Management of the Ecosystem in the Seto Inland Sea

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The Seto Inland Sea is a semi-enclosed sea with 23,203 km^2 of area and 38.0 m of mean depth, which were subject to severe eutrophication and pollution in the 1970s. A Total Pollutant Load Control System (TPLCS) has been implemented since 1979 and contributed to decline the pollutant loads from land and to improve water quality. In this stage, highly sustainable coastal management techniques are required to maintain high water quality without the remarkable decline of biological productivity. However, the basic knowledge of ecosystem structure in the sea is lacking. We estimated the distribution of temporal and spatial primary production in the sea and then the production of zooplankton was estimated in some parts of the sea. The decrease in the primary production was estimated about 20% from the first half of the 1980s to present even if the reduction of total nitrogen and total phosphorus from land was 40% and 61%, respectively, since nutrient load from the connecting sea (the Pacific Ocean) is dominant in the sea. Moreover, large reduction of the primary production was observed near the coast, where chlorophyll-*a* concentration was still high and high primary production would not be transferred to the second production by zooplankton. Therefore, the reduction of phytoplankton growth in the coastal area is still required without the reduction of production in offshore area. The nutrients absorption by seaweed and seagrass in the growth period of phytoplankton was evaluated to develop the measure to control excess growth of phytoplankton in the coastal area.

Keywords: environmental management, nutrient, seaweed bed, biological productivity

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