Tidal Flat Restoration With Public Involvement Toward A New Sato-umi

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Ago Bay is located in Ise-Shima National Park, Mie prefecture, Japan. The bay is famous for cradle of pearl culture. However, recently nutrient loads increased due to domestic loads and pearl culture. At the same time, natural purification capacities decreased due to the land reclamation. Accordingly, the red tides and the hypoxia occurred every year. It is considered that one of the major causes of these problems is a stagnation of the material circulation between sea and land by reclamation of coastal shallow area. During recent 50 years, approximately 70% of tidal flats were reclaimed for constructing rice fields. However most of these areas, cultivation were given up and changed to fallow fields. Therefore, for the environmental restoration of Ago Bay, it is necessary to restore the ecosystem around the shallow area. Responding to the negative effect of ecosystem changes on local fisheries, fishing communities, scientists and local government co-adopted a Sato-Umi approach to restoration of tidal flats. [Present State of Unused Reclaimed Area] More than 50 years ago, about 269 ha of tidal flats were existed in Ago Bay. Recently the total reclaimed areas are about 185ha, But now more than 85% of these reclaimed areas were changed to fallow fields and unused wetlands. Such areas are up to about 154ha. The sediments of unused wetlands contain high contents of organic matters, because the dykes lead to accumulation of the nutrient run off from the land. In these area, the abundance and diversity of macro faunas are quite poor. [Effects of Tidal Flat Restoration] Tidal flat restoration was carried out from Apr. 2010 with public involvement by opening the floodgates on the concrete dike, which was constructed for reclamation. Environmental improvements of restoration area were evaluated by monitoring for 2 years. Before the restoration, only 6 species of macro faunas, which lives in brackish water, were found. But after opening of the floodgate, the macro faunas were changed from brackish to saltwater species. After 2 years, 35 kinds of juvenile fish, migratory macro faunas and small bivalves were found. At the same time, both COD and AVS in sediment decreased. These results indicate that the sediment status in the restoration site is gradually changed from anaerobic condition to aerobic by promoting the tidal exchange. Further the biological productivity was enhanced in the restoration tidal flat. These methods would lead to wise use of the coastal environment and to enhance the biological productivity around the unused reclaimed areas. From above results Shima city government are actively promoting coastal environment restoration

based on Sato-umi concept since 2010. And the tidal flats restoration were specified clearly in the official master plan of shima city. Recently additional 2 sites of the new tidal flat restoration have began in the city. Keywords: Sato-umi, Tidal flat, Public involvement, Restoration, land reclamation