

Economic Loss of Northern Fishers due to the Poaching Activities of Indian Trawlers

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Abstract— The present study was carried out to analyze the economic loss of Sri Lankan fishers due to the poaching activities by Indian trawlers. Fishery resources are major livelihoods in South Indian and North Sri Lankan people who have been fished in harmony since ancient time but the situation has gone upside down since early 90s. Because fish stocks on the Indian side were fast depleting due to over-exploitation, the number of Indian fishing vessels entering into Sri Lankan waters for fishing also rapidly increased. A survey was carried out at Karainagar, Point Pedro and Mathagal region from September 2015 to February 2016 in order to assess the economic loss of Sri Lankan fishers from indicated areas. Primary data related to yield lost, income lost and nautical lost were collected from 100 families by providing a pre-tested questionnaire and secondary data related to the economic lost were collected from co-operative societies of the respective regions. Collected data were subjected to descriptive statistical analysis and one-way analysis of variance. The highest yield lost was recorded in Point Pedro followed by Mathagal, which were being 435.20 ± 125.8 kg/month and 428.10 ± 120.0 kg/month respectively. Mathagal area faced significantly ($P < 0.05$) high amount of income lost (SLR/month 85, 571.00 \pm 35,119.00) than the other area. The nautical lost in Karainagar, Point Pedro and Mathagal area were 8, 6 and 5 Nautical Miles respectively. Fishers living in Mathagal and Point Pedro area faced significantly ($P < 0.05$) high amount of economic lost by Indian trawlers than the Karainagar area. From the present study it can be concluded that the intrusion of Indian trawlers into the Sri Lankan territorial waters should be restricted in order to reduce the economic loss of the Sri Lankan fishers.

Keywords— Economic loss, Invasion, Poaching, Territorial

INTRODUCTION

The Island, Republic of Sri Lanka is located in the Indian Ocean, Southeast of India, between $5^{\circ}55''$ and $9^{\circ}51''$ N latitude, and $79^{\circ}41''$ and $81^{\circ}53''$ E longitude. Sri Lanka and the southern tip of India stand on the same continental shelf and are separated by a shallow sea, the Palk Strait, which is barely 30 m deep. Jaffna district is surrounded by rich fishing areas and famous for coastal fisheries. It contains a variety of species of finfish, shellfish and holothurians.

Fishery resources are one of the major livelihoods in South Indian and North Sri Lankan people who have been fished in harmony since ancient times. The maritime boundary was settled in mid 1970 and then each country did their fishing activity within their territorial sea boundary (Hettiarachchi, 2007) and no disputes were reported between the two groups. In 1960, the potential of shrimp resources in the area was recognized for foreign earning and there after both groups focused potentially on shrimp resources, which were harvested by bottom trawling and the number of motorized trawlers gradually increased (Anon, 2003).

The 1982 United Nations Convention on the Law of the Sea (UNCLOS) is the most comprehensive attempt at creating a unified regime for governance of the rights of nations with respect to the world's oceans. Article 3 of UNCLOS declares that a nation may establish a territorial sea that extends up to 12 nautical miles from the baselines. Within the territorial sea, a nation has exclusive sovereignty over the water, seabed, and airspace. Another nation can't do the fishing activity in particular region (Hettiarachchi, 2007). It is the law. But India

tries to come in the Sri Lankan territorial sea due to the sustainable fish resource availability.

However, the fishing effort on the Indian side was greater than that on the Sri Lankan side and due to over-fishing, fish stocks on the Indian side depleted very quickly. As the fish stocks on the Indian side of the Bay were fast depleting due to over-exploitation, the number of Indian fishing vessels crossing the boundary line and entering into Sri Lankan waters for fishing also rapidly increased. Most of the Indian vessels crossed the boundary line were motorized trawlers pursuing shrimp resources (Sanath de Silva, 2008). The issue of Indian fishing vessels violating the maritime boundary in the Palk Bay also assumed a new dimension constituting a serious threat to the security of the country. Therefore, the present study was carried out to analyze the economic loss of Sri Lankan fishers due to the poaching activities by Indian trawlers.



Plate 1: Location of the study area in the Jaffna District (Karainagar, Mathagal, Point Pedro)

OBJECTIVE

To Estimate the impacts of economic loss of the Jaffna fishermen due to the Indian trawler intrusion.

METHODOLOGY

The present investigation was performed at Karainagar, Mathagal and Point Pedro area in Jaffna district (Plate 1) from September 2015 to February 2016.

Primary data were collected from 100 families by providing questionnaire, which consist the information on socio demographic features of fisher, target fish species, income level, the catch amount, nautical mile lost, yield lost, net lost, fishing effort, cost as well as general challenges faced by fishermen. Secondary data were collected from the Ministry of Fisheries and Aquatic Resources (MOFAR), Department of Fisheries and Aquatic Resources, District Office, Jaffna, District Secretariat, Jaffna and fisheries cooperation and from related web sites.

DATA ANALYSIS

The data collected were entered in the computer, and Minitab was used to perform the statistical analysis. Collected data were subjected to descriptive statistical analysis and one-way analysis of variance. Differences were declared statistically significant at $P < 0.05$.

RESULTS & DISCUSSION

A. Income lost

Table 1 shows the comparison of income lost among the three regions. Mathagal area faced significantly ($P < 0.05$) high amount of income lost (SLR 85,571.00 ± 35,119.00) than the other area. Income lost due to the poaching activities by Indian trawlers at territorial waters of Jaffna peninsula was significantly ($P = 0.000$) different among the three studied sites (Figures 1, 2, 3 and 4). Income loss in Karainagar with regard to the poaching impacts was less (Rs. 45,300.00 ± 22585) and significantly different from other two sites ($p = 0.0194$). There is no significant difference between the economic impact at Point Pedro (Rs. 70,531 ± 21671) and Mathagal (Rs 85,571 ± 35119) ($p = 0.0194$).

Table 1: Comparison of income lost versus places

Selected site	Sample no	Mean of income lost (LKR)	Standard deviation
Karainagar	50	45300	22585
Point Pedro	32	70531	21671
Mathagal	21	85571	35119

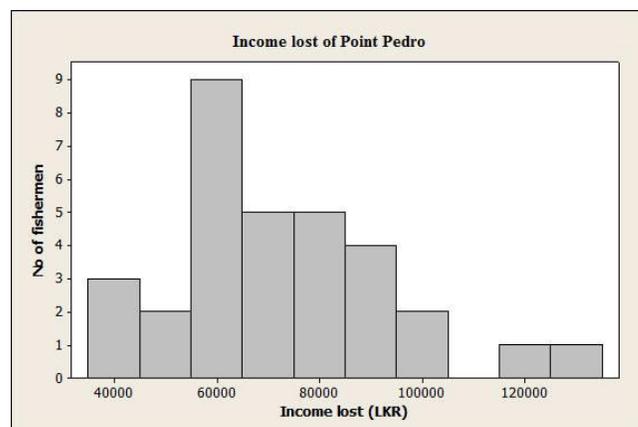


Figure 2: Income lost of Point Pedro due to the Indian trawler invasion (Per month)

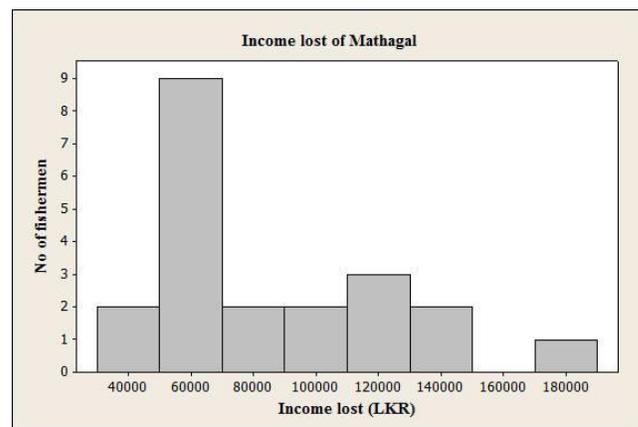


Figure 3: Income lost of Mathagal due to the Indian trawler invasion (Per month)

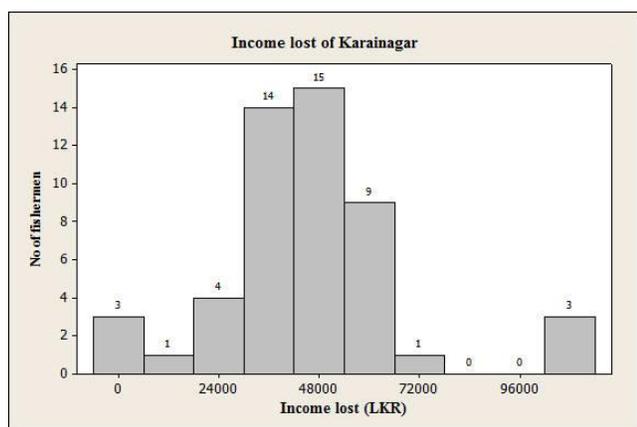


Figure 1: Income lost of Karainagar due to the Indian trawler invasion (Per month)

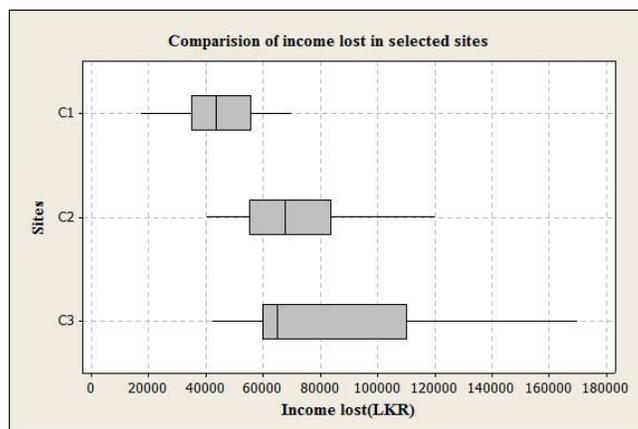


Figure 4: The comparison of the income lost in selected sites (C1 = Karainagar, C2 = Point Pedro, C3 = Mathagal)

B. Yield lost

Table 2 show the yield lost of fishers in the three sites per month. The highest yield lost was recorded in Point Pedro followed by Mathagal, which were being 435.20 ± 125.8 kg and 428.10 ± 120.0 kg respectively (Figures 5 and 6).

Table 2: Comparison of yield lost versus places

Selected site	Sample no	Income before Indian trawler invention (kg)	Income after Indian trawler invention (kg)	Yield lost (kg)
Karainagar	50	471	62	383.9
Point Pedro	32	534	100	435.2
Mathagal	21	485.71	57.62	428.1

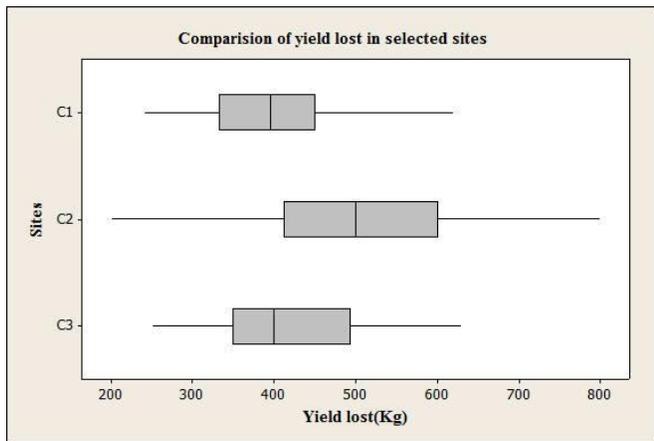


Figure 5: The comparison of the Yield lost in selected sites (C1 = Karainagar, C2 = Point Pedro, C3 = Mathagal)

C. Nautical lost

Nautical lost due to the poaching activities by Indian trawlers at territorial waters of Jaffna peninsula was significantly different among the three studied sites ($p=0.000$). Nautical lost in Karainagar regard to the poaching was high ($NM 8.480 \pm 2.435$) and significantly different from other two sites. There is no significant difference between the nautical lost at Point Pedro ($NM 5.938 \pm 1.900$) and Mathagal ($NM 4.524 \pm 1.632$) (Tables 3 and 4; Figures 7, 8 9 and 10).

Table 3: Nautical lost of fishers in three sites

Selected site	Sample no	Income before Indian trawler invention(NM)	Income after Indian trawler invention (NM)	Nautical lost (NM)
Karainagar	50	13-16	4-7	8.480
Point Pedro	32	13	7	5.938
Mathagal	21	13	8	4.524

Table 4: The comparison of the lost versus places (per month)

	Karainagar	Mathagal	Pointpedro
Income lost(Rs)	45,300	85,571	70,531
Yield lost(Kg)	383.9	428.1	435.2
Nautical lost(NM)	8.48	4.524	5.938

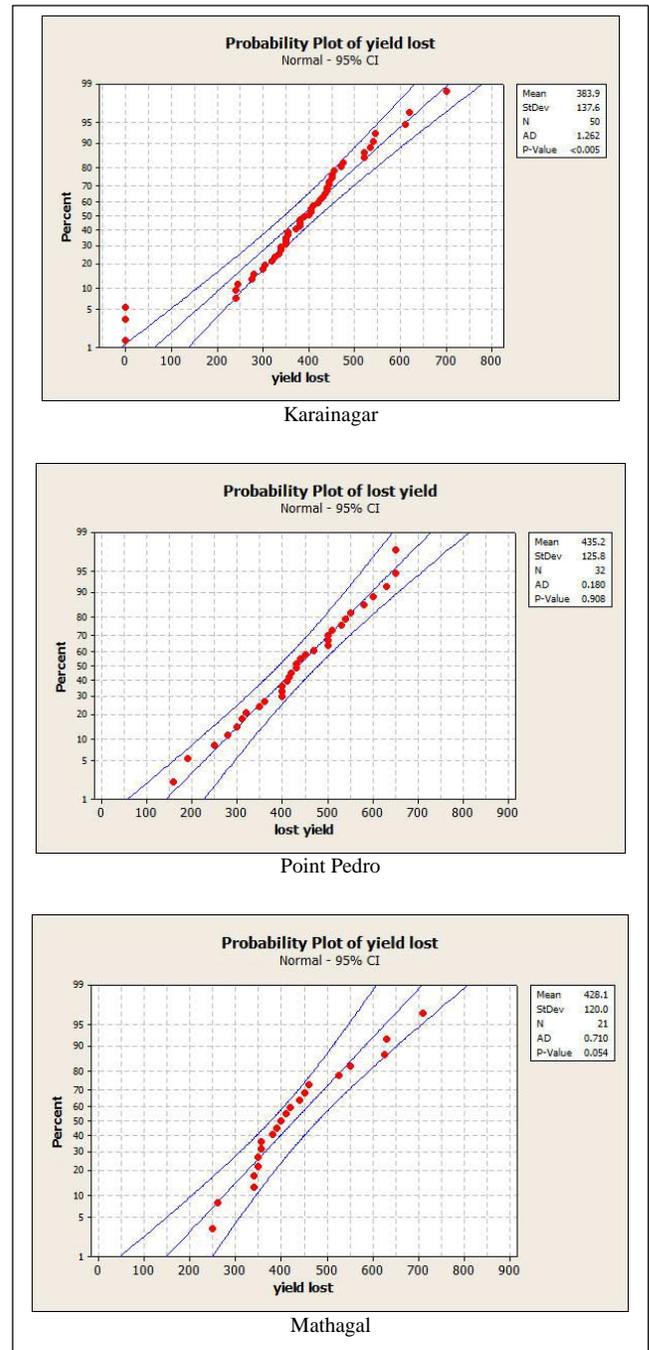


Figure 6: Probability plot of yield lost among selected sites

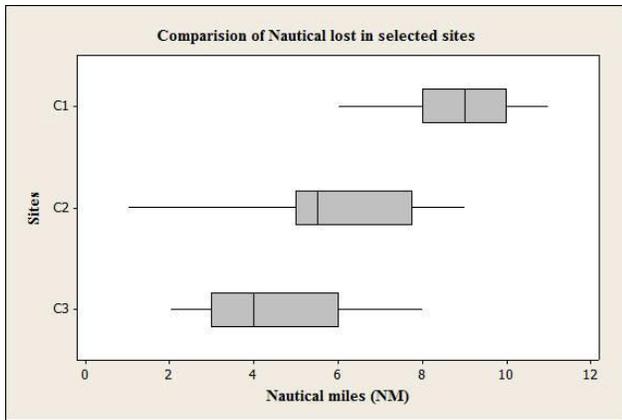


Figure 7: The comparison of Nautical miles lost in selected sites (C1 = Karainagar, C2 = Point Pedro, C3 = Mathagal)

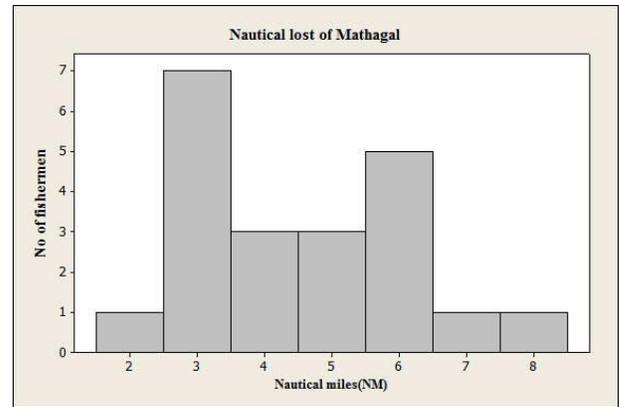


Figure 10: Nautical lost of Mathagal due to the Indian trawler invasion (Per month)

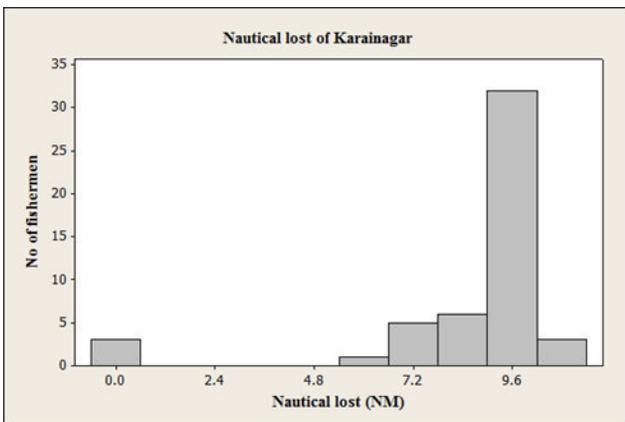


Figure 8: Nautical lost of Karainagar due to the Indian trawler invasion (Per month)

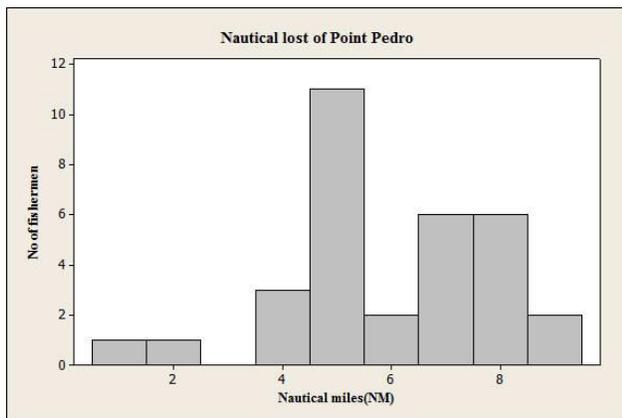


Figure 9: Nautical lost of Point Pedro due to the Indian trawler invasion (Per month)

CONCLUSION

Operation of Indian trawlers in Palk Strait severely affects the fishing activity and fishery income of Jaffna peninsula. According to the present research project loss of fishery income of particular selected villages were recorded.

Here are some suggestions for these problems. First of all both governments of Sri Lanka and India should sign affair agreement including all aspects and subjects on this regard. It should include the legal act, which controls the interference of Sri Lankan fishermen on Indian boundary and vice versa. In addition to that, the Indian government should obey the act that is handled by Sri Lankan government on the fishermen who cross the border.

Both Sri Lankan and Indian government should place a permanent boundary line or boundary mark which cannot affect the human activities and natural environment. The government should be organizing awareness programs to fishermen regarding the affect caused by the operation of the trawlers and also they allocate some funds for the restoration and protection of marine environment, and should support to enhance the biodiversity of marine organism as well.

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