The Application of Geo-informatics Technology for Monitoring of Environmental Variation in Community-based Sea Ranching in Middle Songkhla Lake

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Abstract

Environmental variation in middle Songkhla Lake were monitored 3 times during August 2006 to February 2007, due to global climate changed and La Nina phenomena impacted, could influenced to community-based sea ranching activities, under Fisheries Resources in Songkhla Lake Restoration Project. The survey stations were divided into 40 sites. Found that, mean of depth, pH, dissolved oxygen (DO), alkalinity, total phosphorus (TP) and chlorophyll a were significantly different (P<0.05) among stations, and found that all water quality parameters except DO were significantly different (P<0.05) among study period, and found that temperature, DO and Salinity were significantly different (P<0.05) among top and bottom. For sediment parameters, total ammonia nitrogen (TAN) and organic matter (OM) were significantly different (P<0.05) among stations. About macrobenthos found that, abundant of macrobenthos among stations were significantly different (P<0.05), mean abundant were 1,023 ind./m² (674 ind./m² excluded bivalve). While macrobenthos composition have changed slightly, that found bivalve highest abundant, which Tanaidacea were dominant group. Due to environmental variation, that community-based sea ranching operation were influenced onto consideration in aquatic species and location. Since, water salinity retained on low level in range of 0-6.5 ppt, that highest salinity in November 2006, which area of salinity as equal and above 5 ppt were calculated as 7.2% (15,649 rai), and became to freshwater in February 2007. While DO still more than 4.0 mg/l, TAN less than 1.0 mg-N/l and plenty of macrobenthos abundant all study period. Macrobenthos abundant in study area which equal and above 500 ind./m² were calculated as 29.8% (65,154 rai) (exclude Bivalve). Furthermore, when salinity were decreased, that caused of black tiger shrimp production declined in community-based sea ranching. Thus, black tiger shrimp landing production in 2006 as just 16,365 kg, that loss production as 76,152 kg.

Then, salinity and trend should be considered in first priority for seed releasing into community-based sea ranching zone, as brackish water (>5 ppt) black tiger shrimp should be selected, if became to freshwater should be selected for optimize aquatic species, such as giant freshwater prawn and freshwater fishes (especially bottom feeder such as green catfish, red tail mystus and sand goby). The application of geo-informatics can be display environmental variation, distribution and spatial analysis.

Key words : geo-informatics, environment, community-base sea ranching, Songkhla Lake

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