

TECHNICAL SESSION III

Export market of lobsters in Sri Lanka, with special reference to slipper lobsters**D N Koralagama¹, O Amarasinghe¹ and S Jayakody²**¹Department of Agricultural Economics, Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya, ²National Aquatic Research and Development Agency (NARA), Crow Island, Colombo 15**Abstract**

Lobster fishery in Sri Lanka is an ancient fishery with few available records and literature. But it is a non excludable sub sector in the fisheries industry, since it is a good source of foreign exchange. This study aims to investigate the present status of the lobster export market and its potential for slipper lobster exportation in future. Lobster exporting companies in Gampaha district were selected randomly. Primary data were collected by administering a chart for each company, with the aim of collecting information on the types of lobsters exported, their prices, grades, buyers, quantities handled, and so on. Further, informal discussions were held with lobstermen, exporters and relevant government officers.

*The lobster market is an export oriented oligopoly market where 95% is being exported by only nine companies. Household consumption is negligible. The international market is highly competitive where there is an unattainable demand as well as many competitors from both eastern and western countries. Two categories of lobsters are famous in the export market viz – spiny lobsters and slipper lobsters. The arrival of the slipper lobster in the lobster market is a recent notable change. *Thenus orientalis* and *Parribacus antarcticus* are the two main slipper lobster species exported from Sri Lanka. Normally, spiny lobsters fetch higher prices than slipper lobsters. Therefore, the spiny lobster stock is exported in live form rather than dead. The only value added form in the lobster market is lobster meat prepared from slipper lobsters.*

The Laspreyer's price index revealed an increasing trend in prices of slipper lobsters. It indicates that the slipper lobsters are generating an attractive market, both locally and internationally. Though the lobster market seems to be very lucrative, there are problems and threats which may hinder the progress. Shortage of supply, lack of infrastructure facilities, and habitat degradation are some of them. Therefore, new rules and regulations should be imposed for the sustainability of the lobster fishery as highlighted in this study.

Key words: lobsters, price index, market potential, sustainability

1. Introduction

The fisheries sector is one of the important dynamic sectors in the Sri Lankan economy, contributing approximately 2.7% to the Gross Domestic Product (GDP). More than 90% of this contribution comes from marine and brackish water fisheries, which form the most dominant fisheries sub-sectors. Lobster fishery is one of the most economically important fishing activities that come under marine coastal fisheries. The approbation received by this sector can be attributed to the high amount of foreign exchange earned by the lobster fishery and its contribution to employment. Compared to resource availability, the demand is quite high and is increasing. Along with the process of globalization and the sharp rise in the world demand for lobsters, the lobster fishermen are applying tremendously high fishing efforts, thereby threatening the sustainability of the resources, while earning quite a high income.

Lobsters are crustaceans. There are four varieties of lobster; viz spiny, clawed, slipper, and coral reef. Although all the species have bioeconomical and environmental

importance, only two varieties, spiny and slipper lobsters, have significant commercial importance. The lobster fishery has been recognized as a small-scale and artisanal fishery due to its shallow water coastal nature and the use of nonmechanized fishing gear. Lobster fishery contributes to the total fishery by more than 1%. The export quantity is around 2% of the total fish exports and income is 5% from the total revenue earned through fisheries exportation (Ministry of Fisheries, 2004). Although the lobster fishery generates an array of benefits, very little information is available on the structure and performance of this fishery, which is a serious deterrent for proper planning and management.

In the 1980s and 1990s, spiny lobsters dominated the export market and other lobster categories were labeled as commercially unimportant. The exported varieties of spiny lobsters were in high demand and fetched attractive prices in both local and international markets. Since the public fishery is a free access fishery, the lobstermen tried to harvest more and more, and this has led to over exploitation. As a result, the annual catch of spiny lobsters and the catch per unit effort (CPUE) have declined steadily from 1986 (Jayakody, 1999). In the absence of adequate spiny lobster stocks in the market, other lobster categories are now gradually entering the market. Slipper lobster is one such category that has recently emerged as a commercially important variety in the seafood market (Bliss, 1990). This change took place in the late 1990s. However, research carried out and awareness of the public on this lobster category are very limited. Hence, this study was principally aimed at meeting these informational needs. Other objectives included finding out the present status of the lobster export market and making an assessment of the market potential of slipper lobsters in Sri Lanka.

2. Methodology

Since, one of the major focuses of this study was the lobster export market, a number of lobster exporting companies were selected purposely from *Gampaha* District. Lobster harvesting pattern and data were studied by visiting lobster purchasing centers located in *Negombo* and *Modera*.

Of the nine companies exporting both slipper and spiny lobsters, five were randomly selected. Two methods were employed to collect primary data: a chart was administered to the exporters, with the aim of eliciting information on the types of lobsters exported, their prices, grades, buyers, quantities handled, *etc.* Informal discussions were also held with lobster exporters, officers at National Aquatic Resources Research and Development Agency (NARA) who were engaged in lobster research, and lobstermen at purchasing centers. Laspreyer's price index was used to assess the market potential in terms of price. The following formula was used to calculate Laspreyer's price index.

$$PI_L = \frac{\sum P_1 Q_0}{\sum P_0 Q_0}$$

PI_L = Laspreyer price index

P_0 = base year price

P_1 = current year price

Q_0 = base year quantity

3. Results and discussion

3.1 Characteristics of the lobster market in Sri Lanka

3.1.1 Nature of the market and export mix

Eight commercially important lobster species are traded in the Sri Lankan lobster markets, namely; six spiny lobster species (*Panulirus homarus*, *P. penicillatgus*, *P. polyphagus*, *P. versicolor*, *P. longipes*, and *P. omatus*) and two slipper lobster species (*Thenus orientalis* and *Parribacus antarcticus*). The Sri Lankan lobster market is a highly

export-oriented market where more than 90% of the landings are exported and the quantity consumed by domestic people is negligible. Lobsters are in high demand and popular among the luxury hotels and restaurants in the country and the balance 10% of the lobster catches is purchased by local hoteliers at a high price. Although the lobster exports are small in quantity, the revenue generated is much higher than those generated by other export food items, in terms of revenue per ton of goods exported, which could be attributed to the high prices fetched by lobsters in the international market. Table 1 illustrates this.

Table 1. Lobster export volume and earnings from total fish production

Year	Exports (mt)		Export income (SLR million)		Percentage	
	Lobster	Total	Lobster	Total	Volume	Income (SLR million)
1996	357	8365	411	4125	4.22	9.96
1997	214	8479	271	7978	2.53	3.4
1998	164	11434	195	6732	1.43	2.9
1999	245	9793	268	5131	2.5	5.22
2000	164	19567	157	10328	0.84	1.52
2001	198	15571	221	9136	1.27	2.42
2002	272	14172	317	8047	1.92	3.94
2003	456	15690	165	9543	0.29	1.73
2004	235	13681	220	9435	1.78	4.95

(Source: Statistical unit of MFARD, 2005; NARA, 2002)

As per Table 1, the export volume shows a fluctuation. But the income is always twice the volume. This depicts the lucrative nature of the lobster fishery, which has led to over-exploitation, resulting in a decline in CPUE (Fig.1).

Figure 1 reveals the declining trend of the lobster catch per unit effort. It silently illustrates the over exploitation and the unsustainable nature of the lobster fishery without proper management and policies. The unattainable demand and the attractive prices motivate lobster fishermen to exert more pressure on the lobster fishery. The lobster prices depend on the grades and the types of the lobsters. Generally, spiny lobsters fetch high prices ranging from around Rs. 2,700 / kg (30 -35 USD) and slipper lobsters Rs. 1,200 / kg (14 - 20 USD). The producer prices are also high, about Rs. 1,300 and 700 / kg for spiny and slipper lobsters, respectively.

The lobster market is an oligopolistic market at the level of collecting and exporting, where only a few companies are involved (only nine companies) in lobster exportation (Ministry of Fisheries, 2004). Each company has their own lobster collectors and suppliers. Since the lobster fishery is a capture fishery where the total landings and the market quantities are quite small, there is no room in the market for too many collectors and suppliers, which is the main barrier encountered by potential entrants.

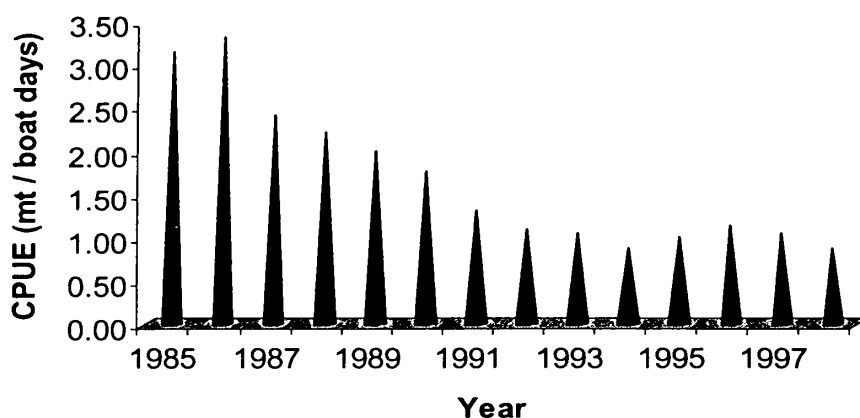


Figure 1. Decline of catch with increment of the effort from 1985 to 1998

3.1.2. Buyers and sellers in the international market

Sri Lanka exports lobsters to both eastern and western countries. The majority of buyers (86%) are from eastern countries and only 14% is sent to western countries. The major buyers are: Hong Kong, Japan, USA, Thailand, South Korea, and the Maldives (Export Development Board, 2004). Most of the Sri Lankan sea food companies are not in a position to supply lobsters to western countries due to their more sophisticated standards of hygiene and quality required by them. Therefore, the exporters concentrate more on catering to the needs of eastern countries rather than western countries though they priced well.

At the international level, the lobster market is quite competitive due to the existence of a large number of exporting companies. The lucrative nature of the lobster market invites many countries to enter the market. Since lobsters are abundant around the equator, almost all the countries around the equator (along the littoral) are exploiting lobster resources. The major Asian competitors are: India, Singapore, Bahrain, United Arab Emirates, Vietnam and Bangladesh. Australia, Hawaii, Cuba, South Africa, Honduras and Brazil are the major competitors from western countries. Nevertheless, the supply appears to be short of the demand and larger quantities of lobsters can still be sold in the international market without facing any losses. This is because the commodity lobsters have no substitutes, are very rare, are 100% natural, and the taste is at a superior level.

3.2 Product differentiation in the lobster market and standards

Product differentiation can be seen in the lobster export market where its prices are heavily dependent on the type of product. Prices vary according to the types of lobster species, forms of lobsters (live or dead), size (weight), parts of the lobster (whole, tail or meat), lobster grades, and lobster value additions. The profitability too varies along these lines. Spiny lobsters are exported both in live and dead forms. But the live form is more profitable than the dead form. To export lobsters in live form they have to be in a healthy and undamaged condition. Prices are high for medium size (125–250g) dead spiny lobsters. For slipper lobsters, the highest prices are paid for the highest weight. The prices for different product categories of slipper lobsters are given in Table 2.

Table 2. Slipper lobster grades and prices

Whole		Tail	
Grade (grams)	Price (Rupees / kg)	Grade	Price (Rupees / kg)
50 – 100	1420	2 – 4	1200
100 – 200	1500	4 – 6	1400
> 200	1600	6 - 8	1500

The standards imposed and the quality assurance certificates required by foreign buyers are: Standard Sanitary Operation Procedure (SSOP), Good Manufacturing Procedure (GMP), and Hazard Analysis Critical Control Point (HACCP). That means, “No *Salmonella* should be detectable in a 25 g sample, *Staphylococcus aureus* should not exceed 100 per gram in three out of five samples with an upper limit of 1000, faecal coli should be less than ten per gram in four out of five samples with an upper limit of 100”.

3.3 The slipper lobster fishery (the bug)

In Sri Lanka, four slipper lobster species are available (*Parribacus antarticus*, *Scyllarus batei*, *Scyllarus motensil*, and *Thenus orientalis*). Among them, only two (*Parribacus antarticus* and *Thenus orientalis*) are being exported. Slipper lobsters are commonly called ‘Bugs’. Bugs live on the seabed of open water. In Sri Lanka, bugs are generally caught in the northern coastal waters. The sandy, muddy, and reef sea bed of the northern part of the island (eg; *Kudiramalai*, *Nilaveli*, *Kuchchaveli*, *Kokilai*, *Jaffna*, and *Trincomalee*, etc) provide a good habitat for slipper lobsters. There are many types of slipper lobster harvesting techniques, gill nets, lobster traps, scuba diving, skin diving, and lobster rings are some of them. Some may harvest lobsters as a by-catch, when shrimp and crab are harvested by trawling or by trammel nets.

Slipper lobster harvesting is generally done by a limited number of small-scale and artisanal fishermen using simple equipment. Although the volumes caught are small compared to other major fisheries in Sri Lanka, it has a good market potential. The stocks of slipper lobsters could support a seasonal fishery for prawn trawlers and crabbers or perhaps a discrete small-scale fishery based on trapping, a technique shown to be effective in capturing similar species in inter-reef waters around the island.

3.4 Slipper lobster market

Slipper lobsters are exported only as frozen dead forms. The grading can be done as whole or tail (Table 2). Apart from that, slipper lobsters are being exported as a special value added food item called ‘lobster meat’ priced at 2700 Rupees / kg (10 – 14 USD / lb). The value added half cooked lobster meat is exported to European countries and many other developed countries such as USA, UK, Switzerland, the Netherlands etc. Thus, it is quite evident that slipper lobster has a ready market. The main buyers for slipper lobsters are: UK, Korea, Thailand, USA, Singapore, and Malaysia, while the major competitors are UAE, India, and Japan.

3.5 Assessment of market potential using Laspreyer price index

Price variation over time was studied by using the Laspreyer price index. This method was selected because it could be used for any comparisons, due to its common denominator. The the price variation is calculated on the base year price and quantity. The year 1995 was taken as the base year due to absence of any economic calamities and inflation. Figure 2 shows the variation of the price index over the 2001-2005 period.

A remarkable trend of increasing prices for slipper lobsters as compared to those for spiny lobsters is quite evident. Prices of the latter seen to have stabilized with slight annual fluctuations. This increase in price would definitely attract more people to the lobster export market, such as lobstermen, middlemen, assemblers, exporters, researchers etc, because of the good market potential.

3.6 Major threats to the lobster fishery

Lobster fishery is a capture fishery which depends totally on the wild harvest from the sea. Lobsters take about three to four years to grow up to the marketable size. This indicates that lobster replacement is a very slow process. The result is a high rate of exploitation over replacement, leading to a depletion of the lobster stock (Fig. 1). Spiny lobsters have already faced this tragedy and the slipper lobster fishery can also be overwhelmed by the same phenomenon. The depletion will occur until the extinction of the lobsters from their natural environment. It is an undeniable future threat. Therefore, the biologists, economists, and researchers must find solutions to protect the lobster population and bio diversity in this exquisite water world.

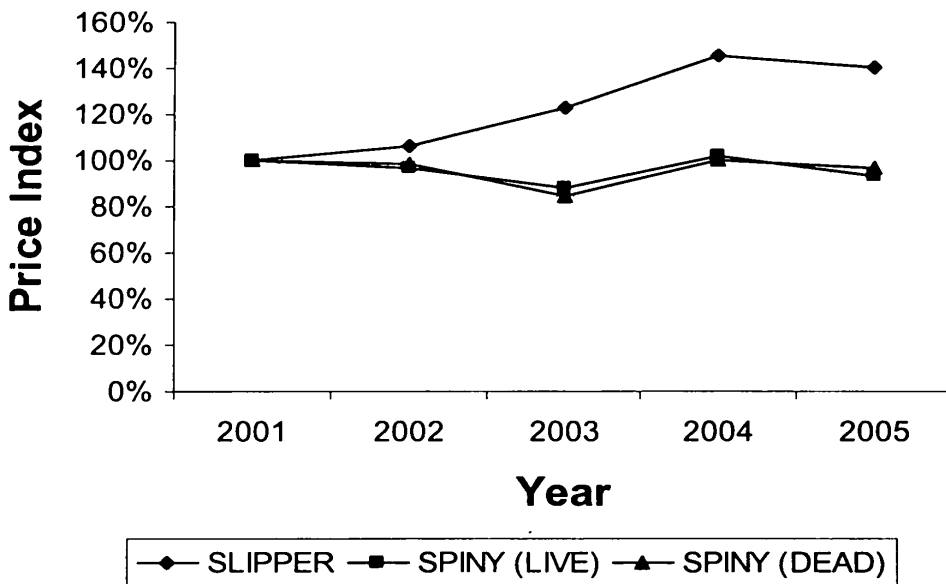


Fig 2: Price Index variation over 2001 – 2005

4. Conclusions

The lobster market is an important constituent of Sri Lankan fish exports, because 90% of the lobster products are exported world wide. Only two types of lobsters have been identified as commercially important viz slipper lobsters and spiny lobsters. Spiny lobsters have a well established market and six species are being exported. On the other hand, the market for slipper lobster is still emerging. Slipper lobsters are the new entrants to the lobster market and two species are currently exported. The spiny lobsters have a higher demand and fetch higher prices than slipper lobsters. But the price indices show a remarkable trend of increasing prices for slipper lobsters as compared to those for spiny lobsters. Lobster prices vary according to the grade, which is diverse. Value addition is currently taking place in the lobster market especially for slipper lobsters. All lobster exports should have HACCP certificate. As with any other industry, lobster fishery also has many threats and hindrances. The major threat is stock depletion. Therefore, proper management measures will have to be introduced if a sustainable lobster fishery is to be maintained.

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