

Impact of *Titili* Cyclone on Marine Fisheries of Srikakulam district of Andhra Pradesh

S.S. Raju*, Phalguni Pattnaik, Shyam. S. Salim and R.Narayana Kumar

¹ Socio-Economic Evaluation and Technology Transfer Division,

ICAR- Central Marine Fisheries Research Institute

***Corresponding author:** S.S. Raju, Socio-Economic Evaluation and Technology Transfer Division,

ICAR- Central Marine Fisheries Research Institute; Email: rajussncap@gmail.com ;

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Abstract

Srikakulam district is located in the extreme northeastern direction of the Andhra Pradesh. The district has the longest coastline (about 193 km) in the state. Fishing continues as a main occupation as well as a good source of healthy food for the coastal people of Srikakulam district. However, problems like seasonality of landings and uncertainty of prices in this sector creates vulnerability among the fishers affecting their livelihood. The *titili* cyclone during 11th October 2018 made fisher's life even more miserable. The present study in general is meant to understand the effect of *titili* cyclone on the marine fisheries sector of Srikakulam district of Andhra Pradesh and to develop a future rehabilitation plan for the well-being of this sector. Thirty five per cent of the respondents were aware of cyclone before hand from the news followed by 20 per cent from fisheries department, friends & internet, and five per cent from relatives. The respondents were highly affected by the cyclone and most of them were victim of such a huge cyclone for the first time. They had enormous losses including property loss, displacement from dwelling, employment loss and some of them experienced human loss due to cyclone. The Governmental support provided isn't enough for curbing such losses. The local committees should be sensitized for the different adaptation and mitigation options. There is a need to provide customized training programmes to increase the awareness towards these natural disasters. Cyclones and floods are natural disasters and are now a days a risk and not an uncertainty. Hence it is wise to plan for mitigating the impacts of such disasters beforehand than waiting for the disaster to happen and blaming the governance systems.

Key words: *Titili*, Cyclone, Marine Fisheries, Srikakulam, Andhra Pradesh.

Introduction:

Andhra Pradesh is one of the predominant fish producing states in the country. The contribution of fisheries sector is 6.4 per cent in Andhra Pradesh Gross State Domestic Product (GSDP) during 2016-17 (Government of Andhra Pradesh, 2018). The fishery sector provides employment opportunities to nearly 14.5 lakh people directly and indirectly in secondary and tertiary sector in Andhra Pradesh. The total fish production in the state during 2016-17 was found to be 20.89 lakh tonnes (22.58 % from marine and 77.42 % from inland). This sector also plays a significant role in reducing poverty and promoting health besides being one of the major contributors of foreign exchange earnings.

Andhra Pradesh has a coastal length of around 974 Km comprising nine coastal districts. The total marine fishermen population in the state is around 6.05 lakh and active fishermen are around 1.5 lakh. The total fishing crafts in the state are around 31,318 with around 14,648 motorized crafts (46.7% of total fishing crafts in the State), 1,871 mechanized (6%) and 14,799 (47.3%) traditional crafts (CMFRI, 2016). The marine fishery infrastructure sector in the State includes four fishing harbours, 349 marine fish landing centers and 555 marine fishing villages. The marine fisheries sector of the state is very much vulnerable to sudden cyclones and related natural disasters.

Srikakulam district is located in the extreme northeastern direction of the state. It is within the geographic coordinates of 18°-20' and 19°-10' N and 83°-50' and 84°-50' E. The district occupies an area of 5,837 square kilometers. Srikakulam is 100 km north of Visakhapatnam. According to the 2011 census the district has a population of 26, 99,471.

The district has the longest coastline (about 193 km) in the state of Andhra Pradesh. It is bordered by Odisha on the north, Vizianagaram district on the west and south, Bay of Bengal on the east. Throughout the year, the climate is characterized by humidity. The South-West-monsoon which follows the summer season lasts up to September. Northeast monsoon Starts from 1st October to the end of November. The period from December to mid February enjoys generally a fine weather. Fishing continues as a main occupation as well as a good source of healthy food for the coastal people of Srikakulam district. However, problems like seasonality of landings and uncertainty of prices in this sector creates vulnerability among the fishers affecting their livelihood. The *titili* cyclone during 11th October 2018 made fisher's life even more miserable.

During this cyclone, around 2,050 people have been rescued from the affected areas, and 15 relief camps have been set up (A.P. state emergency control room). The National Disaster Response Force has deployed seven teams.

While a 62-year-old woman died at Gudivada Agraharam village after a tree fell on her, a 55-year-old man died in a house collapse at Rotanasa village and six fishermen were killed who had ventured into the sea in the Srikakulam district.

According to Fisheries Department, Real Time Governance Website, Government of Andhra Pradesh, damages in Srikakulam district of worth Rs. 38.42 Cr and the assets partially / fully damaged due to *titili* cyclone are as follows:

- Boats & Nets fully lost - 504
- Nets lost / Fully Damaged - 2627
- Boats fully damaged – 177
- Boats partially damaged - 317
- Aqua farms damaged 156- 268.93 hectares
- Shrimp hatcheries damaged - 01

The present study in general is meant to understand the effect of recent *titili* cyclone on the marine fisheries sector of Srikakulam district of Andhra Pradesh and to develop a future rehabilitation plan for the well-being of this sector.

Objectives

The specific objectives are as follows:

1. To estimate the different losses and its impact due to cyclone
2. To assess the level of perception and awareness regarding *titili* cyclone
3. To analyze the involvement of the fishermen in participating relief activities.
4. To identify the critical attributes and provide suggestions for mitigating cyclone in future.

Data and Methodology

The present study is undertaken to assess the impact of cyclone on Marine Fisheries of Srikakulam district of Andhra Pradesh. The study is analytical and descriptive in nature. The universe of the study includes the fishermen respondents from the major cyclone affected areas of Srikakulam district of Andhra Pradesh. The primary data from 60 fishermen from the different fishing villages such as Isakapalem, Ramayapatnam, Battigalluru and Sompeta who were affected by the cyclone are collected using random sampling method. Secondary data from related publications and Real Time Governance website of Andhra Pradesh are also used in the study. Standard statistical and economic tools were employed for analyzing the data.

Results and discussions

Socio-Economic Profile

The demographic profile of the respondents revealed that most of respondents (42%) belonged to the age group of above 45 years and 35 per cent of respondents belonged to the age group of 35-45 years whereas respondents belonging to the age group of below 35 years accounted for 23 per cent of the total respondents. Thirty seven per cent of the respondents have studied up to primary level. While five per cent of the respondents studied up to secondary education and about 58 per cent were illiterates.(Table 1)

Table 1: Socioeconomic profile of the respondents

Age –wise classification of respondents	
Age	Respondents
<35	14(23)
35-45	21(35)
>45	25(42)
Total	60(100)
Literacy level of respondents	
Illiterates	35(58)
Primary	22(37)
Secondary	3(5)
Total	60(100)

Note: Figures in parenthesis indicate percentage to total

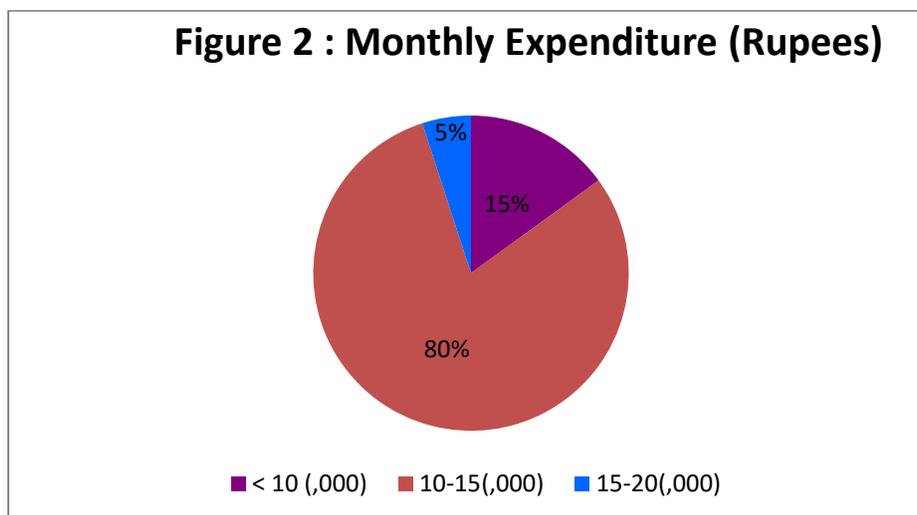
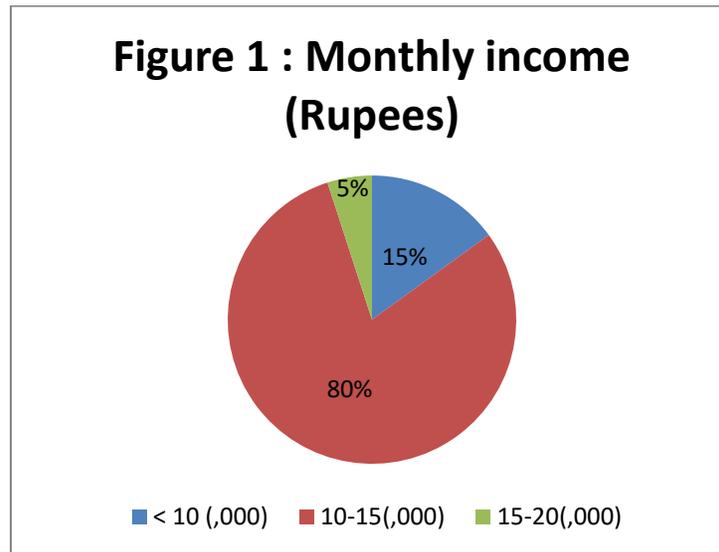
Fishing Experience

It was found that, 53 per cent of the respondents have more than 25 years of experience in fishing, and 47 per cent of the fishermen have experience between 10 and 25 years. On an average 86 per cent of the respondents go for fishing daily, 13 per cent go for fishing on alternate days and only one per cent of the respondents go for fishing weekly twice.

Income and expenditure

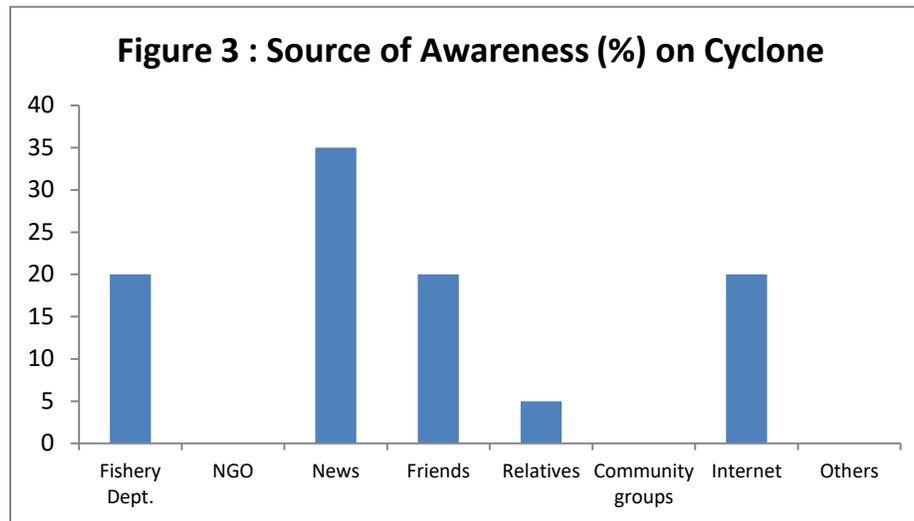
The study also revealed that about five per cent of the fishermen respondents have a high monthly income ranging from Rs.15, 000 to Rs. 20,000 and about 80 per cent of the respondents have high expenditure range between Rs.10,000 and Rs.15,000 (Figures 1 and 2). The income sources of the respondent households comprised of income from marine capture fisheries (72%), business (9%) and labour services (19%). The average monthly expenditure pattern was incurred on the household with a share of 44 per cent for food, 10 per cent for clothing, 5

per cent for fuel, 7 per cent for medical expenses, 8 per cent for education, 12 per cent for durables, 9 per cent for social and religious functions and 5 per cent for entertainment.



Awareness and perception regarding cyclone

Thirty five per cent of the respondents were aware of cyclone before hand from the news followed by twenty per cent from fisheries department, friends & internet, and five per cent from relatives. (Figure 3)



Impact of *titili* cyclone

1. Loss of assets

The respondents were highly affected by the cyclone and most of them were victim of such a huge cyclone for the first time. They had enormous losses including property loss (Table 2), displacement from dwelling, employment loss and some of them experienced human loss due to cyclone.

Table 2: Extent of Asset Loss due to *Titili* cyclone in Srikakulam district of Andhra Pradesh

Items	Extent of Damage (%)		Total loss(Rs.)
	Partial	Complete	
House	56.9	43.10	1,61,293
Gas	79.4	20.5	3,764
Electricity	14.05	85.95	4,298
Drinking water facility	81.50	18.50	1,296
Toilet	71.05	28.95	11,342
Bicycle	57.10	42.90	3,593
Motor Cycle	71.40	28.60	26,714
Durables			
Mixer grinder	71.90	28.10	3,140
Television	43.90	56.10	9,719
Fridge	61.80	38.20	10,411
Fan-Table/ ceiling	73.7	26.30	5,066
Others(Specify):			
Boat (Owned/Rented)	60	40	4,26,233
Fishing gear	58.5	41.5	2,56,660

Source: Primary Survey by VRC of CMFRI, Visakhapatnam - November, 2018.

2. Loss of Employment

On an average 24 days of employment was lost due to cyclone. Since as a victim of cyclone respondents could not go for fishing on the corresponding days. Water gets lodged in nearby areas and made it difficult for going to work. Most of the respondents were relocated to nearby camps, engaged in rescue activities and some of them got typhoid fever and hospitalized due to cyclone and hence made life more miserable without work. The victims expected government support for losses.

The immediate relief measures provided by the Government of Andhra Pradesh to fisheries sector are as follows:

- i) Fully damaged/lost FRP motorized boats: Rs.1.00 lakh compensation.
- ii) Fully damaged/lost mechanized boats: Rs. 6.00 lakh.
- iii) Loss of fishing nets : Rs 10,000/-
- iv) Revival of Fishing activities by fishermen- 50% subsidy on purchase of Nets and Boats amounting up to total value of Rs. 3.00 lakh.
- v) Input assistance for Aquaculture - Rs.30,000/- per Ha for loss of aquaculture.

Source: G.O.M.S.No.13, dated 15-10-2018, Revenue (DM) Department, Government of Andhra Pradesh.

3. Loss of Alternative livelihood

The average loss incurred for the alternative livelihood of the respondents due to cyclone is indicated in the table 4. It is seen that loss incurred for fish farming is about Rs.10, 400 per household.

Table 4: Average loss incurred for the alternative livelihood of the respondents due to cyclone

	Average Income loss per household (Rs.)
Livestock	12,500
Poultry	1,750
Fish	10,400
Agriculture	26,000
Others	1,300

Source: Primary Survey by VRC of CMFRI, Visakhapatnam - November, 2018.

4. Loss of Savings

The average loss incurred for savings of the respondents due to cyclone is indicated in Table 5. It is seen that the average money loss incurred per respondent is Rs.37, 500. Clothes and other loss constitutes about Rs.15, 450/-.

Table 5: Average loss incurred for savings of the respondents due to titili cyclone

Items	Value (Rs.)
Money	37,500
Clothes and Utilities	7,250
Any Others (Vessels / plates) etc	8,200

Source: Primary Survey by VRC of CMFRI, Visakhapatnam - November, 2018.

5. Loss of Health

The impact on health is a serious concern for the respondents. Most of them faced health issues like typhoid fever, cold, cough and related ailments during the cyclone. There were no hospital facilities, doctors or even medicines. Insufficient transportation facilities made the condition very worse thus affecting the health recovering process. It was found that an average of Rs 15,338 has been incurred to meet medical expenses.

Extent of Government support

The extent of A.P. state Government support received by the respondents due to the *titili* cyclone is given in table 6. The amount received due to loss of fishing assets was about Rs. 75,566/-. The level of satisfaction of the respondents was very low towards the government support for the *titili* cyclone relief activities (Table 6).

Table 6: Extent of Governmental support offered to the respondents

Items	Extent of Support		Amount received (Rs.)	Level of satisfaction
	Partial	Complete		
House	58.2	41.8	28,462	Very Low
Electric equipments	33.3	66.7	42,000	Very Low
Agriculture & Livestock	50	50	25,625	Very Low
Fishing assets	43.9	56.1	75,566	Very Low
Medical expense	100		10,000	Low
Saving loss		100	26,666	Medium

Source: Primary Survey by VRC of CMFRI, Visakhapatnam - November, 2018.

Participation in relief activities

Most of the fishermen participated in the relief activities. Around five people have been saved per boat in different turns and a total of 60 numbers of people were saved. But, these fishermen who were involved in rescuing process did not receive any remuneration and government support for the relief activities.

Conclusion

Cyclones have become a recurrent feature in the Indian sub-continent. In India, the east coast is one of the six most cyclone areas in the World. Out of the 1019 cyclonic disturbances that occurred in India during the last 100 years, 890 alone over the east coast (Source: The Hindu, Chennai, dated 19-5-19, page 9). Due to the erratic monsoon the fishers aren't able to adapt / prepare and become aware on these losses. The study indicated that there exist considerable losses in the assets and others for the fisher. The Governmental support provided isn't enough for curbing such losses. The local committees should be sensitized for the different adaptation and mitigation options. There is a need to provide customized training programmes to increase the awareness towards these natural disasters.

Based on the survey conducted and the discussions had with the affected people, the following measures are suggested for mitigating the impact of cyclones in future.

- Information sharing through mobile
- Better governmental support in rescue operations
- Better weather information dissemination mechanisms
- Mapping of cyclone prone areas in advance
- Engaging Local Self Governance (LSG) in information sharing
- Impart training to fishers for carrying rescue operations
- Strengthen inter-governmental linkages
- Awareness campaigns for confronting cyclone

Cyclones and floods are natural disasters and are now a days a risk (as they are predictable with a reasonable degree of certainty) and not an uncertainty. Hence it is wise to plan for mitigating the impacts of such disasters beforehand than waiting for the disaster to happen and blaming the governance systems.

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