

Impact of Cyclone *Amphan* on marine fisheries of Odisha

S. S. Raju^{1*}, Subal Kumar Roul², Prakash Chandra Das², Shubhadeep Ghosh¹ and R. Narayana Kumar³

¹Visakhapatnam Regional Centre of ICAR-Central Marine Fisheries Research Institute, Visakhapatnam -530 003, Andhra Pradesh

²Field Centre of ICAR-Central Marine Fisheries Research Institute, Puri-752 002, Odisha

³Madras Research Centre of ICAR-Central Marine Fisheries Research Institute, Chennai-600 028, Tamil Nadu

*E-mail: ss.raju@icar.gov.in

Introduction

Odisha has a coast line of 480 km with six coastal districts: Ganjam (60 km coast line), Puri (155 km), Jagatsinghpur (67 km), Kendrapara (68 km) Bhadrak (50 km) and Balasore (80 km). With 813 fishing villages and a fisherfolk population of six lakhs (CMFRI, 2010) marine fisheries of Odisha has an important role in the socio-economic development of the state.

The east coast of India is one of the six most cyclone prone areas and of the 1019 cyclonic disturbances that occurred in India during the last 100 years, 890 alone were over the east coast. An area of low pressure was developed in the south-eastern Bay of Bengal about 1,020 km to the south-east of Visakhapatnam, Andhra Pradesh on 13th May, 2020 and in due course of time it became a cyclonic storm where it was named as *Amphan*. On 17th May, 2020 the *Amphan* rapidly intensified into an extremely severe cyclonic storm, with an increase in wind speed from 140 km/h to 215

km/h. The *Amphan* made its landfall in West Bengal on 20th May, 2020. It was a powerful and deadly tropical cyclone that caused widespread damage in eastern India, specifically northern Odisha, West Bengal and Bangladesh. In the present communication, a preliminary assessment of the damage to marine fisheries along Odisha coast has been made based on the information collected from various sources such as telephonic discussion with local Fishery Officers, fishermen, reports of Odisha fishery department, reports from Special Relief Commissioner, Government of Odisha and other media sources.

Economic losses and Damage assessment

Only four districts of Odisha namely Jagatsinghpur, Kendrapara, Bhadrak and Balasore were affected severely by Cyclone *Amphan* and ₹10,59,57,000 was estimated as financial losses in marine fisheries sector (Table 1).

Table 1. Amphan cyclone- Preliminary damage assessment of damage to marine fishery in Odisha (₹)

Item damaged	Approx. Financial Loss (₹)
Crafts	9,96,000
Katcha Houses	4,60,000
Marine Fishery Infrastructure	12,00,000
Employment and income loss of fishermen	7,68,00,000
Employment and income loss of marketing and processing persons	2,65,00,000
Health Loss	1,000
Total	10,59,57,000

Source: Estimated from various Government sources

Table 2. Loss estimated due to craft damage

District	Loss due to Partially damage of Mechanized Trawler per unit ₹20,000. (Approx.)	Loss due to Partially damage of IPBB/ OBFT* per unit ₹8,000. (Approx.)	Loss due to Fully damage of NPBB** per unit ₹40,000. (Approx.)	Loss due to Partially damage of NPBB** per unit ₹5,000. (Approx.)	Total
Jagatsinghpur	1,40,000 (7)	32,000 (4)	Nil	80,000 (16)	2,52,000 (27)
Kendrapara	Nil	1,20,000 (15)	Nil	Nil	1,20,000 (15)
Bhadrak	20,000 (1)	56,000 (7)	Nil	10,000 (2)	86,000 (10)
Balasore	4,00,000 (20)	48,000 (6)	40,000 (1)	50,000 (10)	5,38,000 (37)
Total	5,60,000 (28)	2,56,000 (32)	40,000 (1)	1,40,000 (28)	9,96,000 (89)

*IPBB- inboard plank built boat

*OBFT-outboard fibre teppa

**NPBB-Non-motorized plank built boat

Figures in bracket indicate number of units.

There were no losses recorded due to damage of fishing gears and losses of craft damage are tabulated in Table 2. The highest numbers of partially damaged crafts were recorded for Balasore District (36) followed by Jagatsinghpur (27), Kendrapara (15) and Bhadrak (10) whereas, only one fully damaged craft was recorded in Balasore and total loss estimated at ₹9,96,000 (Table 2).

About 115 kuchha houses were damaged during the cyclone with highest number recorded for Balasore (45) followed by Kendrapara (30), Jagatsinghpur (25) and Bhadrak (15) and total losses estimated at ₹4,60,000 (Table 3).

About ₹12 lakhs was estimated as losses for marine fishery infrastructure. Partial damage of Paradeep fishing harbour, Jagatsinghpur whereas, severe damage recorded for Dhamara fishing harbour, Bhadrak was estimated (Table 4).

Employment and income loss of fishermen: Altogether 19,200 fishermen were affected due to the cyclone across

the four coastal districts of Odisha with highest record for Kendrapara followed by Balasore, Jagatsinghpur and lowest was for Bhadrak district. Due to the advance warning of India Meteorological Department (IMD) and local administration, fishermen were not allowed for fishing and other activities since 15.05.2020. They have lost their income/livelihood nearly 10 days from 15th to 25th May, 2020. The total employment and income loss to traditional fisherman of Odisha due to *Amphan* Cyclone was estimated about ₹7,68,00,000. Highest loss

Table 3. Loss of Kuchha house damage due to Amphan Cyclone in Odisha

District	Loss due to partially damage of kuchha house *
Jagatsinghpur	1,00,000 (25)
Kendrapara	1,20,000 (30)
Bhadrak	60,000 (15)
Balasore	1,80,000 (45)
Total	4,60,000 (115)

Note: Figures in bracket indicate number of units.

*per unit ₹4000 (Approx.)

Table 4. Loss of Marine fishery infrastructure due to Amphan Cyclone in Odisha

District	Type of infrastructure	Extent of damage	Amount required for restoration (₹) (Approx)
Jagatsinghpur	Roof, doors and windows of auction hall of Paradeep Fisheries Harbour.	Partially	5,00,000
Kendrapara	Nil	Nil	Nil
Bhadrak	Roof, Glass and gate of Dhamara Fisheries Harbour, Bhadrak.	Severely damaged	7,00,000
Balasore	Nil	Nil	Nil
Total			12,00,000

Table 5. Employment and income loss of traditional fisherman of Odisha due to Amphan Cyclone

District	Fishermen affected	Days lost per fisherman	Average income per day (₹)	Total Employment lost (man days)	Total income loss (₹)
Jagatsinghpur	~4,300	10	400	43,000	1,72,00,000
Kendrapara	~6,400	10	400	64,000	2,56,00,000
Bhadrak	~3,800	10	400	38,000	1,52,00,000
Balasore	~4,700	10	400	47,000	1,88,00,000
Total	19,200	10	400	1,92,000	7,68,00,000

Table 6. Employment and income loss of marketing and processing persons related to marine fisheries of Odisha due to Amphan Cyclone

District	Active Traditional Fishermen (Approx.)	Fishermen in auction, trade, small businessmen etc. (Approx.)	Fishermen in Dry Fish and fish processing (Approx.)	Miscellaneous (Approx.)	Total income loss* (₹)
Jagatsinghpur	1000	500	400	100	50,00,000
Kendrapara	1500	750	600	150	75,00,000
Bhadrak	1200	600	480	120	60,00,000
Balasore	1600	800	600	200	80,00,000
Total	5300	2650	2080	570	2,65,00,000

*@₹500 per day for 10 days

for the same was recorded for Kendrapara followed by Balasore, Bhadrak, Jagatsinghpur and lowest was for Bhadrak district (Table 5).

The total employment and income loss of marketing and processing persons was estimated about ₹2.65 lakhs with highest loss in Balasore followed by Kendrapara, Bhadrak and Jagatsinghpur districts (Table 6).

More than 1.4 lakh people were shifted to shelters in coastal Odisha. The Odisha Government took a more targeted evacuation approach than during previous cyclones where more widespread evacuations were made thereby minimising damage to life. No cases were recorded for the damage of hatchery and mariculture activities across the four districts. Damage to electricity lines were restored by the distribution agency within 3 to 4 days of cyclone and no major damages for drinking water were recorded during the period.