History and the new efforts of ecosystem restoration around rocky shore in Japan

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Abstract: In Japan, many artificial fish reefs are placing in the coastal area for the purpose of the fishery promotion. Recently not only artificial fish reefs for fishing purpose, but also fish reefs which propagate fishery resources are demanded. In addition, as the social need of preservation for ecosystem in coastal area is increasing, the device which increases creatures actively is requested to the coastal structure constructing. However, fishery resources can not increase in barren ground. As the new efforts of ecosystem restoration around rocky shore, the measure to make grazing pressure reduce became implemented. In this report, the history of the project of artificial fish reef construction and the restoration of the coastal ecosystem and the present in Japan efforts are shown.

The history of man-made fish reef in Japan is old. In recent years, the role of the coastal fishing became important and the Coastal Fishing Ground Improvement and Development ACT has enacted in 1974. Many systematic fishing ground development projects have been carried on at each place. The seaweed bed constructed over 14 years has approached 3,000 ha. The Fishing Port and Fishing Ground Improvement ACT which aims for the prosperity of fisheries industry and the activation of fishing villages has been enacted in 2002. The government had purposes to propagate marine life at nearly 750 areas and to preserve nearly 5,000 ha of seaweed bed and tidal flat.

A lot of seashore was reclaimed during the high economic growth period (1955-1973) in Japan and the ecosystem received big damage. After studying the 'Sustainable development' presented United Nations Conference on Environment & Development in 1992, people began to seek harmonious coexistence with nature to port and coastal structures. As for these technologies, the fishery engineering became a base.

When implementing seaweed bed development, ideal physical circumstantial services such as the stable substrata and the inhabiting space are done. However, the forming of the seaweed bed on the barren ground is very difficult. Specifically, to reduce the influence of the grazing pressure of the herbivore is an important problem. The Fishery Agency of Japan released 'Isoyake Recovery Guideline' in 2007. Isoyake means barren ground. The main concept of the guideline consists in that you should understand and eliminate the hampering factors of seaweed beds, and it is also emphasized that adaptive management in which measures are reconsidered to adapt to environmental changes should be adopted. The adapting efforts will be needed in case of the

restoration and preservation of the ecosystem in addition to the recovery of the seaweed bed.

Keywords: Artificial fish reefs, Barren ground, Ecosystem, Isoyake, Restoration, Seaweed