



Marine Fisheries Information Service

Technical and Extension Series

Number 198

October - December 2008



Central Marine Fisheries Research Institute

(Indian Council of Agricultural Research)

Post Box No. 1603, Cochin - 682 018, Kerala, India

WWW.cmfri.org.in

Bumper catch of spiny lobsters by trawlers and gill netters at Okha, Gujarat

Shubhadeep Ghosh, G. Mohanraj, P. K. Asokan, H. K. Dhokia, M. S. Zala and H. M. Bhint
Veraval Regional Centre of CMFRI, Veraval

During the post-monsoon months of September and October in 2007, an estimated 900 t of spiny lobsters *Panulirus polyphagus* worth of Rs. 67 crores was landed by trawlers and gill netters at Okha and Rupenbander. A total of 15 - 20 t was

landed daily at Okha and Rupenbander during these months and the average catch per boat was 150 kg for trawler and 50 kg for gillnetter. This was the first time in the last two decades that such heavy landings of lobsters were recorded (Fig. 1). Furthermore in



Fig. 1. Heavy landings of spiny lobster at Okha

2007, the lobster catch comprised of bigger size lobsters and the proportion of berried females was very less when compared to the earlier years. Over the years, there is a perceptible change in the species composition of lobsters with the gradual replacement of *Panulirus versicolor* with *P. polyphagus* as the dominant species. The quantum of catch was correlated well with lunar periodicity and an increase in temperature.

Spiny lobsters are exploited both by trawlers and gill netters. Around 500 trawlers and 700 outboard mechanized gill netters operating in the rocky bottom were actively engaged in the fishing of lobsters. The fishing ground for trawlers was off Jakhau, while for gill netters the fishing area was off Dwaraka - Okha. The multiday trawlers having overall length of 40 to 45 ft. powered with 80 – 105 HP engines conduct fishing for 7 - 10 days at the depth range of 15 - 20 m, while the gill netters fish for 1 - 4 days in the depth range of 12 - 30 m. The trawlers perform on an average 4 - 6 hauls per day depending on whether they conduct fishing during the day only or both in day and night. The trawlers carry on an average 10 to 12 nets, each having length of 35 - 40 m with mesh sizes of 8 - 15 mm in the cod end and 40 and 20 cm in the upper and lower wing sections. The gillnetters having overall length of 32 to 45 ft. powered with 8 – 10 HP outboard "Yamaha Endura" engines carry 3 to 4 nets, each having mesh sizes varying between 80 and 110 mm. Spiny lobster fetches high price in the international market and contributes significantly to the export earnings of the state and the country. The price of lobsters ranges from Rs. 600 – 800/ kg depending on the size. The lobsters weighing less than 300 g were preserved in ice after boiling them, whereas those weighing more

than 300 g were preserved in ice directly. The consignment was sent by rail or road to processing plants in Mumbai, Porbander, Mangrol and Veraval for export.

A total of 355 specimens of *P. polyphagus* in the size (total length) range of 12.8 to 31.2 cm were collected randomly for biological study and sampled for recording total length (in cm), carapace length (in cm) and body weight (in g). The linear relationship between carapace length (CL) and total length (TL) for males and females was:

$$CL = - 0.93313 + 0.424304 TL \text{ for males} \\ (r = 0.88)$$

$$CL = 2.611612 + 0.256503 TL \text{ for females} \\ (r = 0.72)$$

The exponential relation between total length (TL) and body weight (TW) for males and females was expressed as:

$$\log TW = - 2.30034 + 3.582274 \log TL \text{ for males} \\ (r = 0.95)$$

$$\log TW = 0.039877 + 1.909481 \log TL \text{ for females} \\ (r = 0.72)$$

The exponential relation between carapace length (CL) and body weight (TW) for males and females was:

$$\log TW = - 0.01446 + 2.750477 \log CL \text{ for males} \\ (r = 0.88)$$

$$\log TW = 0.476367 + 2.340322 \log CL \text{ for females} \\ (r = 0.86)$$

The relationship between carapace length, total length and body weight in males was significantly different from that of females at 5% level. The linear relationship between carapace and total length showed that males have longer carapace length than that of the females. In other words, females possess shorter carapace and longer abdomen to carry large number of eggs. The exponential relation between carapace length, total length and body weight indicated that females were heavier than males. This could be attributed to the fact that around 26.5% of the females encountered in the catch were in berried state.

The chi-square values indicated significant (5%) dominance by females in the commercial catches and the overall sex ratio was 1:2.2. The analysis on the maturity stages revealed that 26.5% of the females landed were berried and were ready to release their eggs.