

底生生態系モデルを用いた海岸生態系の物質循環の評価

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Abstract

A tidal-flat ecosystem model was developed and applied to a natural tidal flat area and an artificial beach of Tokyo Bay. Based on those model results, the nitrogen cycle in these areas were evaluated. It was found that the purification ability on the natural tidal flat area is greater than it is on the artificial beach. On the natural tidal flat area, about 60% of the imported organic matter returns to the bay water as inorganic nutrient, and therefore 40% of it is removed from the system. On the other hand, about 90% of the imported organic matter to artificial beach area returns to bay water as inorganic nutrient, and thus only 10% of it is removed from the system. The difference in purification ability between these two areas can be attributed to food web structures. Benthic algae and macrobenthos dominated the natural tidal flat area resulting in forming a complex food web structure which shows a high buffer ability. However, benthic bacteria dominated the artificial beach area and thus has a simple food web structure which is not readily able to absorb environmental change.