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Nutrition management inferred from the marine environmental changes in Osaka Bay, Japan

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Abstract

Introduction:

The Seto Inland Sea Environment Conservation Basic Plan is a plan that should be the basis for the conservation of the Seto Inland Sea environment, which is formulated by the government based on Article 3 of the Seto Inland Sea Environment Conservation Law. It is a remarkable point that as a change (revision) content regarding "water quality conservation", in addition to conservation for preventing water pollution, the viewpoint of "management" has been added to the goal of water quality conservation.

Methods and Results:

Osaka Bay, which is the focus of this study, is a characteristic sea area in the Seto Inland Sea where the balance of nutrients in the inner part of the bay (overnutrition) and offshore (nutrient deficiency) has recently been pointed out, and following Tokyo Bay and Ise Bay, it is positioned as a closed sea area where environmental management should be tackled. In this study, we performed an environmental evaluation using a multiple regression model, and these graphs showing the normality of the model, the variance, the data order and the stability of the estimated red tide index showed a state with a contribution rate of about 80%.

Discussion:

Unlike Tokyo Bay and Ise Bay, Osaka Bay is characterized by the fact that regulations have been strictly enforced for a long time, including the achievement rate of environmental standards and red tide show various changes such as increase, decrease and leveling. Utilizing this unique feature of Osaka Bay, a model focusing on the “Three Fluctuation Periods of the Red Tide” and “Various Regulations” was created to compare environmental changes. We found a useful solution to promote the sustainable development of "Osaka Bay" and "conservation and management of water quality".

Keywords

Red Tide, Sustainable Development, Osaka Bay, Seto Inland Sea