Brief Communication

Pufferfish poses challenges to fishers of the Ratnagiri Coast

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Pufferfish, characterized by their unique ability to inflate and their potential toxicity due to tetrodotoxin, have historically been seen as a bycatch with limited commercial value. Parts of their body, particularly the liver and gonads, are also toxic to humans due to the presence of tetradotoxin (TTX), a neurotoxin causing asphyxiation and death. Although fishers have normally avoided targetting pufferfish, some states like Kerala and Tamil Nadu have integrated these species into their catch due to increasing domestic and export demands (Remya *et al*., 2024). Consumption of thoroughly processed pufferfish is a prevalent practice in Japan, China, and Korea, and increasingly being adopted in India. The burgeoning populations of pufferfish has been attributed to the overfishing of their natural predators highlighting the need for sustainable fishing practices and the conservation of predator species to maintain ecological balance. The damage caused by pufferfish to fish nets and other catches has not been formally estimated but is believed to be substantial (Mohamed *et al*., 2013). The coastal region of Ratnagiri has recently been facing a significant challenge due to the increasing presence of pufferfish, specifically *Lagocephalus spadiceus* and *Lagocephalus guentheri*. This phenomenon was first observed between August 15th and 17th, 2024 with moderate aggregation of pufferfish along the Jaigad coast. The intensity of their presence began to rise from the first week of October, peaking in the second week and then declining by the third week. By the first week of November, the aggregation had significantly decreased. Similar occurrences were noted at Mirkarwad and Zakimirya. Primarily observed at depths ranging from 7 to 20 meters in both southwest and northwest directions from the Ratnagiri coast it affected the operations of ring seiners and gill netters. Notably pufferfish menace in purse seiner and trawling operations were absent.

The pufferfish observed measured between 15 to 23 cm in total length and weighed between 150 g to 260 g. When encircled by outboard FRP ring seiners, pufferfish exhibited voracious predatory behaviour, preying on other fish caught within the nets and also caused significant damage to the net panels, gnawing through them to escape. Gillnetter fishers faced similar issues, although to a lesser extent. Hence, several catches of commercially valuable species such as Indian mackerel, seer fish, False trevally, and Indian silver pomfret were affected. Interestingly, species such as Indian oil sardine, Lesser sardines and *Thryssa* sp., were not preyed upon by the pufferfish. The fishes attacked by pufferfish had low market value, resulting in significant financial losses for fishers. During the pufferfish menace, there was a notable abundance of Indian oil sardine, Lesser sardine, and Indian mackerel along the Ratnagiri coast that could be tapped by seines. However, in the first week of October 50% of ring seiners suspended their operations due to the pufferfish menace, and further to 90% by the second week of October as damage to nets and resulting cost of repairs along with the low market value for damaged fishes discouraged fishers. There was also no provision for fishers to seek compensation for damaged nets. Fishers reported that approximately 15 to 30 percent portion of their nets were damaged by pufferfish bites. Replacing the damaged net panels with new ones cost around ₹450 to ₹600 per kilogram through the efforts of 7 to 10 net menders, with daily wages ranging from ₹600 to ₹800 per person. On average, 50 to 60 kg of new net panels were needed, and it took 3 to 4 days to repair the damaged nets that incurred losses ranging from ₹50,000 to ₹80,000. Most of the pufferfish escaped the ring seines by gnawing through them after voraciously preying on the caught fish. The remaining pufferfish in the nets were sold for

fishmeal at rates between ₹14 to ₹19 per kilogram. The income from these sales could not cover the losses incurred due to net damage, ultimately leading fishers to suspend their operations.

At present, there is no policy support for financial assistance in cases of damaged fishing nets and catch due to pufferfish menace. Effective management and mitigation strategies to support the livelihoods of the local fishing communities while maintaining ecological balance is needed. Fishers of Kerala and Tamil Nadu are adopting ways to utilize the catch through processing and value addition for export to deal sudden rise of the puffer fish catches.

References

Remya *et al.,* 2024. *Mar. Fish. Infor. Serv. T & E Ser.,*(261): 15-18.

Mohamed *et al.,* 2013. *Current Science*, 104 (4): 426-429.