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## Impact of Yaas cyclone on shrimp farming along the coastal belt of West Bengal and Odisha

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#### Abstract

Shrimp farms in the states of West Bengal and Odisha suffered extensive damage after a major cyclone made landfall in India's eastern coast last year. The agricultural industry in West Bengal was severely impacted by the cyclone Yaas. The farms won't be used to produce shrimp until the end of the year due to floods brought on by the cyclone. A total of roughly 3,000 hectares of shrimp farms in the coastal districts of the two states were inundated by Yaas, resulting in "vast financial losses" for the shrimp farmers. The devastating hurricane Yaas hit the coastal shrimp producers of West Bengal and Odisha, stunting their economic and social development. Damage from the cyclone to the shrimp farms in the two states is estimated at between 2,000 and 5,000 hectares. Around 12,000 tons of shrimp were lost as a result of the severe cyclone and breaches of embankments. The aftermath of such disasters is still being felt in these places. The government and authorities responsible must take the appropriate measures to recover from the setbacks.

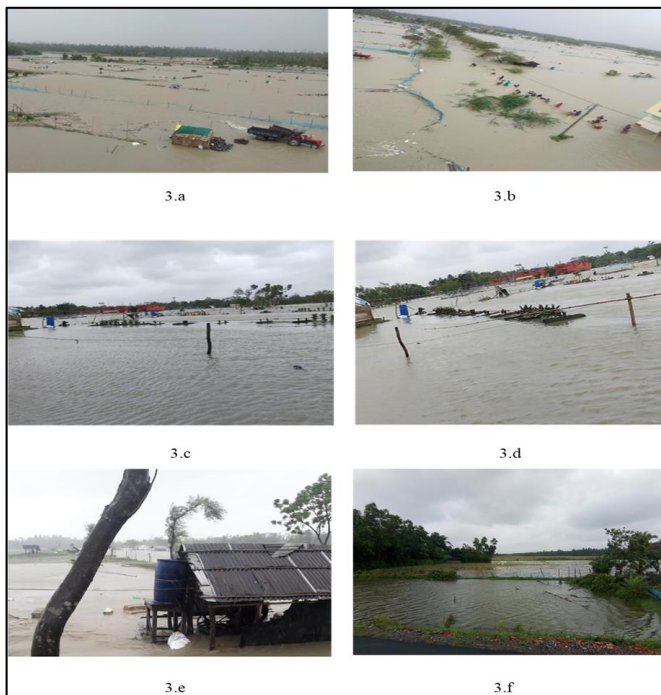
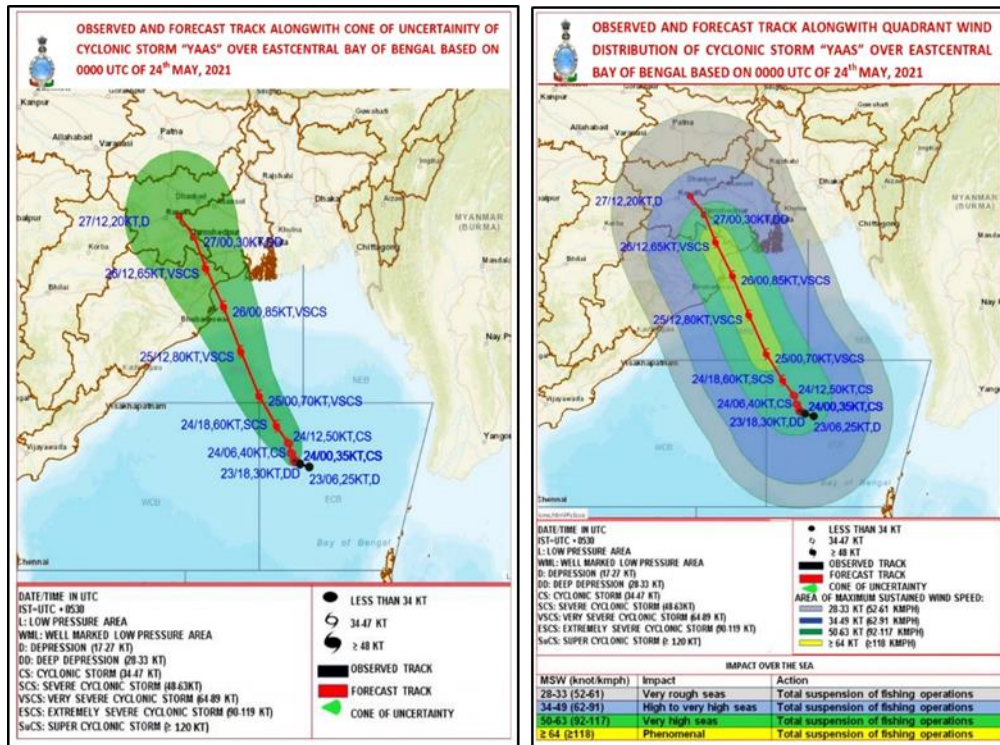
**Keywords:** Yaas, shrimp farm, cyclone, West Bengal and aquaculture

#### Introduction

#### Impact of Yaas on the coastal shrimp farming in West Bengal & Odisha

One after another cyclone has been hitting the shore regions of Bay of Bengal in the last few years. The terrific tropical cyclone Yaas was one of them. The annual frequency of tropical cyclones has grown during the past 25 years by 0.0492 cyclones annually. It was observed that the Bay of Bengal experiences a cyclone every 9.49 weeks (Green Sea *et al.*, 2021) [8]. The cyclone Yaas hit the coast of West Bengal & Odisha on 26<sup>th</sup> May of 2021 (Fig. 1 and 2). The wind speed of Yaas cyclone increased up to 150 km/h ( $\geq 64$  KT) (Kundu and Santhanam, 2021) [10] starting from a speed of 52-61 km/h (28-33 KT) with a high tidal inundation (Indian Meteorological Department, 2021) [9]. COVID-19 outbreaks appear to be exacerbated during this time, but effects of the Yaas cyclone have been proved devastating for the people and also the shrimp farming sector of West Bengal & Odisha (Pradhan and Dash, 2021) [14, 15]. The severe cyclone in West Bengal and Odisha had an impact on state exports of India's aqua products, which rely heavily on shrimp and processed shrimp products, by 15% to 20% (The Times of India, 2021) [24]. This Yaas cyclone and Covid pandemic was ambivalent destructive mood for shrimp farming in the coast of West Bengal & Odisha. Fishers' efforts are hampered by the cyclone's inclement weather conditions (Green Sea, 2021) [8]. The covid pandemic has already caused huge losses in shrimp farming and other allied sectors in India (Bhanja *et al.*, 2023) [5]. The Cyclone Yaas has devastated thousands of hectares of coastal shrimp ponds in West Bengal & Odisha. Shrimp farms & their machinery were heavily damaged by the cyclone Yaas (Fig. 3). As per Govt. reports the total damages from all sectors in West Bengal (2021) were estimated to be around Rs. 20 thousand Crore or US\$2.76 billion, while a report by gov. of Odisha (2021) the total damages in Odisha by the cyclone were estimated to be around Rs. 610 crores or US\$83.63 million (Times of India, 2021) [24].

CNN reports Yaas cyclone was getting gusts of up to 140 kilometres/hour between 10.30 and 11.30 hours (Mutter, 2021) [12]. In the past 100 years, a number of 508 cyclones were formed in the Bay of Bengal, revealed according to the governmental historic records. According to the meteorology department India had faced about 117 numbers of cyclones from 1970-2019. After Amphan, the second very severe cyclonic storm of the 2021 North Indian Ocean cyclone season, strengthening to a Category 1-equivalent tropical cyclone (Indian Meteorological Department, 2021) [9].



**Fig 3:** Shrimp farms & their machinery were heavily damaged by the cyclone Yaas (Source: Authors)

The coast of West Bengal & Odisha is one of the most hazardous areas in terms of number of people suffered by variety of cyclonic surges every year. The severe cyclone Yaas deviously struck down the socio-economic growth of the coastal shrimp farmers of West Bengal & Odisha. About 2,000-5,000 hectares of shrimp farm of the two states were destructed due to the devastating cyclone (Pradhan, 2021) [14, 15]. According to Aquapost (2021) [3], the low-lying areas in the coastal belt of West Bengal and Odisha like -Medinipur, South 24 Parganas, Kendrapada and Jagatsinghpur were

drowned by the tidal waves of height 1-2 meters above astronomical tide. On the other side tidal waves about 2-4 meters are inundate low lying areas of Bhadrak, Balasore district. Head sales officer of IFB Agro, Bishal Acharjee told that, an estimated area of 1,000-1,200 hectares shrimp farms across Ramnagar-I & II block, Pichaboni, Khejuri, Nandigram, Terapekhya, Amtalia, Namkhana, Raidighi, South 24 Parganas (Sagar areas) were badly affected (Aquapost 2021) [3]. Approximately 1,400 acres of land in the Kendrapada district of Odisha was badly hit by the severe cyclonic storm. The embankment was damaged in several places by the effects of cyclone Yaas, and many farmers had lost both his cropland and shrimp farm (Ahamed, 2021) [1]. In West Bengal, Cyclone Yaas damaged about 136 flood barriers (Palit, 2021) [13]. Houses flattened and acres of land destroyed due to breaches in embankments in the coastal areas of both Odisha & Bengal.

State authorities of Bengal revealed around 1,100 villages had been flooded by the storm (Reuters, 2021) [16] (Fig. 5). On the other side Odisha listed around 120 villages had been swamped by sea water and heavy rain whipped up by the cyclone, near the river Rasulpur embankment, there 75 shrimp farmers were affected due to breached of that river (Singh, 2021) [21]. In a report of the Times of India (2021) [24] the chief secretary of West Bengal govt., Alapan Bandyopadhyay indicates that a total of 1.6 lakh hectares of agricultural land have affected by the disaster. The cost of small size shrimp has increased in the market. Immediate after the cyclone prices for small shrimp sizes, like 41/50 gm, are "soaring" to almost \$6.70/ kg (Mutter, 2021) [12].

In Odisha, the cyclone affected 60 lakh people in 11,000 villages (Palit, 2021) [13]. According to the regional manager (Sales) of Growell Feed shrimp farmers of Balasore, Bhadrak, Kendrapara and Jagatsinghpur had incurred massive losses (Aquapost 2021) [3]. Indian Meteorological Department [9] issued an information (IMD report, 2021) that Odisha was

experienced light to moderate rainfall at most places with heavy to very heavy rainfall and extremely heavy rainfall ( $\geq 20$  cm) at several places in Mayurbhanj, Keonjhar, Dhenkanal, Jajpur, Deogarh, Sundergarh & Angul & heavy to very heavy rainfall over Balasore, Bhadrak, Kendrapara, Jagatsinghpur in Odisha (Wikipedia, 2022) [26], (Indian Meteorological Department, 2021) [9]. There approximately 10,000 shrimp and fish farmers of the coastal district Kendrapara and nearby areas of Odisha were shattered hopes due to the heavy rain and severe cyclone (The new Indian Express, 2021) [23]. In Odisha embankments were breached at over 4000 ponds, apart from several others in Chandaneswar, Bradhanpur, Talapada, Dharma, Rajnagar, Talchua, Silda, Parikhi, Chandipur, Avana, Inchudi, Basudevapur, Kasia, Karanpalli, Karanjama, Chandbali, Rajkanika, Dangmala, Jamboo, Saratha. There around 12,000 tonnes of shrimp had got lost due to the severe cyclone & breaches of embankments, revealed by Rajarshi Banerji, president of Seafood Exports Association of

India (SEAI), West Bengal region (The Times of India, 2021) [24]. On another report by Aqua Culture Asia Pacific (2022) stated that around 20,000 tonnes of shrimp were lost due to the flooding of ponds and the loss of infrastructure. Up to 25-30% that matured crop had been lost, where almost 80-90% seeding was completed during that time (Dao, 2021). The estimated value of shrimp loss in only Purba Medinipur was around Rs 900-1,000 crore or \$130 million (The Times of India, 2021) [24].

Shrimps which were washed away from the farms in the storm and heavy rain, were caught by the local people and sold them in the local market at a diminish price Rs 80-100 (approx. \$1.33)/ kg at several places in Purba Medinipur (Fig. 4). Normally shrimps have a retail price of around Rs 350-400 (approx. \$6)/ kg. In Namkhana block of South 24 Parganas, shrimp price came down to Rs 100-150 (approx. \$1.5)/ kg compare to the price of Rs 600-650 (approx. \$8.79)/ kg for those customize sized shrimp.



**Fig 4:** The Villagers were caught shrimps that swept away from the shrimp farms (Source: Authors)



**Fig 5:** Villages are inundated as a result of the embankment breached by heavy rainfall due to the Yaas (Source: Authors)

The coastal shrimp farmers of Odisha, especially farmers of Rajnagar were faces huge losses in shrimp farming. Aquaculture industry in Odisha estimated a loss of over Rs 1500 crore following the recent cyclone Yaas. According to the President of Odisha Marine Fish Producers' Association, massive losses have been experienced by the shrimp

producers in Balasore, Bhadrak, Kendrapara, and Jagatsinghpur of Odisha (The New Indian Express, 2021) [23]. In Kendrapara district of Odisha 729 registered shrimp farmers with over 1400 acre of land, were faces several damages and losses (Senapati; The Times of India, 2021) [24]. In the coastal regions of Baliapal and Bhograi in the Balasore

district of Odisha, water logging resulted in the flooding of more than 2,000 hectares of shrimp farms (Sahu, 2021) <sup>[17]</sup>. Average 20gm size shrimps were swept away from the gharries in different areas of Balasore, Dhamara, Rajnagar. Approximately 70% shrimp farmers were faces huge losses, estimates by different media reports. Approximately 240-250 shrimp gherries had been badly affected only in Kankadapal village of Balasore district (Mohanty, 2021) <sup>[11]</sup>. According to an official report by the AFO (Assistant Fishery Officer) of Baliapal (Balasore), there at least 222 affected farmers registered under the CAA (Coastal Aquaculture Authority) for compensate due to the losses in the cyclone.

According to the MPEDA annual report (2021) the overall export of shrimp during 2020-21 was to the tune of 5,90,275 MT worth USD 4,426.19 Million compare to 6,52,253 MT worth USD 4889.12 Million in 2019-20 had a total decrease of 9.50%. The export of *Vannamei* shrimp had decreased from 5,12,204 MT to 4,92,271 MT in 2020-21. The manifestation of that terrible cyclone and its regarding flood was the main reason for this decline performance.

Where the terrific cyclone had stalled the moving growth of shrimp farming, another side it devastated the business of feed and shrimp suppliers and exporters (Singh, 2020) <sup>[20]</sup>. When the shrimp farmers eyes for a good yield better than the previous year, the combined hit by pandemic and cyclone had made normal business operations impossible. The diesel-run generators and aerators of the farms were severely damaged. The net fencing boundaries of the farms had also been damaged.

However, after that disaster the central govt. had announced a relief fund of about Rs. 1,000 crore (US\$138 million) in immediate split between West Bengal, Odisha, and Jharkhand on May 28, 2021. The state govt. of West Bengal also announced a relief package of Rs. 1000 crore in a scheme, named “Duare Tran” or Doorstep Relief (Banerjee, 2021) <sup>[4]</sup>. On other side according to a report of the Engineer-in-Chief, Water Resources Department of the Odisha Government, that the state had declared a plan at an estimated investment of Rs 1,944 crore to construct 380-km embankment (Senapati; Down to Earth, 2021). The Odisha Govt. granted a financial assistance of about Rs. 4,208,072 to the fish farmers of Sadar, Bahanga, Balipal, Jaleswar, Bhograi, Remuna, Soro, Oupada, Simulia blocks (Govt. of Odisha report, 2021). In order to ensure efficient coordination of civil society capacity for assessments and effective response, UNICEF is providing support to Interagency Groups (IAG) in West Bengal and Odisha (UNICEF, 2021) <sup>[25]</sup>.

## Conclusion

The facing of cyclonic disasters fury is quite natural for the inhabitants of coastal areas. In the recent years we have witnessed many cyclones, such as Amphan, Aila and several others disasters. But no one of them is in the comparison of Yaas, which devastated the coastal areas in just few minutes. In the very present environmental situation, the changing nature of the climate condition is making the disasters as a regular phenomenon. So, in this situation the prime necessary thing is to find a permanent solution to control all the adverse effects of these environmental situation, or else the fish farmers will be ruined every time. Strong embankments are one of the necessary things to do first, which can ensure to stop the sea and canal waters from entering the farming

ponds. It is also important to ensure the strong informative weather forecast about storms, that can make high pre-preparedness before the disasters. The Electricity department should also support the farms by ensuring continuous electric management through modern underground power supply system. At last, the Govt. should develop a better management environment to control these types of nature's fury. The last but not the least, plantation of mangroves, which can effectively reduce the devastation of natural calamities as well as protect our farm and farming activities. In our District of Purba Medinipur, few places of coastal area like- Sankarpur, Tajpur, Mandarmoni etc. naturally mangrove covers significant amount of land mass. But greater impact should be enforced through Govt. initiative and attention drawing from different private sectors.

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