

REPORT ON MASSIVE FISH DEATHS IN THONDAMANARU LAGOON, JAFFNA, SRI LANKA

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Thondamanaru lagoon is one of the most productive lagoons in the Northern Province of Sri Lanka. It supports profitable shellfish and finfish fisheries. There are three existing structures namely barrage with sluice gate, sand bar and bridges. The barrage with sluice gates was erected at a point about quarter mile from the mouth of the lagoon in 1953 by the irrigation department to prevent sea water entering the lagoon and retain the rain water and creating a freshwater lake. Fish death in an aquatic ecosystem is a natural process and it is caused due to lack of oxygen, parasitic infections, predation, disease outbreaks or stress and aging. On 18th April 2014, a massive fish death was observed on the shores of Thondamanaru and around the barrage area located in front of the field work centre. There were no fish deaths from the barrage to the sand bar. To investigate the reasons for fish death, water quality parameters, such as, dissolved oxygen (DO), oxidation reduction potential (ORP), temperature and pH of water samples collected from Thondamanaru lagoon on 18th and 19th April 2014 were measured using a multiparameter. Salinity was measured using a refractosalinometer. Low levels of DO (2 mg L^{-1}), high atmospheric temperature ($32 \text{ }^\circ\text{C}$), alkaline pH (8.1) and high salinity (42 ppt) were observed. Due to very warm atmospheric conditions in those days, water has evaporated to a greater level. Therefore, dissolving ability of oxygen was reduced and salinity was increased. Thus, the water level of the lagoon had dropped below the sand bar as a result of the drought and also sand bar and barrage prevented the free flow of water between the sea and the lagoon. Therefore, fishes were unable to tolerate the high salinity, low oxygen and absence of water which were the reasons for fish mortality in Thondamanaru lagoon. ORP value was 48 - 50 mV which is not suitable for fish health. Among the dead specimens, *Chanos chanos*, *Hemirhamphus* sp., *Nematalosa* sp., *Mugil cephalus*, *Penaeus indicus*, *P. monodon*, *P. latisulcatus*, *P. semisulcatus*, *Metapenaeus monoceros*, *Portunus pelagicus* and *Scylla serrata* were observed. Fingerlings and adult stages of *Gerres* were found in high number in the mass fish grave. However, it was noted that eels and catfish were alive during these days. The Thondamanaru lagoon is being subjected to adverse environmental conditions that threaten its fish and shellfish biodiversity due to lack of saline water and changes in the rainfall pattern. Continuous long term monitoring of this lagoon is very important for their management plans to conserve this lagoon.

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