Living resources, fisheries, mariculture

" Fishery Simulator" To Vitalize Trawl Fishery In Ise Bay, Japan

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In order to revitalize fishing industry and concerned local communities, integrated measures through the production to the consumption are necessary, as well as the assessment system for them. "Fishery simulator" is being developed which consists of computational models of fishing operation (an operation part), and distribution of fishery products and sales (a marketing part). Trawling in Ise Bay, Japan has been chosen for a target of the simulation since it is one of the major fisheries which is sensitive to the marine environmental conditions such as dissolved oxygen. In order to grasp the current situation of trawl fishery, investigations of fishing field, fishing effort, and fish catch were carried out by GPS tracking of fishing boats and fishing records. The information about the economic management of fishermen or cooperative societies were also collected. It is found that each major fishing community has different forms of fishing operation and distribution system. Based on the information obtained by the survey, the operation part of the simulator which demonstrates the fishing activities of fishery was developed. The simulator well reproduced the fishing field and fish catch of the fishing boats from three major fishing ports. The simulator was applied to evaluate the effect of fishing management scheme in which the fishing gear efficiency is controlled. A potential sales of fishery products in coastal areas of Ise Bay was also evaluated in order to assess current situation and measures of fishery products sales by the marketing part of the simulator. The potential sales was modeled by considering spatial distribution of

population, purchasing power and transportation convenience in the target region around the bay, for which various statistical database and GIS are utilized. The potential of existing stores was calculated and compared to their actual sales to validate the employed model. Then the change of potential sales in the future was estimated considering change in population, age structure, and consumption of fishery products per capita. Further, the potential of direct sales store, which is expected to improve the economic situation of fishermen, was also evaluated to discuss its effectiveness.