In Brief

Missing Fishing Trawlers in Sunderbans

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Sunderbans is a land of rivers where boat capsizing is not a new phenomenon. Even in the eighties of the last century, there were often cases of boat sinking. Boats sink due to tidal currents, eddies in the river, impact on the collision with the submerged tidal shoals, strong winds and currents for the cyclonic storms, etc. The introduction of mechanized boats in the 1980s gradually reduced the incidence of boat capsizing in the Sunderbans region [1, 2]. However, reports of fishing boats going missing in cyclones are heard occasionally especially for the fishing trawlers that go far from the coastal or estuarine Sunderbans to capture *Hilsa* fishes in the sea. Although storm warnings by radio news or cell phones reach boatmen, some fishing trawlers are unable to return to safe places before the storm due to various reasons despite red alerts for fishing in the ensuing bad weather system in the sea. And all these trawlers are sometimes forced to surrender to the strong winds of the storm and the huge waves and tidal currents of the estuarine rivers or the coastal sea [3]. Then the trawler sank, some of the sailors including fishermen went missing. Meanwhile, the cyclonic storms emerging from the sea have been gradually increasing for the last three decades [2]. In such a changing scenario, the relationship between the number and severity of cyclonic storms and the number of missing trawlers in the last three decades is likely to be established in this study.

Cyclonic storms hit the Sunderbans more frequently in recent times and the occurrence of such cyclonic storms in coastal West Bengal increased about 36% in the last 30 years [4]. During each cyclonic storm, huge loss of human lives and property is recorded despite prior forecasts by the India Meteorological Department indicating the intensity of each storm that used to ravage the coastal region. Apart from such casualties, loss of lives as well as missing of the fishermen is a common consequence due to missing fishing trawlers who went for fishing before the strike of the cyclonic storms [5]. The fishing harbours of the Sunderbans reported often about drifting of fishing trawlers after the cyclonic events. Sometimes such fishing trawlers went on missing forever (Table 1).

Table 1. Number of missing trawlers in the Sunderbans after being ravaged by the cyclonic storms in the last three decades.

Names of the fishing harbours	Number of missing trawlers	Distance from coast (km)
Namkhana	3	24.61
Patharpratima	1	32.09
Raidighi	2	52.65
Fraserganj	3	4.6
Kakdwip	2	35.62
Baratala	1	54.27

Variances, covariance, and correlation coefficient have been calculated with the available data of the number of missing trawlers and the distance of the fishing harbours from the coast in the coastal Sunderbans using standard

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statistical methods applying the formula as the following [4].

$$\sigma^2 = \frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{N}$$

$$cov(x, y) = \frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})$$

$$\rho_{xy} = \frac{cov(x, y)}{\sqrt{\sigma_x^2}\sqrt{\sigma_y^2}}$$

After computation, results showing the variance value of 0.22 with a sample mean 6 ± 0.22 over the number of missing trawlers; a covariance of -9.53 and correlation coefficient of -0.69 indicates an inverse relationship, hence, providing grounds for concluding that the number of missing trawlers decreases as distance from the coast increases; and the cyclonic storms that caused trawler's missing reveals an unbiased estimate of the number of devastating storms and capsizing of fishing trawlers in the last three decades [2].

References

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