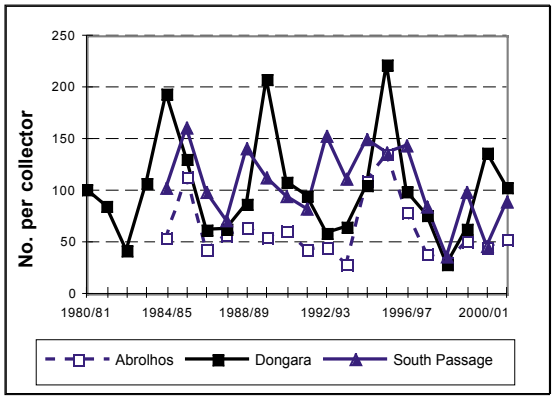


Figure 4. ***The time series of puerulus settlements, including the preliminary 2001/02 data, for the Abrolhos and B zone collection sites of Rat Island (Easter Group), South Passage (Shark Bay) and Seven Mile beach (near Dongara).***

Jurien also saw a decline in numbers of pueruli from the very high levels in the previous two seasons, but was still about 10% above average in 2001/02. Lancelin continued its run of very high settlement with the 2001/02 index being about twice the average. In the southern part of the fishery, both Alkimos and Warnbro recorded a continued decline in pueruli from very good

levels in 1999/00; the former remaining above average (18%) but the latter receiving virtually no settlement at all in 2001/02 (Figure 5). Although not shown Cape Mentelle (near Margaret River) had below average settlement. This site requires a strong Leeuwin Current for good settlement to occur.

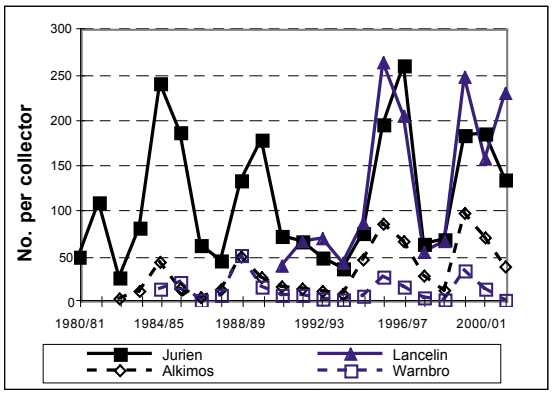


Figure 5. ***The time series of puerulus settlements, including the preliminary 2001/02 data, for the C zone collection sites of Jurien, Lancelin, Alkimos and Warnbro Sound***

Whilst generally above average strength through 2001, the Leeuwin Current (indicated by Fremantle Sea Level (FSL)) was not as strong as the record years of 1999 and 2000 when extensive La Nina conditions persisted in the Pacific. In 2001, the Southern Oscillation Index, SOI, (indicating the presence or absence of El Ninos) remained neutral, leading to a slightly weaker current. The SOI, remains neutral, although a number of models are forecasting a weak to moderate El Nino event later in 2002. Evidence for this is the slightly below average FSL recorded for April this year. April is an indicator of Leeuwin Current strength during 2002.

The 2001/02 settlement will start to recruit to the fishery in the latter part of the 2004/05 season with the remainder entering as whites in 2005/06. Updated catch predictions for all zones will be available in the next bulletin

WRLDA MARKETING NEWS*

Japan

Live

The price of live lobster has increased gradually this season. However, current price levels are under some threat with some major importers noting that the market is struggling. This might be the case in the short term, however, Japan will need to be competitive if we experience traditional second half of May buying by an aggressive Chinese market (see Hong Kong/China) and a reduction in catch over the full moon (May 26) period. Overall, the prices achieved for product sold in Japan should be reasonably steady, but prospects for future price rises are not good at this time.

Frozen Whole Boiled

The price for sales of frozen whole boiled lobster has improved slowly, but many buyers now are commenting that prices being sought by Western Australian producers are too high. Whilst the current cross rate (exchange rate between Yen and USD) is acceptable, many importers have the fear of being caught with inventories of expensive stock, as has been the case in some previous seasons. In Japan, and indeed all markets, importers actually do not believe that inventories of frozen product here in WA are low due to the poor catch this season. The truth is that frozen stock levels are well below those held at the same time last year.

Taiwan

Live

Usually, both demand and price increases in the build up to Mother's Day. Over supply has seen some reticence for buyers to take additional stock, indicating that while there is high demand, there is still resistance to price beyond a certain level. The Taiwanese are aware that the Chinese market usually strengthens significantly in the second half of May and that they will need to be competitive for this product.

Frozen Whole Boiled

There is a keen interest in the Taiwanese market for frozen boiled lobster, which, in similar fashion to Japan, is resulting in a gradual price increase. Taiwanese wholesalers want the stock, but again there is a lack of understanding in Taiwan concerning the limited amount of frozen stock held in store in WA compared to a more typical year. It is believed that there is a definite shortfall between the demand for frozen boiled lobster in Taiwan and actual shipments, so demand remains high. Nevertheless, the economic situation in Taiwan has reduced Taiwanese capacity to purchase such produce. Whilst it is not believed that prices will head to very high levels, the outlook for this market is very positive.

Hong Kong/China

Live

Compared to the same time last year, the price of live product sold into China is significantly higher, but these high prices have seen some resistance to sales. This situation has resulted in only the major importers having the ability to purchase on a regular basis. The Chinese market usually strengthens in the second half of May due to limited supply from other commercial lobster producing nations. Thus, it is usual for the price of live product sold into China to improve over that period. It will be interesting to see the extent to which price might improve this year given that China, like Taiwan and Japan, is feeling the pressure of an economic downturn.

United States

Frozen Tails

The effect of the events of September 11 on the US tail market were contrary to expectations. Whilst the market was depressed for a short period, very low inventories in the United States at the commencement of the season saw prices increase steadily all season for all sizes. Currently, smaller sizes are under some price pressure, but prices for medium and large sized tails appear to be holding firm. Extremely good prices are being achieved for frozen tails and expectations for further significant price increases would be unrealistic. The market remains strong and the outlook is very positive.

VOLUNTARY RESEARCH LOG BOOKS

Maximum Size Non-Setose Catches

Sincere thanks to all those skippers and deckies who are part of the voluntary research log-book system and have forwarded detailed research data to the Western Australian Marine Research Laboratories at Waterman.

A reminder that although keeping the biological data on breeding females is a lot of work, it is very important to continue to

record numbers of non-setose females above the maximum size. This will enable research to estimate the real impact of the management change this season.

Record Turtles, Sealions etc

At the top of each log sheet, underneath the bait and concession boxes, is a question in smaller print. It reads "***If you accidentally catch or entangle in your gear any turtles, sealions or seabirds, etc. please tick box YES or NO***". We need an answer to that question by simply ticking YES or NO! At present 70-80% of log book participants are NOT indicating anything! If, as we suspect is the case, the answer to the question is NO for most fishers, then please make sure you tick the NO box. Leaving it blank does not provide us with any useful information. If the YES box is ticked then the interaction needs to be recorded in the comments column on the day it occurred; eg one shag found dead in pot or turtle entangled in rope released alive and so on. Thanks to those 15-20% of log book participants who are correctly answering that question.

If your log sheets do not have that question at the top, then you are using an old log book and you should contact Eric Barker for a new one. Also, those few participants who send in excel spreadsheets, would you please ensure the question is put on the sheet and answered. We would like to thank you all for your attention to this. It is important we build up a data base that accurately details the effect of lobster fishing on other species such as the ones listed above. It is part of a requirement, through Commonwealth legislation and the Marine Stewardship Council certification process, to assess the ecological risks involved in rock lobster fishing.

We recognise the impact on these icon species is likely to be small, but we need accurate data to demonstrate to others that this indeed is the case.

Log Book Participation Rates Declining

The log-book information is vital data that only you, the fishers, can provide and it is invaluable in answering regional questions and providing research advice to management. This season so far we have data from about 33% of the fleet and we offer our sincere thanks to those people. This is down from the 34% last season, the 36% the season before and the 38% before that.

It will be of interest for you to note that currently we have nearly 60% of the fleet on the log-book mailing list!! Hopefully, some of those fishers who are on that list but not filling in returns, will do so and boost the numbers again.

We are always looking for new entrants to the programme, so, if you wish to find out more about the log-book programme and how it can be of benefit to you and to research, then give Eric Barker a call on 9246 8444.

Do You Remember When

Lancelin 1958
Photo by Eric Barker

***This information was provided by the Western Rock Lobster Development Association (Inc.), Suite 6, 41 Walters Drive, Osborne Park WA 6017. Chairman Mr Tony Gibson ph: (08) 9244 2933 fax: (08) 9244 2934.**

Except where acknowledged, the information in this bulletin has been supplied by the FISHERIES RESEARCH DIVISION of the DEPARTMENT OF FISHERIES (WA). Contact Dr Chris Chubb or Mr Eric Barker ph: (08) 9246 8444 fax: (08) 9447 3062.

Department of Fisheries

Bulletin No 27 15 August 2002

Commercial Fisheries Production Bulletin

Fish for the future

WESTERN ROCK LOBSTER FISHERY

2001/2002 SUMMARY & 2002/03 SEASON FORECAST

THE COASTAL FISHERY

The "reds" catch from the western rock lobster fishery during season 2001/02 was much better than the "whites" enabling the total catch to reach about 8,900 tonnes (Table 1). Climatically, May and June reverted to a more normal winter weather pattern with cold fronts and associated swells. As a result catches during May and the first two weeks of June were good along the coast in both B and C zones but declined during the latter part of June, particularly following the full moon. Throughout the coastal fishery the fleet fished very hard and opportunistically, moving to and from the shallows, through the "teens" and into the mid-grounds. A few vessels ventured deeper. Vessels started carting gear to the shore around the time of the June full moon.

The combined A and B zone share of the catch was 4,413 tonnes, 14.2% below the previous season. B zone landings for the season were 2,800 tonnes, 19.3% lower than the previous season's 3,470 tonnes. Following the more favourable catching conditions in early May, catches improved in both the shallows and mid-water grounds in B zone. Those vessels in the mid-water grounds did well on multiple day pulls. The run of good catches lasted until mid-May then tapered off towards the May moon. Reasonable catches, although not as good as those in May, were taken between the moons in June, but declined dramatically following the June full moon. Kalbarri continued to have a poor season.

Table 1. ***Preliminary rock lobster production figures. Note: Geraldton = A zone plus B zones catches.***

Production (t) to end of June 2002

Fremantle	Jurien	Geraldton	Total
3291	1174	4413	8878

Production (t) to end of June 2001

Fremantle	Jurien	Geraldton	Total
4610	1520	5140	11270

Difference (t) and percentage difference

Fremantle	Jurien	Geraldton	Total
-1319	-346	-727	-2392
28.6% down	22.8% down	14.2% down	21.2% down

10 yr. cumulative average to end of June 2001	=	***11511 t***
Production to end of June 2002	=	***8878 t***
Difference	=	***-2633 t***
% Difference	=	***22.9% down***

C zone catches amounted to 4,465 tonnes but were 27.2% less than the 6,130 tonnes landed in 2000/01. The northern part of C zone (Jurien region) and the southern part (Fremantle) were 22.8% and 28.6% down on the previous season with catches of 1,174 tonnes and 3,921 tonnes respectively (Table 1). During May and into the early part of June, more boats than in 2000/01 fished from Bunbury south along the Capes area. Most of these boats returned north during early June. Periods of calm sea conditions enabled the Capes fleet to fish "hard on" in the shallows and the catches were particularly good. The boats fishing from Bunbury also caught well, as did the large Mandurah fleet which fished mostly south of Mandurah.

The monthly figures for 2001/02 indicate the levels of catch compared to the ten-year averages and the 2000/01 season (Figure-1). The very low whites catch was about 30% of the total catch when it is usually 40% on average, the reason being the very poor November and December landings. After that however, monthly catches were in line with the forecast lower than average catch until May and June. May produced a catch higher than the 10-year average and significantly higher than May of 2000/01. While the June catch was a little lower than the average it was higher than the previous season (Figure-1).

Obviously the better catching conditions in May and June in 2001/02 compared to 2000/01 would have led to better catches. Nevertheless, it is also important to consider the shape of the decline in catches from March to June in Figure 1. The April 2002 catch also was greater than the previous season and not far below the March catch. This would seem to indicate that, in combination with the improved catching conditions, that lobsters not caught in the whites had moulted to a larger size and were being caught in the reds. Obviously not all of them would be captured which means some should be available next season.

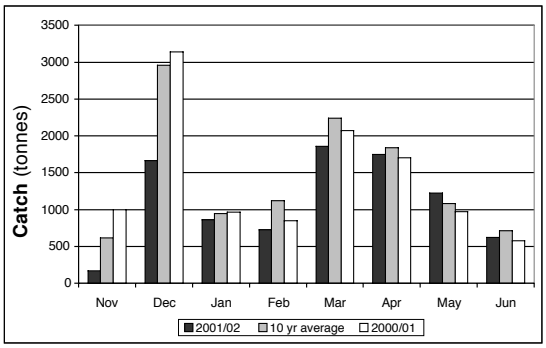


Figure 1. ***The total fishery monthly catches for November to April in season 2001/02 (black) compared to the average monthly catches over the past ten seasons (grey) and season 2000/01 (white).***

This Bulletin is produced by the Research Division of the Western Australian Department of Fisheries

Throughout the coastal fishery, particularly in the south, fishers reported catching very large numbers of setose females and undersize. The presence of large numbers of undersize is to be expected in view of the forthcoming better seasons over the next few years (see Forecast Catches).

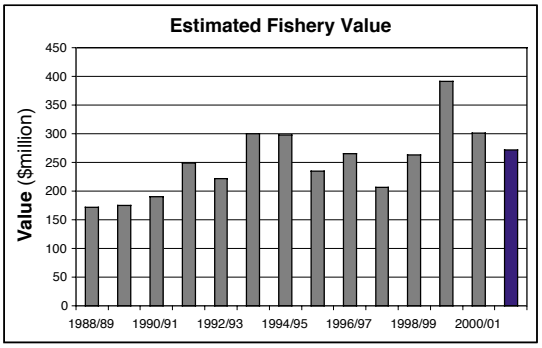


Figure 2. ***The estimated value (ex-vessel) of the western rock lobster catches from 1988/89 to 2001/02.***

Much has been said about the low catch for 2001/02. The forecast estimates were between 10,350 and 9,550 tonnes. The actual catch of 8,900 tonnes was a little under 7% below the lowest estimate generated from the C zone combination puerulus settlement index. Whilst the catch was low, the exchange rate and other factors ensured a record price averaging around $32 per kilogramme for the season. Using this figure, the value of the landed catch was about $285 million, the fifth highest value ever recorded (Figure 2.).

ABROLHOS ISLANDS

Processors production figures indicate that the total catch for the Islands was 1,610 tonnes, 3.5% lower than last season's catch of 1,670 tonnes and 5.3% below the average catch of 1,700 tonnes (21 year average). North Island was the "shining star" of the Abrolhos in 2002. Exceptionally good catches came from deep water north of North Island. Concurrent with this were equally good catches in deep water in B zone, north of the Abrolhos Islands northern boundary. The good catches in both areas continued until approximately the end of May.

One deep-water fisher from Southern Group commented that he believed the North Island landings were in the order of 50% higher than Southern Group. He also stated that it is highly likely that the total catch for Southern Group will be down on last season. Certainly the good catches taken in deep water east of Southern Group last season did not materialise this season.

As in previous seasons, by the middle of June skippers were calling a halt to their season and gear was being carted to the mainland.

FORECAST CATCHES: 2002/03 AND BEYOND

Following the low catch for season 2001/02, landings are forecast to improve over the next two seasons. 2002/03 is expected to produce a slightly above average catch between 10,750 and 11,950 tonnes. The Abrolhos puerulus to catch relationship is being updated currently, but A zone fishers should expect at least an average catch of around 1,700-tonnes and B zone (minus the Big Bank catch) is forecast to land 3,100 tonnes, approximately 11% better than 2001/02. C zone predictions are based on two sets of puerulus indices; the "traditional" index from the Alkimos site alone, and a combination index from a number of settlement sites in C zone. The former index suggests 5,800 tonnes for C zone while the latter index is forecasting 7,000 tonnes, suggesting at least a 30% improvement on the 2001/02 catch.

The reason for the difference in the level of improvement in C zone compared to B zone can be found in the regional differences in puerulus settlements contributing to next season's catch, that is, settlement during 1998/99 and 1999/00. In 1998/99 the settlement was well below average all along the coast. In 1999/00, however, C zone settlement received a tremendous boost while B zone puerulus numbers improved only slightly on the previous year and remained below average. The combination of the two seasons of settlement indicate much greater improvement in catch in C zone.

The improvement is expected to continue into 2003/04 and 2004/05 due to continued above average to average settlements in 2000/01 and 2001/02. A near record catch of about 13,900 tonnes is predicted for 2003/04. C zone should land 8,100 tonnes (the record was 8,200 tonnes in 1999/00), B zone 3,800 tonnes (a little under the catches of 1998/99 and 1999/00) and the Abrolhos 1,800 tonnes.

The preliminary estimates for season 2004/05 also indicate a very good total catch of about 13,000 tonnes with A zone, B zone (minus Big Bank) and C zone catches predicted to be 1,750, 4,000 and 7,000 tonnes respectively.

WRLDA MARKETING NEWS*

At the commencement of the 2001/02 season, inventory of unsold product held in overseas cold storage was at a fairly low level. Hence there was a general expectation that demand for western rock lobster, and therefore prices achieved by processors, would be better than average. Specifically this reflected itself in:

Whole Frozen Lobster (boiled/raw)

The consumer price in the domestic markets of our major buying countries was low. As a consequence buyers were not prepared to pay premium prices despite having the knowledge that the season's anticipated catch would be significantly lower than the previous year. Nevertheless, the effect of the exceptionally low "whites" catch soon created strong demand for product. The demand continued and resulted in a gradual price rise through to the end of the season, which ultimately was reflected in a healthy beach price.

Tails

Prices and demand in the United States tail market rose throughout the season despite the generally held view that the impact of September 11 would have seen both price and demand fall. In fact the price increase from the start of the season until the middle of the "reds" was of the order of 20% above last season. Orders remained steady throughout 2001/02 despite higher than "normal" production primarily due to the demand and consumption in the United States.

Live

The overall view of "lives" is that the 2001/02 was unusual insofar as price was pushed to extremely high levels in order for it to compete with the strong frozen market. In a season of near record low catch the normal expectation would have been for the percentage of lives to be exceptionally high. This was not the case and in fact, the overall tonnage of live lobsters produced was approximately 20% lower than the previous season.

Currency

The early part of the season saw relatively "stable" rates of currency exchange. However, whilst selling prices tended to increase from the middle to the end of the season, this was not reflected in the beach price as the benefits were offset by the strengthening of the Australian currency against the United States dollar.

Next Season

Inventories apart from "tails" will be low hence the expectation is that the season will open with strong demand for whole frozen product. This should form the basis for a healthy demand for all pack styles and good prices. However, a major determinant of beach price is the direction of currency movements which are unpredictable.

The anticipated catch increase will not have a significant impact on the overall situation. A note of caution, however, should be sounded. The other rock (spiny) lobster producing nations continue to increase their levels of competition with WA packers for market share. These countries continue to improve both product quality and packaging and are prepared to accept lower prices, in some cases simply to avail themselves of access to foreign currency in the form of US dollars.

ROCK LOBSTER RESEARCH

Voluntary Research Log-Books

Sincere thanks to all those fishers who are part of the voluntary research log-book system and who kept records of their observations and catches throughout the season and forwarded their data to the Western Australian Marine Research Laboratories at Waterman.

The participation rate for 2001/02 was identical to the previous season at a little over 34%. This is a good result, but given that almost 60% of the fleet are on the mailing list we urge those fishers who did not participate to HAVE A GO NEXT SEASON!

Important Note: By-catch of Turtles, Sealions, etc

At the top of each log sheet, underneath the bait and concession boxes is a question. It reads "***If you accidentally catch or entangle in your gear any turtles, sealions or seabirds, etc. please tick box YES or NO***".

An analysis of the past two years of log-book data shows that the vast majority of participants are not answering that question. In 2000/01 this question was answered in only 5-10% of the log-book records. It improved to 25-30% of the records in 2001/02. *But it is still a long way short of providing realistic data that will be believed by those sections of Australian society which have raised concerns about fishery impacts because of the lack of available information to assess such impacts*. We all have a responsibility to ensure the western rock lobster fishery is managed in an ecologically sustainable way, which includes understanding and assessing the impact of fishing on species other than the western rock lobster. That responsibility is required under Australian law and is necessary to maintain Marine Stewardship Council certification. So please ensure you tick the box yes, or no. If you do tick yes please fill in the relevant details on the day the bycatch interaction occurred; eg 1 leatherback turtle caught in rope and released alive.

The same analysis revealed that some fishers are using old log-books, ones without the bycatch question on the top part of the sheet. Please make sure you use a current log-book and ***if the log-book sheet does not have v18 in the bottom right hand corner, then do not use it***. If you need a new book, please contact Eric Barker on 9246 8407.

Some fishers are sending their own version of log sheets using programmes such as Microsoft Excel. If you are one of these people, *please ensure you enter the by-catch question on your sheet and answer it yes or no then record any interactions as necessary*.

We recognise the impact on these icon species is likely to be small, but we need accurate data to demonstrate to others that this is the case. Thus, we need to build up data bases that will enable us to assess accurately the ecological risks involved in rock lobster fishing. We offer our thanks in advance of next season for your compliance with these requests.

Biological Tags

Again next season you may catch large lobsters bearing **orange** tags on the underside of their tails. The orange colour is different to the normal yellow tags because it signifies that lobsters tagged with the orange tags also contain biological tags. As we have mentioned before, these biological tags will allow us to determine the moult frequency and average moult increment for larger lobsters which will assist our stock assessments. So if you catch a lobster with an *orange tag* please *return the whole lobster with the tag* to the Western Australian Marine Research Laboratories or to your nearest Fisheries Office.

New FRDC Project

A new western rock lobster project, funded by the Fisheries Research and Development Corporation, commenced this financial year. The two-year project, will be undertaken by Dr Bruce Phillips (Curtin University) and Dr Roy Melville-Smith (Department of Fisheries). It will assess the possibilities for enhancing the natural settlement of western rock lobsters by providing artificial habitat for pueruli and early stage post-pueruli. The likely outcome of this work might be the provision of limestone structures with suitably shaped holes for pueruli to colonize, and in that way be less susceptible to predation in their first year after settlement when we believe them to be particularly vulnerable. However, as a first step in that direction, research will need to focus on laboratory studies to obtain an understanding of the shapes and configurations of holes that will lead to optimal colonization by pueruli. Pueruli for the laboratory experiments will be collected at Seven Mile Beach and 30 collectors were put in place in July (to the south of the existing collector site), to catch the animals needed for the research. Further details will follow as and when research results become available.

***This information was provided by the Western Rock Lobster Development Association (Inc.),
Suite 6, 41 Walters Drive, Osborne Park WA 6017. Chairman Mr Tony Gibson ph: (08) 9244 2933 fax: (08) 9244 2934.**

**Except where acknowledged, the information in this bulletin has been supplied by the FISHERIES RESEARCH DIVISION
of the DEPARTMENT OF FISHERIES (WA). Contact Dr Chris Chubb or Mr Eric Barker ph: (08) 9246 8444 fax: (08) 9447 3062.**

Department of Fisheries

Bulletin No 28

18 March 2003

Commercial Fisheries Production Bulletin

Fish for the future

WESTERN ROCK LOBSTER FISHERY

2002/03 SEASON

THE COASTAL FISHERY TO DATE

The commencement of the 2002/03 season saw 563 licensed commercial vessels operating in the western rock lobster fishery. The current season's whites catch of 3,886 tonnes (Nov-Jan) was a big improvement (up 40%) on the previous season, but still 10% below the average over the last 10 years (Table-1). Weather conditions and sea temperatures prior to the start of season were indicative of a "normal" whites run. From the start small numbers of "whites" were present in the catches. To begin with, catches were quite low, resulting in multiple day pulls for most of the fleet, but as the season progressed, catches built up slowly with an increasing percentage of whites appearing in the landings.

As usual, the fleet was confined to the shallows (under 10 fathoms) during the early part of the season. Here catches were very good and lasted well into December, but of course this varied along the coast. By early December, particularly in C Zone the whites run was well and truly under way. In B Zone, the "whites" run also had commenced, however, catches were not as good as in C Zone.

By the second week in December, some of the fleet had moved gear into the "teens" (10-20F), whilst at the same time the shallows were still producing good catches. By approximately the middle of December, vessels were moving gear into the mid-water grounds (20-30F) where good catches were taken. About this time, catches in the shallows started to decline.

A feature of this season was the length of time good catches were taken in the shallows. Possibly the residual stock from last season's poor whites together with better recruitment and favourable catching conditions contributed to this situation.

Towards the end of December many boats had moved into deep water with varying degrees of success. Deep water was patchy, generally short lived and vessels were on multiple day pulls. Nevertheless, at some locations along the coast, good catches were taken. The timing of the deep water run and the strength of the catches varied from location to location throughout the fishery. Fishers consistently reported large numbers of undersize in very deep water, indicating the good catches to come in the next two seasons.

By mid January, boats were returning from deep water. By the end of January the fleet was scattered from the shallows to the mid water grounds. By the third week of January a number of vessels had moved to Bunbury and further south (into the Capes area) and were reported to be taking good catches. This reflects good puerulus settlement there three years ago.

In February, research staff undertook a monitoring survey between Capes Naturaliste and Leeuwin to obtain some size frequency data and observe first hand what was being caught in the area. A large number of breeding females and large males were observed in the catches measured. Effort over the last 3 years has been steadily increasing in the far south of C zone, with up to 40 vessels venturing into this region this year.

By the end of January much of the fleet had moved into the shallows and mid-water grounds. As in previous years, some B Zone fishers removed gear and boats from the water during January. Towards the end of the month these vessels commenced fishing again, some in preparation for Big Bank.

A number of Kalbarri boats, commenced the season fishing from Port Gregory, Geraldton and Dongara as they have done in previous years. These vessels returned to Kalbarri approximately mid December. Once again Kalbarri has not fared particularly well so far this season. The whites were patchy with only a few isolated reasonable catches reported.

As predicted, the whites catches were better in C Zone than in B Zone. The whites catches to end of January, of 1,410 t in B zone and 2,476 t in C zone reached the forecast whites catches of 1,200 t and between 2,470 and 2,750 t for B and C Zones respectively.

Table 1. ***Preliminary rock lobster production figures.***

Production (t) to end of January 2003

Fremantle	Jurien	Geraldton	Total
1,800	676	1,410	3,886

Production (t) to end of January 2002

Fremantle	Jurien	Geraldton	Total
1,157	497	1,108	2,762

Difference (t) and percentage difference

Fremantle	Jurien	Geraldton	Total
643	179	302	1,124
55.6% up	36.0% up	27.3% up	40.7% up

10 yr. cumulative average to end of June 2001	=	***4,323 t***
Production to end of June 2002	=	***3,886 t***
Difference	=	***-437 t***
% Difference	=	***10.1% down***

BIG BANK

A total of 52 boats nominated to fish in the Big Bank area of the fishery this year compared to 60 in 2002. These vessels caught 19 tonnes compared to 50.5 tonnes in 2002, a drop of just over 60% This is the lowest catch by far in the history of the Big Bank fishery (Figure 1). Landings were very poor from the start and deepwater failed to produce any catches of note. The bulk of the lobsters were taken in the shallower regions of the region.

This Bulletin is produced by the Research Division of the Western Australian Department of Fisheries

The reason for the lack of catch may reside in the level of catch taken in the northern part of A zone (block 97011 in the Catch & Effort Monthly Return books) in the latter part of last season. In May and June of 2002, 55.6 tonnes and 5.3 tonnes of lobsters respectively were caught in the northern area (block 97011). This was 2.5 times and 4.8 times as much as the previous 4 year average of 22.5 tonnes and 1.1 tonnes respectively. Big Bank fishers are reminded of their obligation to send their daily log book records to the Rock Lobster Research Unit at the Watermans laboratories.

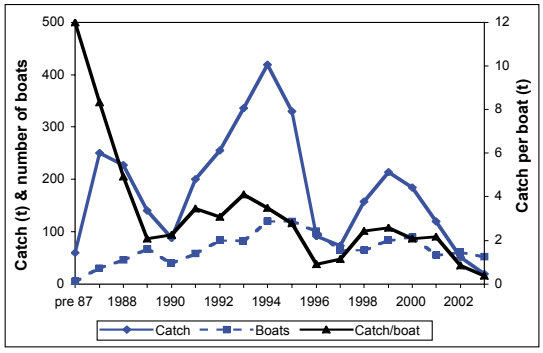


Figure 1. The historical time series of catch in tonnes, number of vessels and catch (tonnes) per boat for the Big-Bank region.

PUERULUS SETTLEMENT

The 2002/03 puerulus settlement to date (May-Feb) has been below average at all sampling sites throughout the fishery (Figure 2). The level of reduction compared to the average settlement over the past ten years ranges from 25% at Seven Mile Beach to 96% at Warnbro Sound.

In general, the northern sites and the Abrolhos had better settlement than the southern locations with puerulus numbers falling rapidly south of Lancelin. These low settlements will first impact on the "reds" of 2005/06 and then as a poor "whites" in 2006/07.

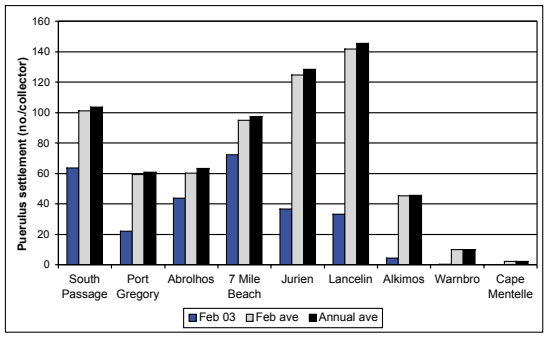


Figure 2. The cumulative puerulus settlement to the end of February compared to the cumulative average to February over the past 10 years and the annual 10 year average.

These below average puerulus numbers may be attributed to the El Niño conditions which commenced in early 2002 and have continued well into January 2003. Under these conditions, a weak Leeuwin Current down the Western Australian coastline contributes to a poor puerulus settlement. The climate forecasters believe that El Niño conditions will continue to weaken through April 2003. Thereafter, the consensus forecast is for near normal conditions during May to October 2003. (Climate Prediction Center, NOAA, Colorado, 2003). This is likely to mean an average to slightly below average settlement next season (May 2003-April 2004).

WRLDA MARKETING NEWS*

Overview

At the commencement of the season, inventories of unsold, last season's lobsters in overseas cold stores were low. Coupled with a forecast average catch, this was a highly desirable position from which to negotiate the new season's sales. However, whilst the season's early opening landings were good, the very high beach price paid to fishers, through its direct link to market price, created serious resistance in the minds of many overseas buyers who, simply, were not prepared to pay the prices being asked for by WA Exporters.

As the season unfolded, WA witnessed a most uncommon occurrence, that of a quite dramatic drop in the level of live lobster production during the "whites". Mexican live lobster exporters made huge inroads into the live market, particularly into Taiwan, at price levels that all WA Exporters could not match. As a result, production of tailed and cooked lines was much higher than normal (Figure 3).

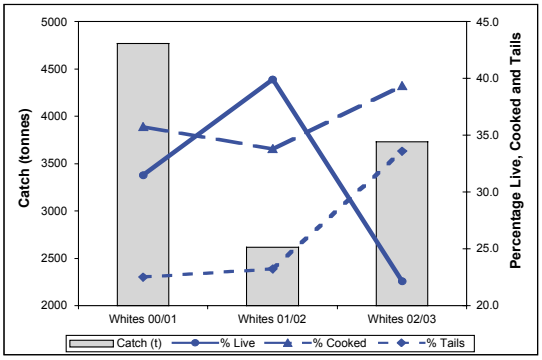


Figure 3. The whites catch (Nov-Jan) and the percentage of live, whole cooked and frozen tails produced from that catch from 2000/01 to 2002/03.

Differences in the quality of competing products are detected easily in frozen product but this does not apply to live product. Once transport mortality problems have been solved by a country exporting live lobsters, a live animal is a live animal in the market place! Readers should not lose sight of the fact that whilst we quite rightfully boast that we have one of the best-managed, sustainable fisheries in the world, buyers view western rock lobster as a commodity only and they compare the prices of all like commodities on offer before purchasing. Up to a point quality will win out, but high prices always will cause buyers to consider other options. It is not difficult to understand the decline in sales of live western rock lobster in Taiwan when Mexico was offering similar product at up to US$3 less per kg than WA exporters were asking.

Only time will tell if any long-term reduction of market share has been caused by the competition with Mexican live producers in the Taiwanese market. One fact is certain, that the Mexicans have established themselves very firmly as suppliers of live lobster to the market in the months of September to February and concern for the future of our market share in Taiwan is very real. Some WA exporters also are expressing concern with a similar situation in the Japanese cooked lobster market.

Whilst it is recognized that some readers will say this is simply the processors complaining, the fact of the matter is there is much more competition in the market place. For example, increased production from Cuba with an additional 2,000 tonnes, and South Africa with an extra 700 tonnes on offer to traditional markets will add yet extra competition for WA lobster exporters. Buyers have recognized the improvement in quality and packaging by

these producers. Coupled with lower asking prices, buyers see far greater potential for profit in these lines than that which exists for WA produced lobsters, the superior quality of WA lobsters notwithstanding. These issues are industry issues and matters of concern to all involved in the western rock lobster fishery.

The uncertainty of international events also is having an "adverse" effect on the Australian dollar with its value strengthening against the US dollar and the AUD hovering around the 60 US cents level. Everyone knows this is not a good situation for Australian exports of all kinds.

United States

The level of frozen tail production has been far greater this season due to the decline in live market sales. There comes a point where the United States brokers, who have dealt in WA frozen tails for the last 45 years, simply cannot move stock unless they drop the price to the restaurants/casinos/hotels who set their menus and determine their pricing structure twice yearly. Such a time appears to approaching rapidly and, together with the uncertainty surrounding the US/Iraq conflict, this does not augur well for a continued buoyant US tail market.

Japan

Yet again the weakened Japanese economy is demonstrating its reluctance to spend on luxury consumables. WA exporters are placing greater emphasis on non-traditional lobster pack styles in an attempt to retain market share. This does not happen over night but the signs are encouraging. Much has been written about the decline of the Japanese traditional wedding market and recent statistics confirm that spending on weddings continues to drop. This is impacting further on the sales of cooked lobster which traditionally has been served as a feature of the event. With the end of the financial year in Japan (March) there is a reluctance to buy product and show this on the books as inventory at the year's end. Hopefully, with the commencement of the new fiscal year the buyers will become more active.

Europe

WA exporters are continuing to press for the removal of the tariff barrier on our lobster products into the European Union. However, our claim has a very low priority when compared to the massive fishing dislocation issues being faced by many of the EU member countries. WA exporters will continue to pursue the tariff reduction vigorously in the belief that the results achieved thus far, support the view that Europe will be a very important market for WA lobster. This is both time consuming and costly, however, we have been assisted greatly by our WA Agent General in London, Mr Bob Fisher, and his staff.

ROCK LOBSTER RESEARCH

Voluntary Research Log-Books

The participation rate of fishers in the voluntary research log book programme and the quality of the data have been excellent. To date over 36% of the fleet has forwarded research records to the research team, which has already eclipsed last year's rate. Special thanks to all the log book participants, it is a wonderful expression of your concern about your fishery and the will to ensure it remains the "best" fishery in the world.

Nevertheless, one thing that appears to be a bit of a problem is the consistent decline in the number of returns in March, April, May and June every season (Figure-4). It would seem that fishers start to lose a bit of interest in the scheme or, alternatively, they are not returning the records to the Rock Lobster Research Unit. The research team urges you to continue recording your catches and observations and returning them to the Marine Research Labs in the reply-paid envelopes, previously forwarded to you. It is very important that the research team gets these data, particularly in view of the need to assess the impact of the fishery on the ecosystem.

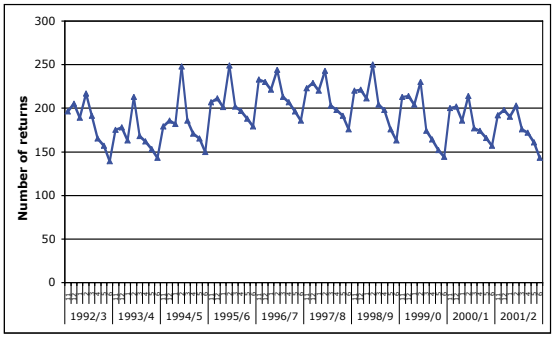


Figure 4. The number of log book returns each month from 1992/93 to 2001/02.

Part of that ecosystem impact relates to fishing effects on other species such as the endangered leatherback turtles, sealions and so on.

At the top of each log sheet, underneath the bait and concession box is a question outlined in black. It reads ***"If you accidentally catch or entangle in your gear any turtles, sealions or seabirds, etc please tick box Yes or No".*** This information is vital in understanding the impact the fishery may have on these species. About 50% of log book participants currently are ticking either ***Yes*** or ***No***, the other 50% leaving it blank, presumably because there was no interaction. IT IS IMPERATIVE THAT YOU TICK ONE OF THE BOXES for the simple reason that if you do not, the research team does not know if there was no interaction, or whether you just do not want to give research any information. We guess it is the former explanation, so please take the time to tick the box on the log sheet.

Being part of the log book programme is to be part of the rock lobster research team and make a positive contribution to ensuring sustainability of this wonderful fishery. If you would like to join in, then give Eric Barker a call on 9246 8444.

Again a sincere thanks to all those fishers who are part of the voluntary research log-book system and who kept records of their observations and catches throughout the season and forwarded their data to the Western Australian Marine Research Laboratories at Waterman. Please remember to return your records in the second half of the season.

Independent Breeding Stock Survey: October 2002

The Department's fishery independent breeding stock survey (IBSS) was undertaken in October at the commencement of the breeding season and prior to the start of the commercial fishing season. These surveys commenced in the early 1990s. They have the objective of monitoring the state of egg production in the fishery independently of data supplied by the fishery through log-books and commercial monitoring, etc. The IBSS is undertaken over the new moon at the same time each year, using standardized fishing gear and bait at specific GPS positions in three locations, Lancelin, Dongara and the Abrolhos Islands. Every fifth year the survey is extended to include Fremantle, Jurien and Kalbarri. The October 2002 IBSS was an extended survey.

The fishery independent egg production indices have tended to be somewhat irregular when viewed on year-to-year basis, probably because it is impossible to take all catchability effects into account (although attempts have been made to correct for well-known effects such as swell and temperature). As a result of these difficulties, indices in some years are clearly dubious,

but the overall trend in the breeding stock index is clear. Since it is the long-term trends in the indices that are of interest, the data have been smoothed by way of a three-year moving average. This removes the abnormal highs and lows and shows the long-term trends more readily (Figure 5).

Fishery independent egg production indices confirm the substantial increase in coastal egg production since the early 1990s that also is evident in indices derived from commercial monitoring data. In contrast to the commercial monitoring data, the fishery independent indices have shown a downturn in recent years. To some extent this downturn has been distorted by two very high egg production values which were recorded in 1999 and 2000, and for which attempts to correct for increased catchability effects in those years have not been entirely successful to date.

The overall result of egg production indices derived from both commercial monitoring and fishery independent sources, is that levels are well above those recorded in the early 1990s. Modelling using these data shows egg production to be at or above the target level of 1980.

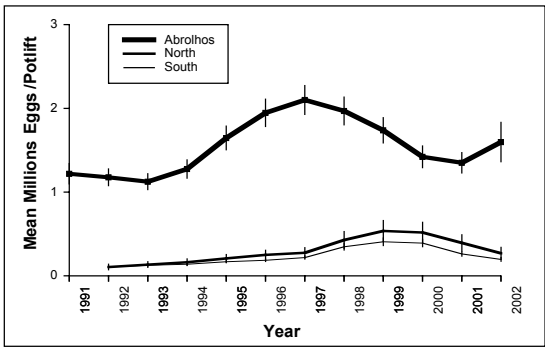


Figure 5. Fishery independent breeding stock indices for the Abrolhos Island and coastal regions. A three-year moving average has been used to smooth the data.

AQIS Decision on Rock Lobster Bait

The research team is hard at work during the closed season as well, analysing data, writing reports and providing advice on a range of issues. One such issue came from the Australian Quarantine Inspection Service in August last year, and research advice was crucial in the AQIS decision to allow the importation of Californian pilchards and mackerel for use as rock lobster bait.

Rock Lobster Research provided AQIS with a range of temperature data collated from the WA Marine Research Laboratories' aquarium intake, commercial monitoring operations, temperature information from loggers attached inside rock lobster fishers' pots and from the CSIRO logger station off Rottnest Island. When compiled, these data indicated that the water temperatures in the western rock lobster fishery did not fall to the levels that would facilitate the transmission of the Viral Haemorrhagic Septicaemia virus found in Californian pilchards and mackerel.

Whilst the rock lobster industry lodged a submission to allow the use of these species as bait, AQIS subsequently sought from Rock Lobster Research, temperature data that allowed AQIS to sanction the continued use of this bait during the rock lobster season. Just another part of the "behind the scenes" service provided by the research team in support of your industry.

Bait Use in the Rock Lobster Fishery

Another summary that the Research team provides to industry is a collation of the use of bait throughout the season. Data on imported and locally sourced baits are collected from all the major bait suppliers to industry. The following table provides a summary of bait use over the past two seasons.

	2000/01	**2001/02**
Total Bait (t)	16,190	13,405
Imports (t)	14,520 (89.7%)	10,920 (81.5%)
Local (t)	1,670 (10.3%)	2,484 (18.5%)
Catch (t)	11,266	8,966
Potlifts	10,456,200	10,327,000
kg of bait per kg of catch	1.44	1.50
kg of bait per pot lift	1.55	1.30

Imported baits contributed 90% and 82% of all baits used in 2000/01 and 2001/02 respectively, the bulk of that being sourced from New Zealand. Popular imported baits in both seasons were blue mackerel from New Zealand and the USA, North Sea herring from Holland and Scotland and kahawai, jack mackerel, orange roughy and hoki (blue grenadier) from New Zealand. Local fish provided more of the bait in 2001/02, and comprised principally Australian salmon and Australian herring, but also skipjack tuna heads from South Australia and orange roughy heads from New South Wales.

Interestingly, the total amount of bait used in 2001/02 was 17% less than the previous season, with imports down and local bait usage increased. The reason for the reduced bait use appears to lie in the greater number of two and three day pulls seen last season resulting from the very poor whites run.

The amount of bait used per kilogramme of catch was similar in both seasons at 1.4-1.5 kg of bait per kg of catch, but the kg of bait per pot lift was lower last season (1.3 kg) compared to 2000/01 (1.55 kg). This information will be collated on an annual basis.

Tagged Lobsters

During the season you may find tagged rock lobsters. Rock Lobster Research has used ventral tags (on the underside of the tail) that are either **yellow** or **orange**. The **yellow** tags have been used for general tagging work while the **orange** ones have been used on large lobsters and indicate a biological tag has been inserted into the animal. If you find a lobster with a **yellow** tag please record accurately the carapace length, date, GPS position, length, sex, setose, berried etc and return it to the water if undersize. If it is legal size, then either you can return it to Rock Lobster Research who will pay you for it, or record all the details and consign the lobster to the processors. **If the tag is *orange*, regardless of its condition (ie, setose, tar spotted or berried), the lobster must be returned to Rock Lobster Research so we can examine the biological tag.** This is extremely important for studying the growth of these larger animals. You may see lobsters with **white** tags. These are part of an FRDC funded research programme looking at cold stunning of lobsters. You should contact Dr Glen Davidson at the Geraldton Fishermen's Coop for details about the handling of these animals.

***This information was provided by the Western Rock Lobster Development Association (Inc.), Suite 6, 41 Walters Drive, Osborne Park WA 6017. Chairman Mr Tony Gibson ph: (08) 9244 2933 fax: (08) 9244 2934.**

Except where acknowledged, the information in this bulletin has been supplied by the FISHERIES RESEARCH DIVISION of the DEPARTMENT OF FISHERIES (WA). Contact Dr Chris Chubb or Mr Eric Barker ph: (08) 9246 8444 fax: (08) 9447 3062.

Bulletin No 29 30 July 2003

Department of Fisheries

Commercial Fisheries Production Bulletin

Fish for the future

WESTERN ROCK LOBSTER FISHERY

2002/03 SEASON

THE COASTAL FISHERY TO DATE

The 563 licensed commercial vessels operating in the western rock lobster fishery during the 2002/03 season landed almost 11,420 tonnes, 27.5% more than 2001/02, but 2% greater than the average over the last 10 years (Table-1, Figure 1). It is important to remember that the last 10-year period includes the 1998/99 and 1999/00 seasons when successive record catches of 13,000 t and 14,500 t respectively were landed. The catch fell within the forecast range for 2002/03 of between 10,600 and 11,700 tonnes.

Table 1. ***Preliminary rock lobster production figures.***

Production (t) to end of June 2003

Fremantle	Jurien	Geraldton	Total
5,040	1,467	4,912	11,419

Production (t) to end of June 2002

Fremantle	Jurien	Geraldton	Total
3,360	1,186	4,413	8,959

Difference (t) and percentage difference

Fremantle	Jurien	Geraldton	Total
1,680	281	499	2,460
50.0% up	23.6% up	11.3% up	27.5% up

10 yr. cumulative average to end of June 2002	=	***11,191 t***
Production to end of June 2003	=	***11,419 t***
Difference	=	***228 t***
% Difference	=	***2.0% up***

Both the whites and reds catches for C Zone were almost 50% and 40% higher respectively than the previous season, whereas catches in B Zone during the whites were better than 2001/02 (27%) but landings improved only marginally in the coastal reds fishery (7%) (Figure 2). These trends were in line with the predictions based on levels of puerulus settlement three and four years ago.

During February, most of the fleet had returned to the shallows, but some boats remained to fish the mid-grounds and deeper. Landings during the early part of February were poor throughout the fishery, however, towards the latter part of February the catches improved following the moult. The area from Mindarie to Two Rocks fared well, as did the Mandurah area, whilst the area from Cervantes north provided only modest catches. In late March many vessels that had ventured south returned to the Cervantes/Jurien area where catches had picked up. The good run in this area lasted until approximately the last week in April. Once again the fleet was scattered throughout all depths.

Also following a moult in late February/early March catches in B Zone started to pick up. During this period the fleet was scattered from the shallows out to the mid-grounds and deeper. Geraldton north fared well, whilst Kalbarri continued its poor run.

During May, with the exception when good swells developed, catches started to decline throughout the fishery. Catches generally were poor during the calm spell in the early part of June, leading up to the full moon on the 14th. Fishers also reported water temperatures declining by one or two degrees mid June. Nevertheless, good catches (some very good) were taken in the final days of the season following a spell of strong winds and rough seas. Some fishing operations ceased earlier in June due to a combination of declining catches and a low beach price.

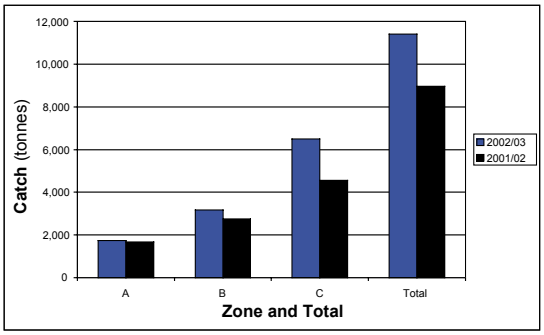


Figure 1. ***Preliminary catches for A, B and C Zones and the total landings for 2002/03 compared to 2001/02.***

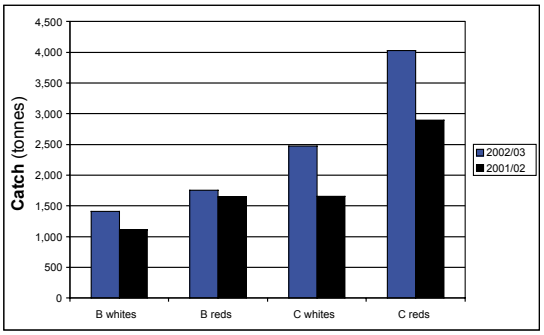


Figure 2. ***Preliminary whites and reds catches for B Zone (not including the Abrolhos catch) and C Zone and the total landings for 2002/03 compared to 2001/02.***

This Bulletin is produced by the Research Division of the Western Australian Department of Fisheries

THE CAPES REGION

A number of vessels had moved to Bunbury and the Cape Naturaliste to Cape Leeuwin region (Capes region) in January (see CFP Bulletin No. 28). By mid February most of these boats returned north to their usual fishing grounds following excellent catches by many vessels fishing right through the Capes region to the southern boundary of C Zone.

In January and February, fishers reported large numbers of setose females, including numbers of oversize females. Numbers of undersize were also reported. The undersize appear to have resulted from a spike in settlement in 1999/00 and 2000/01 (Figure 3).

In about mid April, a number of vessels returned to the area and again many boats landed very large catches. It was almost mid May before many boats returned north. Fishers reported that large numbers of newly-moulted setose were in the pots. Obviously the large numbers of setose females seen previously (Jan/Feb) had moulted in the interim and became available to be included in the catches, together with large jumbo males.

It is fair to say that the considerable increase in rock lobster fishing and associated activities in this region over the past two seasons has generated some debate in the local community. The Western Rock Lobster Council is holding a meeting of those fishers who operate in the Capes region to develop a voluntary code of practice for rock lobster fishers to benefit both the fishers and the local community in the Capes region. The meeting will be held at 1.00 PM on the 8th August in the Murray Conference Room at the Atrium in Mandurah. If you fish, or are anticipating fishing in this region it is in your interest to attend this important meeting.

East of Cape Leeuwin, the two vessels fishing in the Windy Harbour/Augusta rock lobster fishery also experienced good catches as stocks continue to rebuild slowly following the improved puerulus settlement and the reduction in fishing effort since the early to mid 1990s.

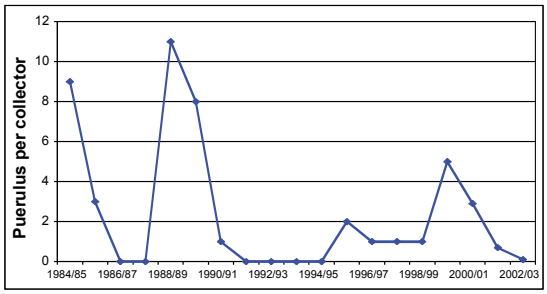


Figure 3. ***Puerulus settlement for Cape Mentelle (near Margaret River). Detectable settlement occurs on these collectors generally only during years with strong Leeuwin Currents.***

THE ABROLHOS ISLANDS FISHERY

With a full moon on the 18th of March, the start to the Islands season was slow. Once the catches improved, the Easter Group and to the north fared best, with catches in Southern Group patchy, particularly in deep water. A large fleet of vessels caught well in deep water north of North Island. This particular area was more heavily fished in 2003 than in the previous season and it is highly likely that this will continue to have an impact on the Big Bank catch.

At the end of March the total Abrolhos catch was 4.1 % lower than the previous season. As the season progressed catches improved and by the end of June the total catch for the Islands area was 5.2% higher than in 2002. This was due principally to a good catches in April, which were 28% better than the previous April (Figure 4). During June, possibly due to the declining catches and a low beach price, fishing operations were ceasing and vessels were returning to the mainland.

The preliminary total catch for A Zone in 2003 was 1,750 t, in comparison to the previous season's catch of 1,660 t (Figure-4).

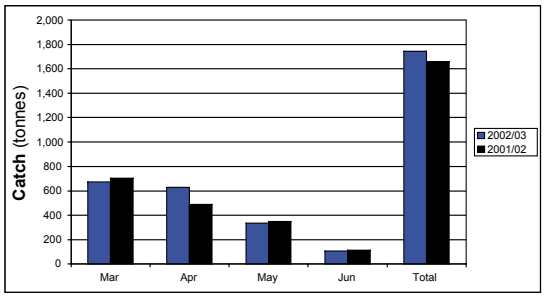


Figure 4. ***Preliminary monthly and total catches for the 2002/03 Abrolhos Islands season compared to 2001/02.***

PUERULUS SETTLEMENT

The 2002/03 puerulus settlement was below average at all sampling sites throughout the fishery. The level of reduction varied but in general the northern sites and the Abrolhos had better settlement than the southern locations with puerulus numbers particularly low south of Lancelin. Compared to the average settlement over the past ten years, puerulus numbers at South Passage (Shark Bay), Seven Mile Beach and Rat Island were respectively 39%, 25% and 31% lower. The annual indices for Jurien Bay and Lancelin declined by 72% and 77% respectively, whereas the Alkimos, Warnbro and Cape Mentelle indices all dropped by 90-96% compared to the average (Figure 5). These lower settlements will first impact on the "reds" of 2005/06 and then as a poor "whites" throughout the fishery in 2006/07.

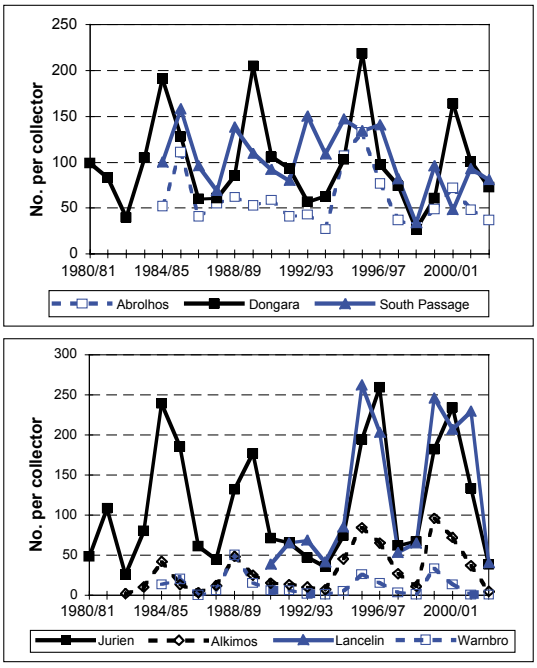


Figure 5. ***The time series of annual indices of puerulus settlement (number of puerulus per collector) at northern sites (top) southern sites (bottom).***

These below average puerulus numbers may be attributed to the El Niño conditions which commenced in early 2002 and continued through the first half of 2003. Under these conditions, a weak Leeuwin Current down the Western Australian coastline contributed to a poorer than average puerulus settlement particularly in the southern regions. The consensus forecast from international experts is for near-neutral conditions through the rest of the year but with the possibility of a return to El Niño.

Settlement for 2003/04 has begun with small numbers of pueruli (which settled over the June new moon) being collected from Lancelin, Jurien and Dongara (Seven Mile Beach). However, given the El Niño conditions over the past year, it is likely that average to slightly below average settlement will result.

CATCH PREDICTIONS

Forecasts of catch are available for the next three seasons (2003/04 - 2005/06). These are based on the puerulus settlements three and four years prior to the season for which catch is being predicted. In general, the Abrolhos catch remains stable as usual, while the forecast for coastal catches in the next two seasons is very good all along the coast. This will be followed by a decline to a below average total catch in 2005/06 (Table 2). If the suggestion above for average to below average settlement this coming season comes to fruition, then 2006/07 also will be an average to below average catch.

Table 2. ***Predictions for rock lobster catches (tonnes) for the next three seasons. * indicates C Zone forecast from Alkimos puerulus settlement alone and ** indicates predictions from a combination of C Zone settlement sites.***

Season	A Zone	B Zone	C Zone	Total
2003/04	1,650	3,950	7,850*	13,450
			8,150**	13,750
2004/05	1,650	4,100	6,900*	12,650
			7,100**	12,850
2005/06	1,600	3,750	4,800*	10,150
			5,100*	10,450

WRLDA MARKETING NEWS*

The season has ended with a fair degree of uncertainty about what lies ahead for the Industry. However, before reaching for the crystal ball, it is in order to review what happened in the 2002/03 season.

At the beginning of the season, the level of inventory (stock holdings) in overseas cold stores was fairly low which resulted in a high demand and a very high opening beach price. This was due to overseas buyers needing to raise their lobster holdings noting normal consumption patterns at retail outlets.

Unfortunately the early very high prices we enjoyed did not last! Upon reflection, there were many reasons for this. Clearly, as the season unfolded, the impact of SARS on the live market was significant. We can only guess what effect the lead up to Iraq war and the war itself had on the market, however, it was a contributing factor to the decline in prices received.

A major factor having a huge impact on price during the season again was currency. Fluctuations in the Australian to US dollar exchange rate are a constant focus for Australian exporters and a greater than 20% strengthening of our dollar against the greenback has occurred since August 2002. This had a significant impact on beach price in 2002/03 with the AUD worth an average of 55-56 US cents in the early part of the season and an average of almost 67 US cents in June (Figure 6).

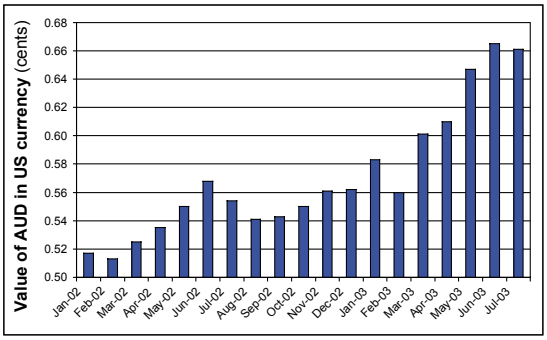


Figure 6. The average monthly value of the Australian dollar (AUD) in US currency from January 2002 to July 2003. Data from www.x-rates.com.

It is also very interesting to note that Daryl Sykes, Executive Officer of the New Zealand Rock Lobster Industry Council, made a very similar assessment about the New Zealand rock lobster fishery. In a general communication in late April 2003 he had this to say:

> *"SARS is not the only significant factor for the NZ rock lobster industry. There are several factors that are re-shaping the economic prosperity of the lobster industry. At the top of the list is the current foreign exchange rate, closely followed by a general decline in market demand for NZ live lobsters.*
>
> *In two major markets, Japan and China, there is a 13% - 20% decline from 2002 levels in the price paid for NZ lobsters. That decline is exacerbated by a 30% decline in exchange rate from 2002 levels. NZ exporters are being paid less, and the foreign exchange is of less value in $NZ than it was at the same time in 2002.*
>
> *The decline in market demand is a consequence not only of SARS, but of competition from other lobster supplying companies; Chinese buyers getting more experienced and more astute in their trading; a dependence on a single "gateway" into the mainland China market; the import tariffs placed on NZ seafood into China; and a general decline in economic activity due to the uncertainty over the world situation.*
>
> *In other years NZ might look to offload lobster production into the US frozen lobster tail market. But for similar reasons that is currently not a viable option for NZ exporters. The consequences of September 11th are still evident in the US consumer economy; exchange rates are not favourable (44c/45c to $NZ in 2002, 54c/55c in 2003); Australian lobster production is high; and there is competition from domestic US and other lobster products.*
>
> *The challenge for the NZ rock lobster industry is to understand the current economic conditions and adjust expectations and operations to reflect the reality of those."*

Back in Australia, of some concern during the season was the effect of the very high opening beach prices paid, subsequent competition-induced drops in prices being sought by WA packers and movement in the exchange rate all of which "hurt" many of the buyers. We must never overlook the fact that unless our buyers make a profit they will seek alternative sources of supply, or perhaps even available alternative commodities. We are not the only lobster producers in the world! On the positive side we still maintain our position as being a supplier of some of the world's finest lobsters at the highest level of quality available worldwide.

The season saw a huge swing towards the production of frozen "tails" due to the lack of air cargo space available, and, whilst some packers were predicting a fairly swift drop in prices, in fact this has not eventuated. Similarly, by the end of April and into May, it became clear that the market had bottomed for cooked/boiled lobster and at the time of preparing this review the market continued to strengthen. This statement should not be construed as support for the lengthening of the season however as a throw away comment we catch our lobsters in the northern hemisphere's winter and our off-season coincides with their summer! Perhaps therein lies some food for thought?

There are many fishermen asking what the situation looks like for next season. The answer is that it is far too early to make any predictions, and until processors know more about:

- the inventory both here and overseas in October;
- the movement in currency exchange rates over the next few months;
- the volumes our competitors will produce;
- the price at which the Mexicans will offer their live lobsters into the market in September;
- the price the Cubans are prepared to accept in Europe, and so on;

it will not be possible to attempt to estimate opening beach prices for the 2003/04 season.

This notwithstanding, WRLDA members have agreed to meet with the Board of the Western Rock Lobster Council in early November for an exchange of information about opening beach price ranges. This is a positive step and is to be encouraged.

Given the prediction for next season, another question being asked concerns the ability to place nearly 14 million kg into the market. The answer in part is that exporters will sell the catch, however, whilst every processor endeavours to achieve the best available price on the day a sale is made, that price will depend upon critical elements such as demand, competition and exchange rates.

A final comment relates to the increasing volume of product destined for the European Union. Whilst this continues to grow and interest in western rock lobster develops, the Cubans and the Canadians, who have majority share of the market will not agreeably loose market share. Europe is destined to become a very important market for our product and this is an opportunity to thank fishers for their assistance in complying with the EU Vessel Registration requirements as, without the boats being registered, we cannot continue to develop the market.

ROCK LOBSTER RESEARCH

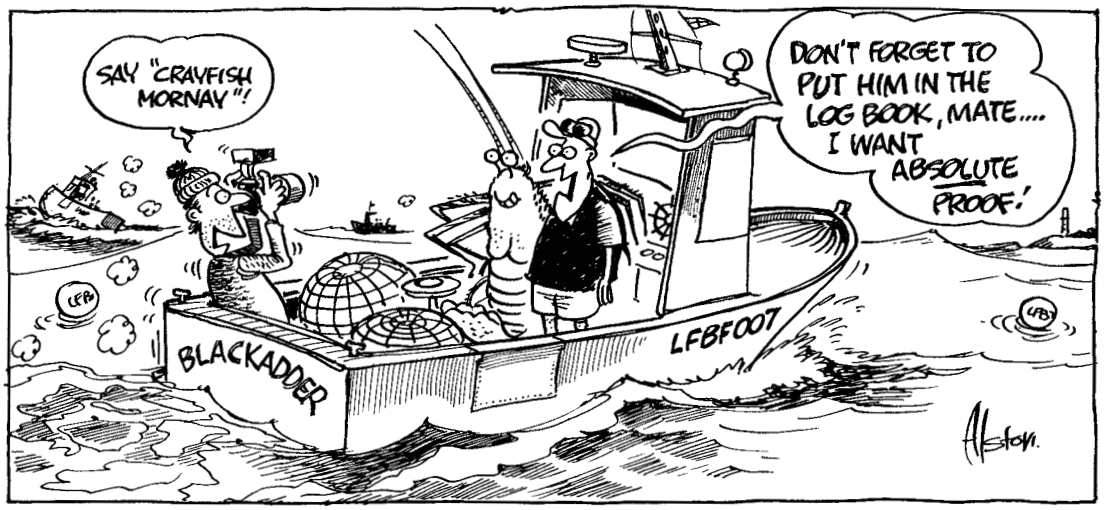
Voluntary Research Log Books

The participation rate of fishers in the voluntary research log book programme and the quality of the data have been nothing short of sensational during 2002/03. We are awaiting a few log-book returns but, at the time of printing, a record 39.1% of the fleet has forwarded research records to the research team. This eclipses the 1997/98 result of 38.5%.

Very special thanks are due to all the log-book participants, it is a wonderful expression of your commitment to your fishery and the will to ensure it remains the "best" fishery in the world. We also acknowledge the excellent efforts of John Mutter and his Fisheries Officers who recruited new members to the programme while undertaking the anchorage checks along the coast at the commencement of the season. And we should not forget the constant efforts of Eric Barker to promote the log books and maintain liaison with fishers.

For those people who accepted a log book at the beginning of the season, and for whatever reason have yet to submit any returns, we would be delighted to receive them now or ask that you "have a go" next season!

Both WRLDA and the Rock Lobster Research Unit wish you well during the closed season.



*This information was provided by the Western Rock Lobster Development Association (Inc.),
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Except where acknowledged, the information in this bulletin has been supplied by the FISHERIES RESEARCH DIVISION
of the DEPARTMENT OF FISHERIES (WA). Contact Dr Chris Chubb or Mr Eric Barker ph: (08) 9246 8444 fax: (08) 9447 3062.