

RELATIONSHIP BETWEEN BIODIVERSITY OF MACRO BENTHOS AND PHYSICAL HABITAT CHARACTERS IN TIDAL FLAT IN EASTERN SETO INLAND SEA, JAPAN

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Introduction

A numbers of public work projects have been implemented in Japan to create artificial tidal flats to utilize the function of tidal flat such as water purification and habitat for macro benthos. Macro benthos plays an important role for those functions in tidal flat. The relation between the distribution of the macro benthos and the environmental factors is considered to be a key. This fact is used in the design of an artificial tidal flat and the forecast of the distribution of the macro benthos. However, the chemical characteristics of sediments, such as the amount of the organism and the sulfide that are changeable in qualitative factors, have been used in current researches, nevertheless these chemical characters cannot forecast the change of macro benthos properly. Therefore, when the correspondence of the macro benthos and sediments is generalized, a researcher should focus on physical characteristics of sediments. The objective of this study was to study the relationship between physical characteristics of sediments and the biodiversity.

Method

Quantitative quadrat sampling of macro benthos was carried out at 6 tidal flats in easterner Seto Inland Sea, Japan(Figure.1). We determined Physical characteristics of the habitat, in term of difference in elevation and sediment particle size. The sediment particle size was collected up to 4cm in depth by using the core sampler of 15mm in the diameter and sorted into pebble gravel (4.75~19mm), granule gravel (4.75~19mm), coarse sand (2~4.75mm), medium sand (0.85~2mm), fine sand (0.25~0.85mm), silt clay (0.075~0.25mm).

Result

1) A total of 192 species were collected at 187 stations on 6 tidal flats. 2) A rate of silt clay and fine sand was significantly higher in sediments of estuary tidal flats than those of foreshore tidal flats. Pebble gravel and granule gravel did not exist in sediments of estuary tidal flats. 3) Physical characteristics of sediment were classified into 9 groups by cluster analysis in relation sediment particle size and difference in elevation. 4) Those groups had also significant difference with physical characteristics of sediments and characterized by some specific macro benthos species. 5) The result suggested that the biodiversity and the number of species have a positive correlation with the number of

sediment group. These results show that when the diversity of the sediments increases, various macro benthos appear and the biodiversity increases (Figure.2).

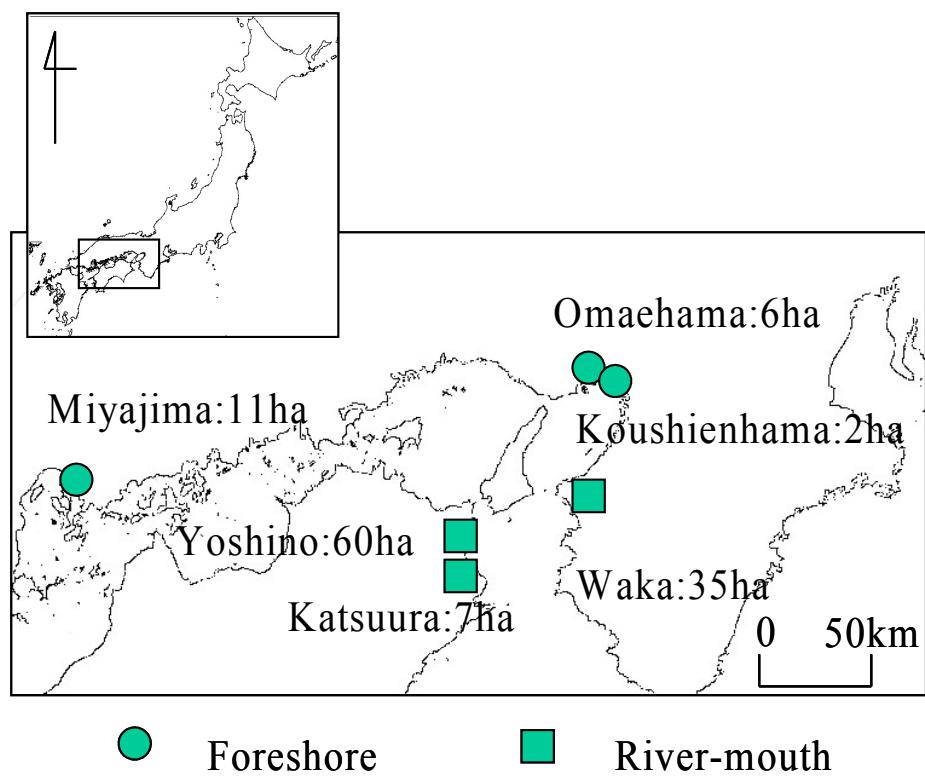


Figure.1 Study Area

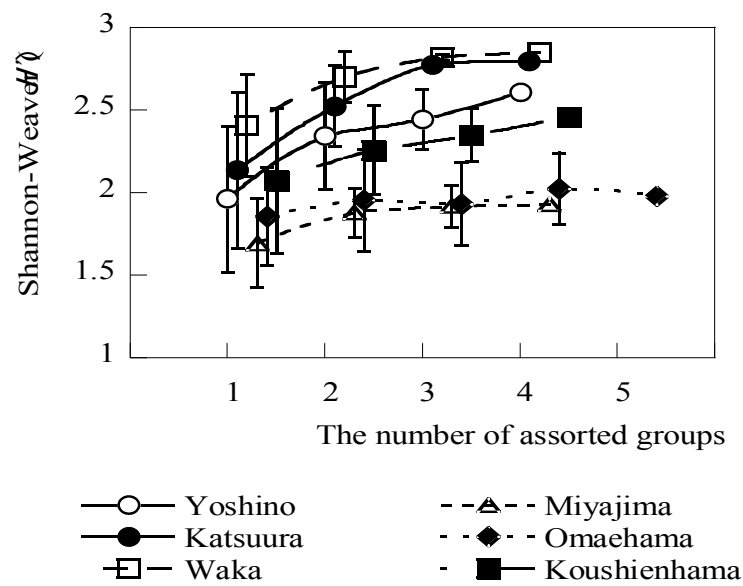


Figure.2 Relationship between diversity of the sediments and the biodiversity