

Biological Treatment of Organically Polluted Sediment Deposited on the Marine Bottom

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In the past three decades, fish net pen culture has developed in the coastal water in Japan. However, a serious organic pollution of the surrounding water and marine bottom followed the development of this new style of fishery. Oxygen depletion of the bottom water and extremely reduced condition of the bottom sediment occur around the fish farms every summer. The organic pollution by the fish culture is still progressing. We need to create a new technology to decompose the organic matter deposited below the net pens efficiently with minimum cost for sustainable development of the fish net pen culture.

We have attempted to treat the organically polluted sediment which is deposited on the marine bottom just below fish net pen culture, using biological activities of a deposit feeding polychaete, *Capitella* sp. 1. This species possesses very unique ecological characteristics as concentration of distribution on the organically polluted areas, extraordinarily large potential for population growth and extended breeding season almost throughout the year. The environmental conditions on the marine bottom just below fish net pen culture were reproduced in the tubs in the laboratory. In the experiments with these tubs, the organic matter deposited on the sediment was quickly decomposed by the biological activities of the rapidly increasing population of this polychaete in the sediment. The levels of organic matter of the sediment only slightly increased throughout the period of the experiments. The promotion of organic decomposition significantly prevented the generation of reduced conditions of the sediment. We are trying to put the mass culture of this polychaete on the organically polluted sediment in the field to test how quickly the colonies of the polychaete can improve the chemical characteristics of the sediment. We will introduce the basic concept of the technics how to treat the organically polluted sediment with the biological activities of the polychaete.