BACTERIAL INDICES AND MAPPING OF SUITABLE BIVALVE CULTURE AREA IN THE COASTAL WATER OF SURATTHANI PROVINCE

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ABSTRACT

Survey on the bacterial contamination in the coastal water of Suratthani Province was conducted during January 1999 - December 2001. Seawater was collected twice monthly from 3 lines of 31 sampling stations within the intertidal area. Results showed that the contamination was higher at the stations near the mouth of the river and the canals than those further from shore. However, *Salmonella* spp. was not detected throughout the survey. It was also found that the highest number of the total coliforms and fecal coliform at the stations in the survey line A and B were higher than the standard range of coastal seawater quality categorized no. 4 (seawater quality for coastal aquaculture). Statistical analysis on the bacterial contamination of each station and month showed that the highest average total viable count was occurred at the mouth of Donsak canal and September - October was the peak period. The highest average number of *Vibrio* spp. was found at the mouth of Donsak canal and the peak period was between March - April. The highest number of total coliforms and fecal coliform was found at the mouth of Cha-nogoe canal and September was the peak period. The highest number of *E. coli* was found at the mouth of Tapi river and the peak was in July and October - November. Furthermore, cluster and MDS analysis showed that 3 groups of the stations can be divided; group 1 consisted of the stations in line A (A1 - A13), group 2 consisted of the stations in line B (B1 - B15) and group 3 consisted of the stations in line C (C1 - C3). Spatial analysis under the Arc View geographical information system showed that the bacterial contamination at the mouth of Tapi river and Chaiya canal was higher than the other area. Seasonally, near shore contamination was occurred in the dry season, while off shore contamination to the northeast direction was occurred in the wet season. Mapping of suitable bivalves culture area in the coastal water of Suratthani province based on the bacterial indices showed that at 3, 5 and 10 km border limit, the most suitable area were calculated to be 102.52, 17,818.66 and 10,190.88 ha, respectively, while the moderate suitable area were 184.54, 28,583.68 and 16,219.29 ha, respectively, and the unsuitable area were 246.06, 52,000.15 and 31,228.79 ha, respectively. Furthermore, survey on the climatic condition showed that at average, the air temperature was 26.8 ± 0.1 °C, the annual rainfall was 1,680.7 ± 111.4 mm and the annual rainy day was 86.3 ± 2.5 days.

Key words: Bacterial indices, geographical information system, coastal water, bivalves, Suratthani Province.