CULTIVATION OF CLAMS IN THE TIDAL FLAT CONSTRUCTED IN THE EUTROPHIC ENCLOSED COASTAL SEA AREA

HAJIME MIYAZAKI[1], TOMIO YAMASAKI[1], TAKATOSHI TANIMOTO[1], TAKEHIKO HIWATARI[2], AND KUNIO KOHATA[2]

[1]Hyogo Prefectural Institute of Public Health & Environmental Science, 3-1-27 Yukihira-cho, Suma-ku, KOBE, 654-0037 JAPAN

[2]National Institute for Environmental Studies, 16-2 Onogawa, Tsukuba-Shi, Ibaraki, 305-8506 JAPAN

In Japan, we have paid efforts to reduce controlled the concentration of COD (Chemical Oxygen Demand), nitrogen, phosphorous in waste water according to by counter measures to restrict effluent of pollutants as the plan for reduction of total pollution load and counter measures to restrict effluent of pollutants. Although we have got The effort results in a success such as the decrease in of the occurrences of red tide., rRecently people hope the restoration of the water coastal environments that they can to be familiar with able to swim or gather seashells in a beach. Unfortunately, most of enclosed coastal areas close to large cities are too eutrophicated for benthos to survive. The areas receive it is not only get a lot of pollution load from urban or industrial areas, and but it is difficult to water exchange between the areas and outer the sea is restrictedwater in enclosed coastal seas. Coastal areas are generally expected to show Usually, they cause eutrophication. Therefore, it is so difficult for benthos to survive that those seas lose the high self-purification capacity. However, poor benthic fauna loses the capacity in such the eutrophicated coastal areas.

Amagasaki Port is athe typical eutrophic enclosed coastal sea. To aassessccess develop the technologies to purify eutrophic enclosed coastal seas, the artificial tidal flat(12m×32m) was constructed in the port in March, 2002. We have started cultivating clams in this tidal flat to restore evaluate the self-purification capacity by the clams on the artificial flat in the eutrophic enclosed coastal sea since March, 2002, comparing that with those in a natural tidal flats .flat.

Although clams survived and greow well(Survival rate was more than 80%) from March to July, almost all clams died in August when after dissolved Oxygen decreased to 2.4C/L in the bottom layer in August in summer(Water temperature often rise 30C.) almost clams died. From March to July, clams assimilated nitrogen (18.8(g/m2)) and phosphorous (1.86(g/m2)) as well as those them living in the natural tidal flats.To conserve clams, wWe have cultivated clams in a cage at 3m depth hanging from a raft in another sea area ofin Amagasaki Port. Fortunately, 40% of clams survived and continued growing in the cage during the for summer season and continued growing.

Furthermore, significant number not a few(more than 160) of juvenile clams appeared on the artificial tidal flat after September. The juvenile clams that were less than 0.5Cof wet weight have occurred after September, they and have continued growing well there.

We concluded that; (1) the method using As a result, we could apply clams could evaluate the self-purification capacity of tidal flats from experimentally obtained to assimilateion rates of nitrogen and phosphorous by clams, and (2) the variety of environmental conditions make clams survive for summer when dissolved oxygen decreased in the bottom layer. We are investigating the completion of the life history and the reproduction of clams through cultivating juvenile clams.