

Basic Concept of a Newly Established Integrated Study on the Linkage of Forest-Sato-Sea Collaborating with a Social Movement Flagged “The Sea is Longing for the Forest” and Its Actual Case Research Conducted in Ariake Bay-Chikugo River System, Japan

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20th century science had been highly specialized to create a large variety of new technologies, resulting in “happy” easier life only for human being. However those individually separated technologies caused serious impacts on the earth systems. The author believes it is necessary to create integrated new science in 21st century because all of the present global-scale issues have complicated and/or comprehensive aspects.

Japan is characterized by two unique features of being covered by forest (67%) and surrounded by highly diverse marine systems ranging from sub-arctic to subtropical regions. The forest is of course connecting to the sea basically by river which conveys continuously clean but nutrients / minute elements-rich water from the forest. However, the linkage between forest and sea was largely damaged by high energy-consuming urban life and industrial activities which are concentrated to river side and estuarine land area. Unfortunately previous sectionalized science couldn't efficiently contribute to solve the present comprehensive global-scale issues. Thus the author proposed a newly integrated study on linkage of forest-sato-sea in 2003 primarily based on my own research experiences as well as a preceded fishermen's social activity. The goals of this new study are to restore the linkage and to recover intimate relationship among people.

This idea has been first emerged from an estuarine ecosystem research conducted in the bottom of Ariake Bay where a unique and precious biodiversity with large number of last ice-age continental relict organisms including 8 sub-endemic fish species exists. These relict fish aggregate at low-salinity ETM (estuarine turbidity maximum) during the early juvenile stage, although their spawning grounds are different. The reason is that a large biomass of a brackish-water copepod *Sinocalanus sinensis* (relict species) assemblage exists there. This relict copepod is a detritus-eater which is formed at the ETM area owing to aggregation of clay-silt particles transported from volcanic Mt.Aso catchment via largest river Chikugo. Thus I could conclude intimate linkage: sub-endemic fish – prey zooplankton – minute particles (detritus) – Chikugo river – Mt.Aso. However, this relation has been highly influenced by decreases of water and sand supply caused by construction of dams.

Discussion will be also made from the viewpoint of forest-origin iron contribution to enhancing primary production in the coastal waters in relation to fishermen's social movement “The sea is longing for the forest “