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The Western Rock Lobster Fishery 1973-1974

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WESTERN AUSTRALIA

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PERTH

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THE WESTERN ROCK LOBSTER FISHERY 1973-74

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1 INTRODUCTION

The fishery for the western rock lobster* is one of the most important single fisheries in Australia and an important export earner for the State. The fishery is governed by a complex set of regulations which have been reviewed by Bowen (1971) and which are designed to limit the total effort to acceptable levels and to enforce a legal minimum size. It is thus important to constantly monitor the state of the fishery both to ensure that the effort is remaining within the accepted limits and that the regulations are adequately performing their function of maintaining reasonably stable catches. Inherent in this monitoring of the fishery is a careful examination of fishing practice, gear, etc., which may lead to increases in efficiency which may not be detectable through the usual calculated effort figures.

This paper is the second of a series of annual reviews of the previous rock lobster season which will discuss fishing practice, catches, effort, mean size and various other factors, a knowledge of which will help toward a better understanding of the status of the fishery.

11 METHODS

Catch and effort data were extracted from figures supplied by the Australian Bureau of Statistics and also from research log book data, while mean size information was gathered from measurements made by Departmental Research Staff aboard commercial vessels fishing from Dongara, Jurien, Lancelin and Fremantle. Information on trends in fishing practice was gathered principally from conversation with fishermen at various ports as well as from comments made in research log books.

* Referred to as *Panulirus cygnus* George (Morgan, 1974), *P. longipes cygnus* George (Chittleborough and Thomas, 1969) and *P. longipes* (Milne-Edwards) (Dall, 1974).

111 RESULTS

A. Catch and Effort Data

The fishing season extends from 15 November to 14 August and may be subdivided into three distinct phases viz. (i) the "whites" fishery (George, 1958) which begins suddenly in late November (as pale-coloured newly-moulted rock lobsters leave the shallow reef areas) and arbitrarily finishes on 31 December, (ii) the "coastal red" fishery, which begins on 1 January and ends on 14 August and (iii) the Abrolhos Islands fishery which is open from 15 March to 14 August.

In 1973 the "whites" run commenced on about 24 November in both northern and southern areas which is about the average time, and only a day earlier than the previous season.

Catches and effort (in number of pot lifts) were as follows:

| | | |
|-----------------------|---|---------------------|
| "Whites" catch | = | 1 693 043 kg |
| "Whites" effort | = | 2 514 074 pot lifts |
| "Coastal Reds" catch | = | 3 853 296 kg |
| "Coastal Reds" effort | = | 6 070 310 pot lifts |
| Abrolhos catch | = | 1 233 333 kg |
| Abrolhos effort | = | 1 279 868 pot lifts |
| <hr/> | | |
| Total Catch | = | 6 779 672 kg |
| Total Effort | = | 9 864 252 pot lifts |

These figures do not include "cash" sales (i.e. rock lobsters which are sold for cash and are not recorded in the fisherman's monthly returns of catches) totalling approx. 454 500 kg, or amateur catches for which estimates have so far not been obtained. Figure 1 shows comparative catch, corrected effort and catch per effort data from previous years.

Catch and effort data from various statistical blocks (Figure 2) are shown in Table 1 with catches expressed in kgs weight and effort as number of pot lifts. Table 2 shows catch per pot data for the same statistical blocks. Using the method of Gulland (1969) to calculate effective fishing

intensity with each month's effort in pot lifts being weighted according to the relative catchability in that month (Morgan, 1974), the total effective fishing intensity was 7 127 385 units of effort, which was about 1.73% less than the 1972/73 season.

B. Mean Size

Samples of rock lobsters were measured aboard commercial vessels using standard pots with 54 mm escape gaps in four depth categories at various ports. The sample would hence include all commercial size rock lobsters plus undersize which would have been reduced in number by selection by the escape gap (Bowen, 1963). Mean carapace lengths of males and females in the various depth categories at Fremantle, Lancelin, Dongara and Jurien throughout the fishing season have been compared in Table 3. The many omissions in the table are due to either fishermen not fishing the area in question or to some circumstance (breakdowns, etc.) which prevented the data from being collected.

C. Number of Boats

The number of boats licensed to fish for rock lobsters is carefully controlled, though boat owners are able to nominate their choice of fishing area viz. north or south of 30°S.

| | | | |
|--|---|----------------|-----|
| Number of boats licensed in 1973-74 | = | 800 | 813 |
| Number of boats licensed North of 30°S | = | 409 | |
| Number of boats licensed South of 30°S | = | 391 | 405 |

D. Forecast of 1973/74 Recruitment

The poor puerulus settlement that occurred during 1969-70 was reflected in the reduced catches in the 1973-74 "white" fishery (Chittleborough and Phillips, 1975).

E. Introduction of New Legislation

1. As from 1 November 1973 the fishing industry changed over to the metric system, and all measurements and distances referred to in the Fisheries Act Regulations were changed to metric units.

2. The period that professional rock lobster fishermen may take rock lobsters in the area between 800 metres offshore and 1600 metres offshore from Parker Point to Cape Vlaming was extended. Fishermen may now fish in this defined area from 15 November to 15 January (previously 15 November to 31 December).

Information regarding these changes to the legislation governing the rock lobster fishery, as well as the Department of Fisheries and Wildlife's policies on various issues, may be found in the following volumes of the Fishing Industry News Service (F.I.N.S.):- Vol. 6 No. 3 (Sept 1973) pp, 61, 62, 63. Vol. 6 No. 4 (Dec 1973) back page.

F. Effects of New Legislation

1. The change over to the metric system proceeded smoothly, with the majority of fishermen completing their returns and research log books in kg.
2. The decision to extend the time that fishermen may take rock lobsters in the above defined area at Rottnest was well received by fishermen. Production figures are however not available for this area as the monthly returns and log book data supplied by fishermen are not sufficiently detailed.

G. Innovations to Boats and Gear

The number of boats replaced during the period 1 July 1973 to 30 June 1974 was 36% less than for the same period in 1972/73. This was due to a general decline in the economy of the industry. Figures supplied by the Harbour and Light Department showed that a total of 43 boats were replaced ranging from 6.35 m - 16.46 m in length and were constructed of:

| | WOOD | FIBRE GLASS | ALUMINIUM | STEEL |
|-----------|------|-------------|-----------|-------|
| FREMANTLE | 12 | 8 | 2 | - |
| GERALDTON | 12 | 8 | - | 1 |
| | 24 | 16 | 2 | 1 |

The trend was still towards lighter hulls and greater speed with larger vessels becoming unpopular due to higher overhead costs and reduced profitability.

Data from research log books showed the following usage of various types of pots by fishermen North and South of 30° South:

| | BEEHIVE | BATTEN | STEEL BEEHIVE |
|-------|---------|--------|---------------|
| NORTH | 10.4% | 83.0% | 6.6% |
| SOUTH | 67.6% | 27.5% | 5.0% |

The use of large single necked pots (converted large multi-necked pots which were banned during the 1972/73 season) continued to decline.

H. Bait

The type of bait used does not vary greatly from season to season. However price and availability does to some extent affect the individual's choice of a particular bait. The most popular combinations of bait were, cattle hocks or pieces of cattle hide together with fish heads, whole fish or pieces of fish. The range of fish baits consisted of: Western Australian salmon heads (*Arripis trutta esper.*), Eastern salmon heads (*Arripis trutta marginata*), pieces of salmon flesh, Australian herring or ruff (*Arripis georgianus*), New Zealand snapper heads (*Chrysophrys auratus*), mullet (*Mugil cephalus*), Yellow-eyed mullet (*Aldrechetta forsteri*), pilchards (*Sardinops neopilchardus*), bony herring (*Fluvialosa vlaminghi*), scaly mackerel (*Amblygaster postera*), Canadian salmon heads (*Oncorhynchus* sp.), Eastern States barracouta heads (*Leionura atun*), Eastern States and Western Australian tuna heads and tuna meat.

In the northern areas (i.e. north of 30° South) the most popular baits were, hocks and/or cattle hide used in combination with herring or other assorted fish and fish heads.

In the southern areas (i.e. south of 30° South) the most popular combinations of bait were hocks and/or pieces of hide together with herring, salmon heads and pieces of salmon plus assorted fish and fish heads.

Pieces of hide became increasingly popular (especially in the southern areas) due to lower cost, longer lasting qualities, ease of storage and more baits per bag.

Although still popular, salmon heads declined slightly in use due to poor availability and high cost. The cost of salmon heads rose by approx. 9.6% from the 1972/73 season. Eastern States salmon heads being smaller in size and thereby giving more baits to the bag, were generally more popular than local salmon heads.

I. Distribution of Fishing

The distribution of fishing is shown in Table 1. The usual pattern of fishing occurred i.e. concentrated in the shallows during November and December, followed by deep water potting during the latter part of December, January and February, back to the shallows during the latter part of February, March and April and in mixed depths (mainly shallow), depending on weather and density of rock lobsters, throughout the remainder of the season.

J. Average Number of Days Worked per boat per Month

| Month | Nov | Dec | Jan | Feb | March | April | May | June | July | Aug |
|-------------|------|------|------|------|-------|-------|------|------|------|-----|
| Days worked | 10.8 | 24.5 | 16.6 | 16.7 | 21.7 | 20.1 | 15.9 | 14.7 | 15.0 | 6.6 |

The average number of days worked per month during November and December was 2.5% down on the 1972/73 season and for the period January to August was 7.4% up on the 1972/73 season.

The average number of days worked per month for the 1973/74 season was 17.0, which was an increase of 4.9% on the 1972/73 season.

*K. Price of Rock Lobsters

Price to fishermen \$2.64 - \$2.75 per kg.

Wholesale New York price

| Grade | \$Aust. per kg. |
|---------------------------|-----------------|
| 5 - 6 oz (142 - 170 g.) | 7.93 - 8.51 |
| 6 - 8 oz (170 - 226 g.) | 7.66 - 8.88 |
| 8 - 10 oz (226 - 283 g.) | 6.96 - 8.54 |
| 10 - 12 oz (283 - 340 g.) | 7.11 - 8.54 |

| | |
|---------------------------|-------------|
| 12 - 16 oz (340 - 453 g.) | 6.80 - 8.39 |
| 16 - 20 oz (453 - 566 g.) | 6.67 - 7.72 |
| over 20 oz (over 566 g.) | 6.26 - 7.42 |

*L. Market Trends and Economic Factors

The majority (99%) of frozen rock lobster tails were again exported to the U.S.A. Export of whole rock lobster decreased by 46% from the record level of 1972/73. 53% of exports of whole rock lobster went to Japan and 21% to the U.S.A.

Holdings of frozen rock lobster tails in the U.S.A. at 30 June 1973 were 1 973 tonnes a decrease of 23% on holdings a year earlier.

In September 1973 the Australian dollar was devalued by 12%. This resulted in an increase in the price paid to fishermen.

M. Average Value per Pot on Pot Redistribution

About \$250 - \$270.

N. Sea Water Temperatures and Salinities

These have relevance to the behaviour and catch rates of rock lobsters (Morgan, 1974)

The average sea water temperature during the rock lobster season (i.e. 15 November to 14 August) at Waterman (aquarium intake temperature) was 20.3°C with a maximum of 24.1°C on 27 January 1974 and a minimum of 16.3°C on 21 and 28 July 1974.

The average salinity during the season at Waterman (aquarium) was 35.570 ‰, with a maximum of 36.597 ‰ on 24 February 1974 and a minimum of 33.931 ‰ on 12 August 1974.

Bottom temperatures in waters of various depths in the Fremantle, Lancelin, Jurien and Dongara areas were collected as part of the monitoring of rock lobster catches (item B) and are shown in Table 4. Other records are maintained by CSIRO.

* Sections K. and L., are based on data provided by the Australian Department of Agriculture.

O. Spawning Rock Lobsters

While most of the breeding females are found in the 20 - 30 fathom depth range, no variation has been observed in the size at first breeding from one depth category to another, except at Jurien over 30 fms (Chittleborough, pers. comm.). Hence the data for December, January and February from all depths with the exception of Jurien over 30 fms may be pooled to indicate the size frequency of breeding (i.e. "berried" and mated) females and this has been done in Figure 3. The mean size of breeding females was greater at Lancelin and Fremantle than at either Dongara or Jurien with the mean sizes being 88.0 mm for Jurien, 94.6 mm for Dongara, 105.4 mm for Fremantle and 107.4 mm for Lancelin. By comparison the mean sizes at first breeding (i.e. the smallest carapace length at which 50 per cent have been mated) was found to be 99.0 mm at Fremantle, 92.0 mm at Lancelin and 92.0 mm at Jurien. Insufficient data was available for Dongara.

P. Sex Ratios

The sex ratios of rock lobsters taken by commercial pots was calculated from the information gathered from the catch monitoring programme and is shown in Table 5.

IV DISCUSSION

The 1973/74 catch was down slightly on the previous season although still just within the lower range of sustainable level of catch calculated by Bowen and Chittleborough (1966). The reduced catches of the 1972-3 and 1973-4 seasons were probably a result of the poor puerulus settlement that occurred during 1969 and 1970. The total effective fishing intensity also showed some reduction from the previous season and it could well be that, under the present regulations and economic conditions, the effort expended by the fleet is stabilizing. There was a general decline in the economy of the industry brought about by increased costs while prices only increased marginally. These will be fully documented in the current economic survey being conducted by the Australian Department of Agriculture. A 12% revaluation of the Australian dollar in September 1973 did, however, help to offset increased overheads and charges. The

reduction in the number of boat replacements from the previous season also reflected the downward trend in the economy of the industry. The trend towards increased efficiency of the fishing fleet continued during the 1973/74 season, and this together with above average weather conditions resulted in an increase in the average number of boat days worked per month from the previous season.

V ACKNOWLEDGEMENTS

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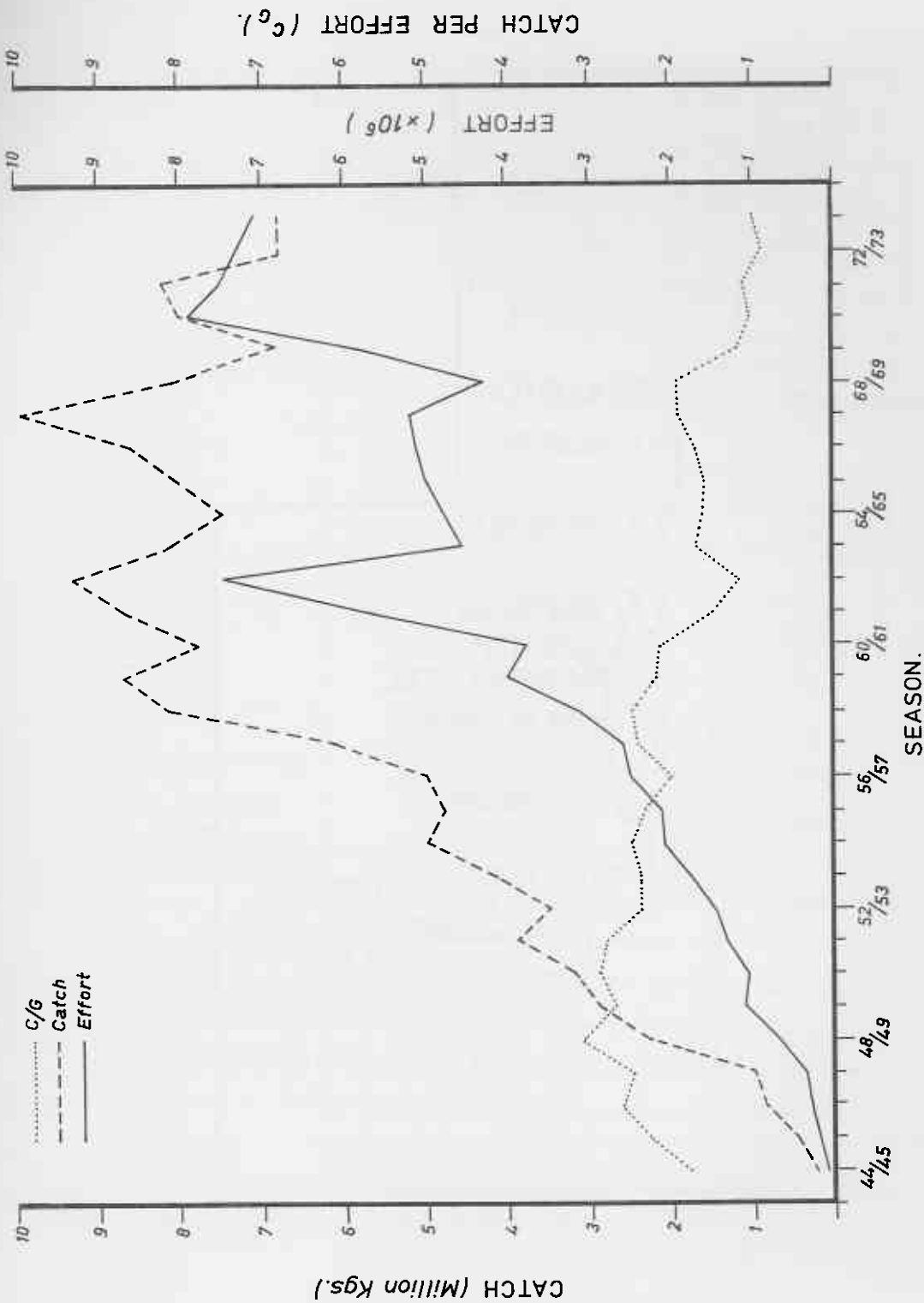


FIGURE 1. Rock Lobster Catch, Corrected Effort and Catch per unit of Effort Data

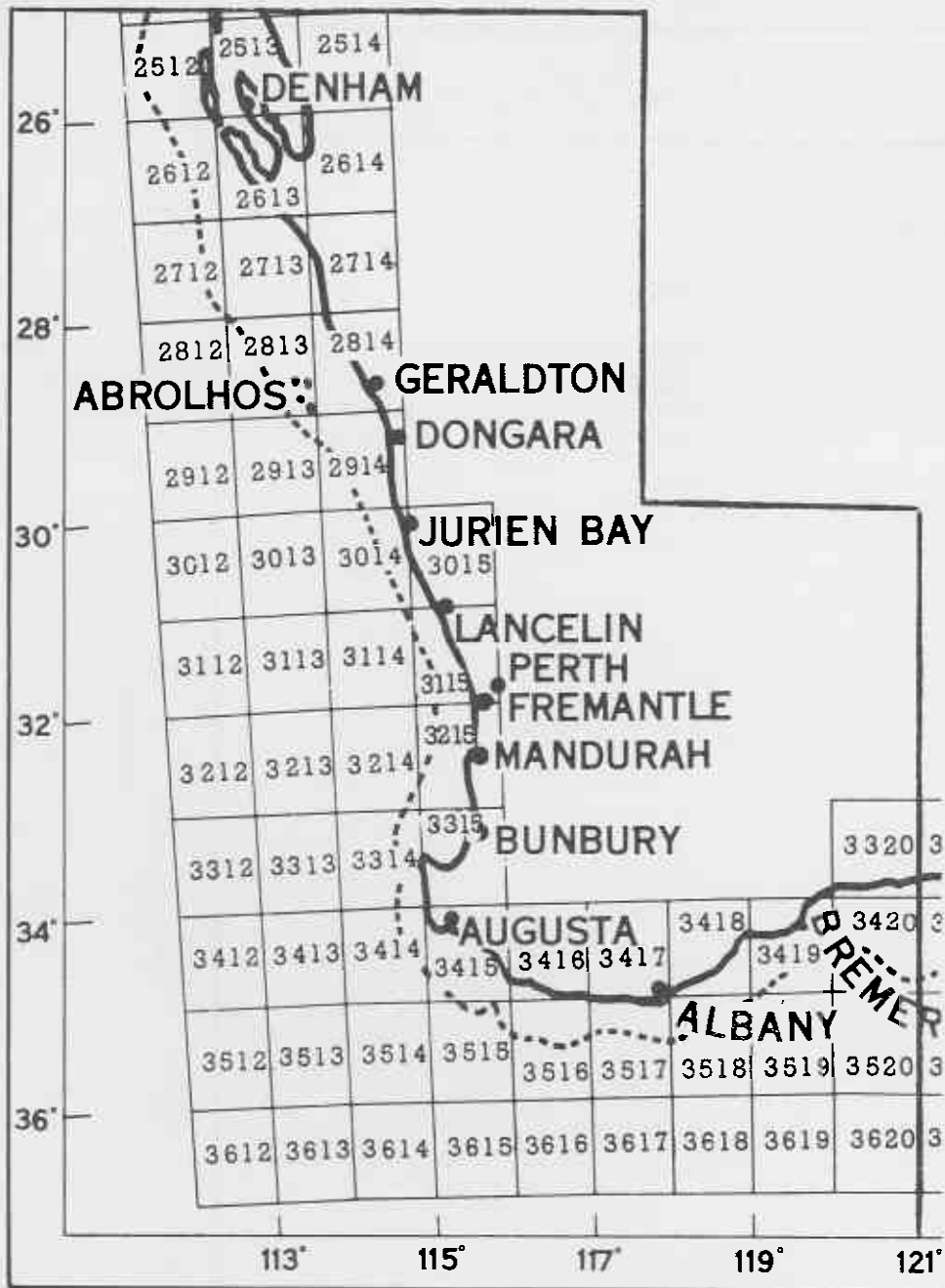


FIGURE 2. Rock Lobster Fishing Areas

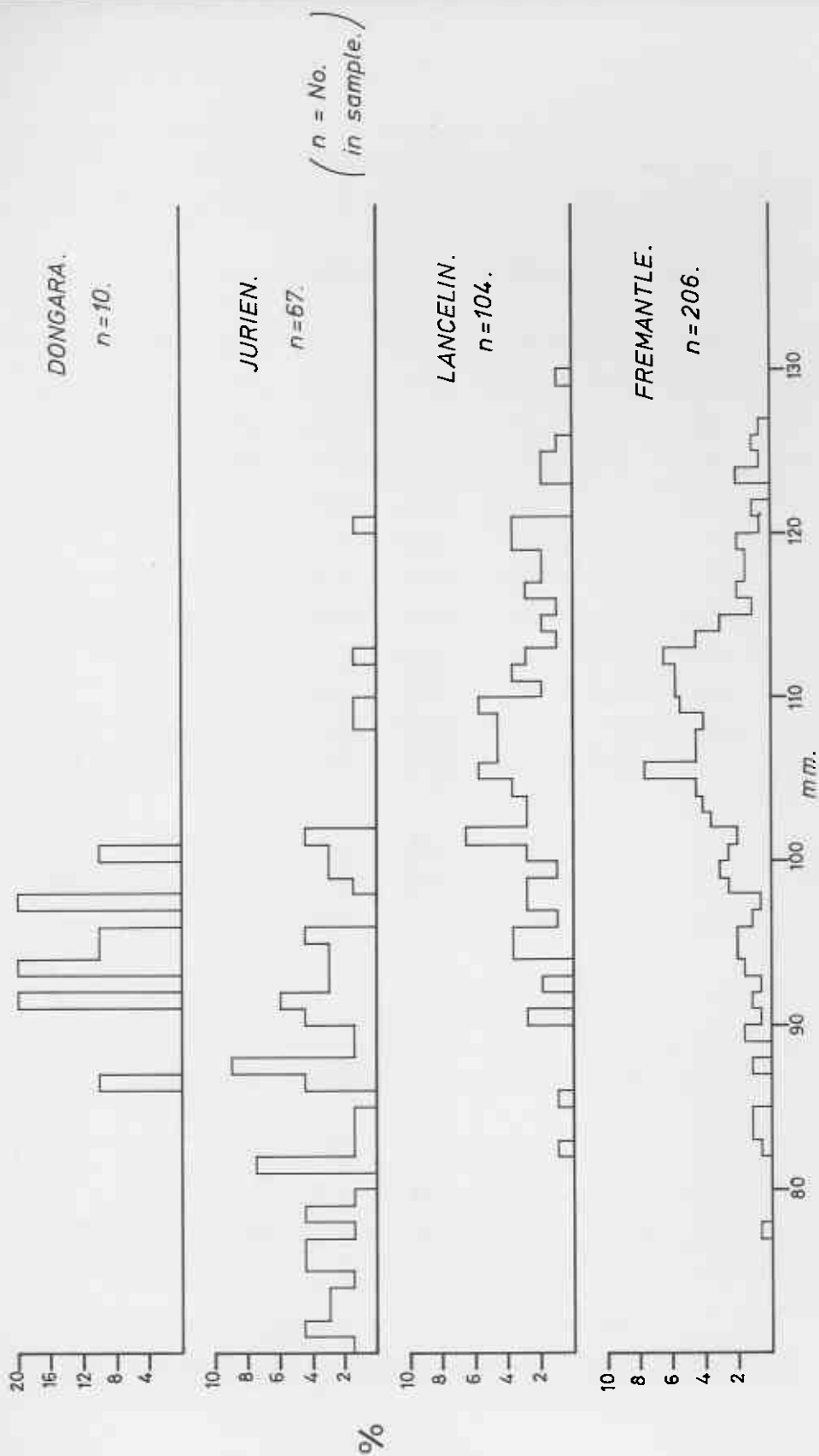


FIGURE 3. Length Frequency of Breeding Female Rock Lobsters taken from December 1973 to February 1974.

TABLE 1. Catch (in kgs weight) and Effort (in pot lifts) for the 1973/74 Rock Lobster Season in Various Statistical Blocks.

| Block | Nov | Dec | Jan | Feb | March | April | May | June | July | Aug | Total |
|-------|---------------------------|-----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|--------------------------|-----------------------------|
| 2612 | - | - | - | - | - | - | - | - | - | - | - |
| 2613 | - | <u>1133</u> (1800) | <u>276</u> (840) | - | <u>1659</u> (3795) | <u>1590</u> (1148) | <u>6193</u> (3749) | - | <u>977</u> (2560) | <u>318</u> (840) | <u>12146</u> (14732) |
| 2712 | - | - | - | - | - | - | - | - | - | - | - |
| 2713 | <u>3492</u> (6131) | <u>19215</u> (16390) | <u>36891</u> (34417) | <u>10285</u> (21669) | <u>20654</u> (27217) | <u>29559</u> (19764) | <u>19484</u> (19331) | <u>14636</u> (20238) | <u>8125</u> (20723) | <u>2740</u> (4912) | <u>165081</u> (190792) |
| 2714 | <u>5222</u> (7721) | <u>15584</u> (12283) | <u>19793</u> (24736) | <u>6729</u> (14056) | <u>14714</u> (18353) | <u>19936</u> (18895) | <u>13490</u> (16465) | <u>10816</u> (14608) | <u>5661</u> (8923) | <u>181</u> (558) | <u>112126</u> (136598) |
| 2812 | - | <u>1158</u> (1350) | <u>155</u> (836) | <u>147</u> (968) | <u>6214</u> (5100) | <u>5270</u> (5430) | <u>2600</u> (4026) | <u>892</u> (1260) | <u>100</u> (855) | - | <u>16536</u> (19825) |
| 2813 | <u>2532</u> (4368) | <u>5899</u> (11404) | <u>1040</u> (2754) | <u>987</u> (3108) | <u>448513</u> (252303) | <u>439725</u> (430173) | <u>197973</u> (286275) | <u>53525</u> (110252) | <u>73750</u> (156999) | <u>19847</u> (43866) | <u>1243791</u> (1301502) |
| 2814 | <u>56328</u> (128540) | <u>205694</u> (277555) | <u>41148</u> (112174) | <u>37449</u> (96715) | <u>75247</u> (96238) | <u>60074</u> (91601) | <u>40654</u> (75368) | <u>36569</u> (66099) | <u>42453</u> (70309) | <u>14714</u> (22953) | <u>610330</u> (1037552) |
| 2912 | - | - | - | - | <u>3960</u> (3640) | <u>2410</u> (2400) | - | - | - | - | <u>6370</u> (6040) |
| 2913 | <u>1006</u> (2712) | <u>9567</u> (13747) | <u>2870</u> (5574) | <u>1780</u> (3585) | <u>37969</u> (19467) | <u>23804</u> (22812) | <u>6976</u> (10222) | <u>937</u> (2622) | <u>3602</u> (5460) | <u>642</u> (1740) | <u>89153</u> (87941) |
| 2914 | <u>136459</u> (242518) | <u>344408</u> (503001) | <u>151500</u> (277244) | <u>112922</u> (221712) | <u>187432</u> (233336) | <u>120055</u> (184873) | <u>81635</u> (134444) | <u>60716</u> (116411) | <u>83199</u> (132781) | <u>20832</u> (37058) | <u>1299158</u> (2083378) |
| 3012 | <u>1550</u> (3462) | <u>7755</u> (8079) | <u>1574</u> (1989) | <u>2177</u> (2674) | <u>1759</u> (1879) | <u>2498</u> (2223) | - | - | - | - | <u>17313</u> (20306) |
| 3013 | <u>448</u> (810) | <u>7094</u> (5778) | <u>4646</u> (7392) | <u>3551</u> (6966) | <u>6425</u> (9888) | <u>2870</u> (4962) | <u>52</u> (135) | <u>505</u> (1683) | <u>120</u> (560) | - | <u>25711</u> (38174) |
| 3014 | <u>61325</u> (125731) | <u>256441</u> (306305) | <u>131558</u> (223471) | <u>101809</u> (189217) | <u>200228</u> (255396) | <u>134301</u> (198234) | <u>49528</u> (99590) | <u>45629</u> (88369) | <u>41397</u> (84394) | <u>10505</u> (25236) | <u>1032721</u> (1595943) |
| 3015 | <u>12351</u> (26657) | <u>69758</u> (81041) | <u>29261</u> (49134) | <u>20701</u> (38808) | <u>49072</u> (64289) | <u>26685</u> (34967) | <u>10027</u> (18124) | <u>12842</u> (20135) | <u>7442</u> (15883) | <u>2703</u> (4273) | <u>240842</u> (353311) |
| 3112 | <u>318</u> (987) | <u>5742</u> (5666) | <u>2772</u> (3102) | <u>2539</u> (2874) | <u>3236</u> (3384) | - | - | - | - | <u>218</u> (420) | <u>14825</u> (16433) |
| 3113 | <u>801</u> (3184) | <u>3388</u> (4392) | <u>1185</u> (1386) | <u>3027</u> (4732) | <u>1764</u> (1950) | <u>650</u> (1200) | <u>873</u> (3150) | <u>1181</u> (2850) | <u>1027</u> (2410) | <u>491</u> (794) | <u>14387</u> (26048) |
| 3114 | <u>6812</u> (18966) | <u>31901</u> (44164) | <u>40874</u> (55790) | <u>27372</u> (43046) | <u>40937</u> (52993) | <u>22009</u> (34181) | <u>3807</u> (8655) | <u>1245</u> (3035) | <u>945</u> (2120) | <u>336</u> (600) | <u>176238</u> (263550) |
| 3115 | <u>54603</u> (158313) | <u>286582</u> (374687) | <u>213702</u> (285330) | <u>187263</u> (301537) | <u>323401</u> (379095) | <u>122554</u> (240525) | <u>55987</u> (129708) | <u>50502</u> (124162) | <u>36613</u> (89158) | <u>13705</u> (28730) | <u>1344912</u> (2111245) |
| 3212 | - | - | - | - | - | - | - | - | - | - | - |
| 3213 | - | - | - | - | - | - | - | - | - | - | - |
| 3214 | - | <u>2727</u> (4050) | - | - | - | <u>350</u> (1184) | - | - | - | - | <u>3077</u> (5234) |
| 3215 | <u>4120</u> (14007) | <u>66817</u> (90140) | <u>54259</u> (77082) | <u>51596</u> (79032) | <u>62398</u> (100118) | <u>26139</u> (52524) | <u>19739</u> (34945) | <u>23457</u> (33508) | <u>15371</u> (23038) | <u>7508</u> (8040) | <u>331404</u> (512434) |
| 3314 | - | - | <u>3103</u> (2535) | - | - | - | - | - | - | <u>891</u> (450) | <u>3994</u> (2985) |
| 3315 | <u>1144</u> (2498) | <u>3669</u> (5637) | <u>2692</u> (4022) | <u>3139</u> (6838) | <u>788</u> (3000) | <u>757</u> (2570) | <u>261</u> (1204) | <u>1417</u> (4663) | <u>2732</u> (2850) | <u>870</u> (2036) | <u>17469</u> (35318) |
| 3414 | - | - | <u>265</u> (690) | <u>995</u> (2221) | <u>702</u> (1760) | <u>126</u> (240) | - | - | - | - | <u>2088</u> (4911) |
| Total | <u>348511</u> (746605) | <u>1344532</u> (1767469) | <u>739564</u> (1170498) | <u>574468</u> (1039758) | <u>1487072</u> (1533201) | <u>1041362</u> (1349906) | <u>509279</u> (845391) | <u>314869</u> (609895) | <u>323514</u> (619023) | <u>96501</u> (182506) | <u>6779672</u> (9864252) |

TOTAL CATCH = 6 779 672 kgs

TOTAL EFFORT = 9 864 252 Pot Lifts

Effort figures are shown in parenthesis and catch figures are underlined

TABLE 2. Catch/Effort Data for 1973/74 Season in Various Statistical Blocks.

| Block | Nov | Dec | Jan | Feb | March | April | May | June | July | Aug | Total |
|-------|------|------|------|------|-------|-------|------|------|------|------|-------|
| 2612 | - | - | - | - | - | - | - | - | - | - | - |
| 2613 | - | 0.63 | 0.33 | - | 0.44 | 1.39 | 1.65 | - | 0.38 | 0.38 | 0.82 |
| 2712 | - | - | - | - | - | - | - | - | - | - | - |
| 2713 | 0.57 | 1.17 | 1.07 | 0.47 | 0.76 | 1.50 | 1.01 | 0.72 | 0.39 | 0.56 | 0.87 |
| 2714 | 0.68 | 1.27 | 0.80 | 0.48 | 0.80 | 1.06 | 0.82 | 0.74 | 0.63 | 0.32 | 0.82 |
| 2812 | - | 0.86 | 0.19 | 0.15 | 1.22 | 0.97 | 0.65 | 0.71 | 0.12 | - | 0.83 |
| 2813 | 0.58 | 0.52 | 0.38 | 0.32 | 1.78 | 1.02 | 0.69 | 0.49 | 0.47 | 0.45 | 0.96 |
| 2814 | 0.44 | 0.74 | 0.37 | 0.39 | 0.78 | 0.66 | 0.54 | 0.55 | 0.60 | 0.64 | 0.59 |
| 2912 | - | - | - | - | 1.09 | 1.00 | - | - | - | - | 1.05 |
| 2913 | 0.37 | 0.70 | 0.51 | 0.50 | 1.95 | 1.04 | 0.68 | 0.36 | 0.66 | 0.37 | 1.01 |
| 2914 | 0.56 | 0.68 | 0.55 | 0.51 | 0.80 | 0.65 | 0.61 | 0.52 | 0.63 | 0.56 | 0.62 |
| 3012 | 0.45 | 1.00 | 0.79 | 0.81 | 0.94 | 1.12 | - | - | - | - | 0.85 |
| 3013 | 0.55 | 1.23 | 0.63 | 0.51 | 0.65 | 0.58 | 0.39 | 0.30 | 0.21 | - | 0.67 |
| 3014 | 0.49 | 0.84 | 0.59 | 0.54 | 0.78 | 0.68 | 0.50 | 0.52 | 0.49 | 0.42 | 0.65 |
| 3015 | 0.46 | 0.86 | 0.60 | 0.53 | 0.76 | 0.76 | 0.55 | 0.64 | 0.47 | 0.63 | 0.68 |
| 3112 | 0.32 | 1.01 | 0.89 | 0.88 | 0.96 | - | - | - | - | 0.52 | 0.90 |
| 3113 | 0.25 | 0.77 | 0.86 | 0.64 | 0.90 | 0.54 | 0.28 | 0.41 | 0.43 | 0.62 | 0.55 |
| 3114 | 0.36 | 0.72 | 0.73 | 0.64 | 0.77 | 0.64 | 0.44 | 0.41 | 0.45 | 0.56 | 0.67 |
| 3115 | 0.34 | 0.76 | 0.75 | 0.62 | 0.85 | 0.51 | 0.43 | 0.41 | 0.41 | 0.48 | 0.64 |
| 3212 | - | - | - | - | - | - | - | - | - | - | - |
| 3213 | - | - | - | - | - | - | - | - | - | - | - |
| 3214 | - | 0.67 | - | - | - | 0.30 | - | - | - | - | 0.59 |
| 3215 | 0.29 | 0.74 | 0.70 | 0.65 | 0.62 | 0.50 | 0.56 | 0.70 | 0.67 | 0.93 | 0.65 |
| 3314 | - | - | 1.22 | - | - | - | - | - | - | 1.98 | 1.34 |
| 3315 | 0.46 | 0.65 | 0.67 | 0.46 | 0.26 | 0.29 | 0.22 | 0.30 | 0.96 | 0.43 | 0.49 |
| 3414 | - | - | 0.38 | 0.45 | 0.40 | 0.53 | - | - | - | - | 0.43 |
| TOTAL | 0.47 | 0.76 | 0.63 | 0.55 | 0.97 | 0.77 | 0.60 | 0.52 | 0.52 | 0.53 | 0.69 |

TOTAL CATCH 6 779 672 kgs
 TOTAL EFFORT 9 864 252 Pot Lifts.

TABLE 3. Mean Carapace Lengths (mm) of Male and Female Rock Lobsters in Various Depth Categories at Fremantle, Lancelin, Jurien and Dongara throughout the Fishing Season.

| Year | Area | Month | 0-10 Fathoms | | 10-20 Fathoms | | 20-30 Fathoms | | 30+ Fathoms | |
|-------|-----------|-------|--------------|--------|---------------|--------|---------------|--------|-------------|--------|
| | | | Male | Female | Male | Female | Male | Female | Male | Female |
| 73/74 | Fremantle | Nov | 77 | 75 | | | | | | |
| | | Dec | 78 | 73 | 87 | 82 | | | | |
| | | Jan | 74 | 70 | 78 | 76 | | | 101 | 97 |
| | | Feb | 76 | 71 | | | 106 | 103 | | |
| | | March | 79 | 76 | | | 101 | 98 | | |
| | | April | | | | | | | | |
| | | May | | | | | | | | |
| | | June | | | | | | | | |
| | | July | | | | | | | | |
| Aug | | | | | | | | | | |
| 73/74 | Lancelin | Nov | 72 | 71 | | | | | | |
| | | Dec | 70 | 69 | 78 | 76 | | | | |
| | | Jan | 74 | 71 | 71 | 69 | 120 | 100 | | |
| | | Feb | 73 | 70 | | | 98 | 96 | | |
| | | March | 73 | 72 | | | | | | |
| | | April | | | | | 113 | 113 | | |
| | | May | 75 | 73 | | | | | | |
| | | June | 75 | 73 | | | | | | |
| | | July | 74 | 73 | 96 | 97 | | | | |
| Aug | | | | | | | | | | |
| 73/74 | Dongara | Nov | | | | | | | | |
| | | Dec | 77 | 74 | 77 | 75 | | | | |
| | | Jan | 71 | 70 | 77 | 77 | | | | |
| | | Feb | 71 | 71 | 77 | 74 | 80 | 77 | | |
| | | March | 80 | 76 | 76 | 75 | | | 101 | 89 |
| | | April | 74 | 73 | | | 94 | 88 | 104 | 91 |
| | | May | 76 | 75 | | | | | 98 | 88 |
| | | June | 72 | 71 | | | 94 | 86 | 110 | 93 |
| | | July | 72 | 70 | | | 85 | 89 | 101 | 93 |
| Aug | 72 | 70 | | | 88 | 90 | | | | |
| 73/74 | Jurien | Nov | 71 | 71 | | | | | | |
| | | Dec | | | 77 | 76 | 79 | 78 | | |
| | | Jan | 74 | 70 | | | 87 | 86 | 90 | 85 |
| | | Feb | 71 | 69 | 74 | 70 | | | 89 | 85 |
| | | March | 75 | 73 | | | | | 93 | 92 |
| | | April | 74 | 72 | 77 | 75 | 98 | 89 | | |
| | | May | 74 | 70 | | | | | | |
| | | June | 75 | 72 | | | | | | |
| | | July | 69 | 68 | | | | | | |
| Aug | 75 | 70 | | | | | | | | |

TABLE 4. Bottom Temperature ($^{\circ}\text{C}$) for Fremantle, Lancelin, Jurien and Dongara of Waters between various depth contours for the 1973/74 Season.

| Area | Depth | Nov. | Dec. | Jan. | Feb. | March | April | May | June | July | Aug. |
|-----------|-------|------|------|------|------|-------|-------|------|------|------|------|
| Fremantle | 0-10 | 20.6 | 21.4 | | | | | | | | |
| | 10-20 | | 21.0 | 23.2 | | | | | | | |
| | 20-30 | | | | 21.6 | 21.8 | | | | | |
| | 30+ | | | 20.0 | | | | | | | |
| Lancelin | 0-10 | 20.1 | 20.1 | 24.2 | 22.0 | 22.3 | | 19.3 | 19.7 | | |
| | 10-20 | | 20.1 | | | | 21.2 | | | 18.8 | |
| | 20-30 | | | | | | | | | | |
| | 30+ | | | | | | | | | | |
| Jurien | 0-10 | | | | 22.4 | 23.0 | 21.5 | 22.1 | 16.0 | 18.6 | 17.9 |
| | 10-20 | | 20.6 | | 22.2 | | 21.6 | | | | |
| | 20-30 | | 20.3 | 21.8 | | | 23.4 | | | | |
| | 30+ | | | 22.0 | 20.8 | 22.2 | | | | | |
| Dongara | 0-10 | | | | 25.2 | 24.0 | 21.2 | 18.6 | 18.6 | 18.3 | 18.3 |
| | 10-20 | | 23.2 | 22.3 | 23.2 | 22.6 | | | | | |
| | 20-30 | | | | 23.1 | | 21.3 | | 21.9 | 20.1 | 20.3 |
| | 30+ | | | | | 23.7 | 21.6 | 22.9 | 22.0 | 21.0 | |

Temperatures were taken using an unprotected reversing thermometer.

TABLE 5. 1973-74 Sex Ratio by Month and Depth Category. Figures given are % of Females in the Total

| Area | Depth Range Fath. | Nov | Dec | Jan | Feb | March | April | May | June | July | Aug |
|-----------|----------------------|-----|-----|-----|-----|-------|-------|-----|------|------|-----|
| Dongara | 0-10 | | 51% | 54% | 48% | 59% | 54% | 45% | 59% | 58% | 57% |
| | 10-20 | | 38% | 42% | 43% | 59% | | | 48% | 61% | 64% |
| | 20-30 | | | | 44% | 70% | 70% | 62% | 49% | 77% | |
| | 30+ | | | | | | | | | | |
| Jurien | 0-10 | 50% | 50% | | 47% | 50% | 53% | 52% | 50% | 56% | 61% |
| | 10-20 | | 53% | | 46% | | 58% | | | | |
| | 20-30 | | 52% | 63% | | | 64% | | | | |
| | 30+ | | | 54% | 42% | 74% | | | | | |
| Lancelin | 0-10 | 46% | 43% | 47% | 46% | 60% | | 54% | 55% | 56% | |
| | 10-20 | | 50% | 57% | 59% | | 59% | | | 67% | |
| | 20-30 | | | 76% | | | | | | | |
| | 30+ | | | | | | | | | | |
| Fremantle | 0-10 | 60% | 47% | 51% | 46% | 61% | | | | | |
| | 10-20 | | 54% | 47% | 68% | 64% | | | | | |
| | 20-30 | | | | | | | | | | |
| | 30+ | | | 59% | | | | | | | |