

Water quality fluctuations under floating net cages for fish culture in Lake Cirata and its impact on fish survival

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Abstract Vertical profiles of water quality were surveyed before and after mass mortality of fish cultured in cages in Lake Cirata, a man made lake in Indonesia. The first survey was performed 4 months before the mass mortality and the second survey was carried out 4 days after the mass mortality. In the first survey, the conditions below 8 m depth were reductive and anoxic, although at 8 and 10 m depth, the water became oxidative in spite of low oxygen concentration in the second survey. These changes were probably caused by strong mixing of surface water with deeper water. Eight months after the mass mortality, when the redox potential at 8m became reductive again, exposure tests of fish were performed in different layers in the water column around the cage. During the exposure tests the redox potential of the water was less than -100 mV and 93% of carp died within 6 h of exposure at 8 m depth. These results indicated that the mass mortality was caused by the strong mixing of surface water with reductive water in deeper layers.

Key words : cage culture - carp - catfish - man made lake - mass mortality - milkfish - stratification